



**IMRC  
2025**  
India Management  
Research Conference  
IIM Ahmedabad

# INDIA MANAGEMENT RESEARCH CONFERENCE — IMRC 2025 —

December 5-7, 2025 | IIM Ahmedabad

Conference Theme  
**The Future of the Economy:  
People, Organizations, and Policy**

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## Track 01: Unpacking the Indian Startup Story

Submission ID: 5

Track 01: Unpacking the Indian Startup Story

### Unpacking the Indian Dream: A Startup Perspective

*Lanke Srilatha and Vemula Ravikumar*

**Abstract:** The rapid development of India's startup ecosystem is examined in "Unpacking the Indian Dream: A Startup Perspective" as a reflection and a driver of the country's socioeconomic change. India has seen a dramatic transformation over the last 20 years, going from a service-based economy to a thriving centre of innovation that is now home to one of the biggest and fastest-growing startup scenes in the world. This essay explores the complex story of how the "Indian Dream" has evolved to include entrepreneurship, disruption, and digital empowerment in addition to upward mobility through conventional jobs. This article explores the main forces behind India's startup revolution using a combination of historical background, data-driven analysis, and real-world case studies. These forces include the emergence of digital infrastructure (like Jio and UPI), demographic dividends, policy initiatives like Startup India, and the growing availability of venture capital. A new generation of risk-takers and innovators from metros to Tier-II and Tier-III cities are inspired by the socio-cultural shift that has redefined failure as a stepping stone. The abstract also highlights how founders are reimagining solutions for uniquely Indian problems, such as agritech and edtech platforms reaching underserved communities and fin-tech for the unbanked, while addressing the difficulties faced by Indian startups, such as regulatory barriers, scalability issues, and the urban-rural digital divide. This narrative seeks to provide a grounded, human-centered perspective of what it really means to pursue—and build—the Indian Dream today by delving into the motives, attitudes, and mechanics of Indian entrepreneurship. It does this by going beyond the headlines of unicorn valuations.

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Track 01: Unpacking the Indian Startup Story

### Voids or Venture: When Indian Information Technology Outsourcing Firms Expand Internationally Despite Shortfalls

*Rajarshi Mukherjee*

**Abstract:** The internationalization of firms from emerging economies presents a paradox. While institutional voids at home push firms to seek growth opportunities abroad, these firms simultaneously face legitimacy challenges in foreign markets, such as liability of foreignness and liability of origin. This study examines how Indian Information Technology Outsourcing (ITO) firms, as born globals,

respond to performance shortfalls and whether institutional conditions in the home country influence these responses. Using the Behavioral Theory of the Firm (BTOF) and the problemistic search framework, we theorize that performance shortfalls prompt ITO firms to expand exports rather than focus on the underdeveloped domestic market. However, the extent of this response is shaped by home-country institutions. These findings contribute to behavioral strategy research by demonstrating that firms' responses to performance shortfalls are context-dependent. While traditional BTOF literature suggests firms conserve resources during performance downturns, our results reveal that born-global ITO firms leverage their existing international footprint to expand rather than retrench. Furthermore, we highlight how institutional conditions in emerging economies shape firms' behavioral responses, offering insights into internationalization under uncertainty.

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Submission ID: 262

Track 01: Unpacking the Indian Startup Story

## SYSTEMATIC REVIEW OF THE TOY INDUSTRY IN INDIA: TRENDS, CHALLENGES, AND GLOBAL INTEGRATION

*Adit Jha, Praveen Choudhry.*

**Abstract:** This study aims to comprehend the evolving landscape of the toy industry by conducting a domain-based Systematic Literature Review (SLR). Researchers have framed four basic research questions: RQ 1: What are the recent publication trends in the toy domain? RQ 2: What are the various clusters in the toy domain literature? RQ 3: How do government and economic developments affect the emergence of the toy domain? RQ 4: What are the future research aspects in the domain? Research Design: A Systematic Literature Review has been written following PRISMA 2020 guidelines and Scientific Procedures and Rationales for Systematic Literature Reviews (SPAR-4-SLR) protocols, we meticulously selected papers from Scopus to identify historical developments and track structural changes within the industry. For the Systematic Literature Review (SLR) Biblioshiny tool of R programming and VosViewer have been used. Descriptive Statistics, Author's Keywords, Cluster analysis, and Factorial Analysis (PCA) have been done. Key Finding: The result shows the growth in a subject area is a 5.71% annual growth rate, term deep learning has topped in the most relevant words, followed by machine learning and IoT. The toy domain has been defined in 9 different clusters. Callon Centrality of toy manufacture was found at 9.22, and toys were found on 8.77, exhibiting an established cluster connection with toy and toy manufacture. Recent developments in toys were related to wooden toys, machine learning toys and IoT toys. Originality/ Implication: As per the author's knowledge, there is no review study available on the toy domain. The study will provide implications to future researchers, toy professionals, and government agencies to make.



## Indian Entrepreneurial Financial Landscape and the role of Innovation in driving Economic growth and Sustainability

*Pragati Kachhi and Dr. Kritika Tekwani.*

**Abstract:** This qualitative study explores the interplay between entrepreneurial financing and innovation in deriving economic growth and sustainable development across generations in India. By using a grounded theory approach, the research investigates how diverse financing mechanisms, coupled with innovation, contribute to long-term sustainability and intergenerational equity. In this study data were collected from panel discussion and various reports (Global Entrepreneurship Monitor, Entrepreneurship Development Institute reports, Budget 2025) and websites (Startup India, Ministry of Electronics & Information Technology, Ministry of Science & Technology, Indian Institute of Entrepreneurship, MSME, Ministry of skill development and entrepreneurship, DST) which are related to, Entrepreneurs, investors and policy makers. Our findings reveal that innovative entrepreneurship promotes economic growth and development, environmental sustainability, and intergenerational equity through the mechanism of knowledge transfer, collaborative networking, and adaptive strategies. This study highlights the important role of innovative entrepreneurship in promoting interstate -gene capital through mechanisms such as economic development, environmental and knowledge transfer, collaborative networks and adaptive strategies. It is necessary to strengthen economic aid structures, promote innovation -friendly politics and promote partnerships across the sector to ensure long -term economic flexibility. The study emphasizes the importance of policy support, institutional infrastructures, and collaborative cooperation to create a sustainable entrepreneurial ecosystem in India. This paper also includes recommendations for decision makers, entrepreneurs and investors and Government to promote innovation-driven economic growth and sustainability. By integrating sustainable business models with new economic strategies, entrepreneurs can create sustainable values that benefit both current and future generations.

Submission ID: 335

Track 01: Unpacking the Indian Startup Story

## From Crop Loss to Crop Shield: Marketing AI Solutions in Marginalized Communities

*Dr. Priyanka Suresh, Nayanatara Acharya and Prof. Rajani Balaji*

**Abstract:** This case is about the journey founder of PashuTham, Nitin, a tech entrepreneur. PauTham, an AI innovation that focuses on addressing the human-wildlife conflict that leads to agri damage in rural India. Despite technological innovation and successful pilot testing, the product faces resistance from its intended users—small and marginal farmers—due to affordability issues, traditional mindsets, and market readiness gaps. The case delves into the intersection of agri-tech innovation, biodiversity conservation, and rural market dynamics, highlighting the challenges of monetizing AI solutions in underserved communities. It also prompts reflection on how technology can contribute to achieving Sustainable Development Goals (SDG 2: Zero Hunger and SDG 15: Life on Land). Designed for discussions around market segmentation, pricing strategy, social entrepreneurship, and sustainable business models, the case challenges readers to develop feasible revenue models that reconcile impact, adoption, and profitability in resource-constrained settings.

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Submission ID: 376

Track 01: Unpacking the Indian Startup Story

## Navigating the Indian Startup Ecosystem: A Data-Driven Analysis of Structural Challenges and Growth Opportunities

*Ashish Maurya, Saptarshi Datta, Himanshu Thakkar and Piyush Mohapatra*

**Abstract:** This article presents an empirical examination of the Indian startup ecosystem by exploring its structural constraints, demographic disparities, and future growth opportunities. It combines macro-level data from the GUESSS India 2023 Report (N=13,896) and micro-level results from an independent and targeted survey of a sample of entrepreneurs (N=56). National data indicates that India is the world leader in entrepreneurial intent, with 32.5% of students claiming to be nascent entrepreneurs. However, our own primary data analysis has uncovered important structural and demographic barriers to achieve entrepreneurial activity. Cross tabulation and inferential statistics reveal a statistically significant association ( $p=0.042$ ) between the gender of a founding member of the venture and their perception of funding as a challenge; and that educational background of an entrepreneur has a significant impact on their perceived growth of the venture ( $p=0.021$ ). In addition, these results provide critical detail to the nationally reported "intention-to-action gap" (only 4.8% of students become active founders), suggesting that the elements of structural and demographic barriers may exacerbate the gap. In conclusion, this paper suggests that the next wave of India's startup growth will rely on an evolution

away from the one-size-fits-all support and instead provide targeted support that acknowledges and addresses the structural and demographic barriers and equitable development initiatives.

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Submission ID: 424

Track 01: Unpacking the Indian Startup Story

### Mind Her Business

*Samreen Hussain, Mitali Tiwari and Isha Yadav*

**Abstract:** Through a set of secondary data, this paper investigates the impact of economic freedoms on women's economic empowerment. Three models depicting (1) women employment having no power in policymaking, (2) women entrepreneurs, and (3) women at higher managerial positions are taken. Regression analysis is used to determine quantitative results interpreted in the light of relevant laws and case laws. It was found that government integrity was the most potent enabler, and property rights and tax burden were significant inhibitors in providing an enabling economic environment to women. This has implications for the contribution of women to economic development.

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Submission ID: 441

Track 01: Unpacking the Indian Startup Story

### Unlocking Firm Performance through Entrepreneurial Networks: The Mediating Role of Business Model Innovation in Agri-Tech Startups

*Arun B S and Ranjith V K*

**Abstract:** Introduction: In the dynamic and resource-constrained environments of emerging economies, entrepreneurial networks (EN) have emerged as critical strategic assets for startups, particularly in sectors like agri-tech that face inherent uncertainties and fragmented ecosystems. The increasing relevance of business model innovation (BMI) as a mechanism for value creation and capture, especially under institutional and infrastructural voids, warrants a deeper exploration of how network-driven startups reconfigure their business logic to improve performance. While business model innovation has been studied in various contexts, its specific role as a mediator rather than an outcome of entrepreneurial network use in emerging-market agri-tech ecosystems remains under-theorised. This study focuses on the role of entrepreneurial networks in enhancing firm performance (FP) through the mediating mechanism of business model innovation, with specific attention to agri-tech startups in Bengaluru, India. Research Context and Gap: Startups in India's agri-tech sector are addressing persistent issues of productivity, climate uncertainty, and technology adoption in rural agriculture (Kadyan et al., 2023; Kumar, 2024). However, these ventures often struggle to scale due to infrastructural gaps, limited access

to capital, and fragmented value chains. While prior literature has emphasised the value of entrepreneurial orientation (EO) and learning (EL), limited empirical work dissects the discrete role of networks in enabling strategic innovation pathways like BMI. Existing research (Abbas et al., 2019; Xu et al., 2022) establishes EN as a key resource conduit, yet few studies investigate how such networks translate into sustainable performance outcomes via innovative business model transformations. This research addresses this gap by investigating EN → BMI → FP as a focused causal pathway. Theoretical Foundation: Grounded in the Resource-Based View (RBV) and Social Network Theory (Batjargal et al., 2013), this study conceptualises EN as an external yet firm-leveraged capability that facilitates access to resources, legitimacy, and information. Entrepreneurial networks provide structural and relational capital, which firms can recombine through BMI to realign value propositions, revenue models, and delivery systems (Clauss, 2016; Spieth & Schneider, 2015). The study positions BMI not merely as an outcome of network advantages but as a transformative engine that reconfigures such advantages into performance-driving mechanisms. Research Questions and Objectives: This paper answers the following research question: To what extent does business model innovation mediate the relationship between entrepreneurial networks and firm performance in agri-tech startups? The key objectives include: (1) examining the direct relationship between EN and FP, (2) analysing the role of EN in fostering BMI, and (3) testing the mediating effect of BMI between EN and FP. Methodology: A mixed-method research design was employed, following the pragmatic paradigm. The quantitative strand utilised a structured questionnaire administered to 55 agri-tech startups in Bengaluru, representing both urban and Semi-urban ecosystems. Constructs for EN, BMI, and FP were measured using validated instruments from Xu et al. (2022), Latifi et al. (2021), and Kusa et al. (2023), respectively. Data were analysed using Partial Least Squares Structural Equation Modelling (PLS-SEM) via SmartPLS v4 to test direct and mediated paths. The qualitative component included 8 in-depth interviews with founders, incubator managers, and agri-policy experts. Thematic analysis and axial coding were used to extract insights about network composition, trust-building, and iterative business model adjustments. Findings from the qualitative strand were used to triangulate and contextualise quantitative patterns, especially where statistical mediation effects aligned with founders' lived experiences of network-enabled business model shifts. Key Findings: The study finds that entrepreneurial networks do not automatically lead to better firm performance. Instead, their impact depends on how strategically they are used to drive business model innovation. Startups that actively translated their connections into novel shifts, such as moving from product sales to service platforms or integrating digital tools, saw greater performance gains, challenging the assumption that network access alone is sufficient. Business model innovation emerges as a deliberate capability, converting network-derived knowledge into market-aligned solutions that help startups navigate constraints like infrastructure gaps and fragmented ecosystems. Quantitative results support a partial mediation, showing that while networks influence performance, the effect is largely indirect, working through the business model innovation. Qualitative insights enhance this finding: entrepreneurs attributed their ability to pivot their models to mentors, incubators, and peer interactions, frequently altering customer focus, revenue streams, or delivery methods. Ultimately, networks act not as static social capital but as dynamic enablers of innovation, effective only when entrepreneurs mobilise them purposefully. It is this

strategic conversion, not mere access, that drives sustainable growth in agri-tech startups. Managerial and Policy Implications: Entrepreneurs should focus not only on building wide networks but also on leveraging these ties for strategic realignments of their business models. Practical implications include the need for founders to build ‘bridging ties’ connections that expose them to diverse perspectives beyond the immediate agri-business community. Policymakers and incubators should design interventions that promote not just networking but capability transformation through BMI labs, design thinking workshops, and peer experimentation platforms. These findings can directly inform the design of startup accelerators and government funding mechanisms. Relevance to SDGs: This study contributes directly to Sustainable Development Goals (SDG) 8 (Decent Work and Economic Growth), 9 (Industry, Innovation and Infrastructure), and 17 (Partnerships for the Goals). By enhancing understanding of how EN and BMI interact to drive performance, the research supports inclusive and sustainable agricultural entrepreneurship. Conclusion: Entrepreneurial networks, while crucial, are not sufficient on their own to ensure performance outcomes in agri-tech startups. It is through business model innovation enabled by these networks that startup can align their value creation strategies with contextual realities and achieve sustainable growth. The study offers a refined understanding of how firms can activate latent network resources into actionable business advantages via BMI, especially within constrained emerging market contexts. By empirically validating this mediating pathway, the study not only reinforces the causal role of business model innovation but also reframes entrepreneurial networks as enablers of transformation rather than direct performance levers.

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Submission ID: 521

Track 01: Unpacking the Indian Startup Story

## Fostering Innovation through Digital Ecosystems: A Startup Perspective

*Mohd Tabrej Alam and Rudra Prakash Pradhan*

**Abstract:** This study explores the role of digital platforms in entrepreneurial ecosystems, focusing on their transformative impact as a catalyst to innovation, promoting startup growth and inclusive ecosystems. Digital platforms-the likes of Kickstarter, LinkedIn, Slack, Trello, etc.-are very critical enablers that seek to address classic challenges such as resource inefficiencies, geographic constraints, and inequality in access. The platforms integrate tools for crowdfunding, professional networking, and collaborative project management, enhancing resource allocation, global connectivity, and operational efficiency. Regression and correlation analyses show that global networking is the most significant driver of revenue growth, followed by innovation progress and funding success. Challenges like the digital divide, platform dependency, and data security are significant. Based on case studies and quantitative insights, this study offers actionable strategies for stakeholders including entrepreneurs, policymakers, and ecosystem managers to fine-tune integration with digital platforms to ensure the resilience and sustainability of modern entrepreneurial ecosystems. This underlines a balanced approach

with digital tools being supplements rather than replacements for the traditional components in the ecosystem driving sustainable entrepreneurial growth.

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Submission ID: 546

Track 01: Unpacking the Indian Startup Story

## **The Business of Electrification: AR4 Tech's Startup Journey Through Crisis and EV Retrofitting**

*Dr. Anand Tp and Dr. Lakshmi Subramani*

**Abstract:** This case study looks at the entrepreneurial journey of AR4 Tech, a startup in Coimbatore, Tamil Nadu that retrofits electric vehicles (EVs). Founded by Sivashankari, a first-generation entrepreneur, AR4 Tech focuses on converting internal combustion engine (ICE) vehicles into EVs using modular technology that does not require invasive techniques. The company has seen early success, converting over 800 vehicles and achieving 100% year-over-year growth. However, it faces major challenges, such as regulatory hurdles, financial strain from policy changes, and operational constraints. The case highlights a strategic dilemma: whether to focus on high-margin but tightly regulated vehicle segments or shift toward unregulated sectors like agricultural machinery and exports. It also looks at the company's hybrid business model, which includes vocational training for underserved communities. This case offers a rich context for discussing entrepreneurial strategy, innovation in business models, navigating regulations, and balancing profit and purpose in emerging markets.

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Submission ID: 648

Track 01: Unpacking the Indian Startup Story

## **BLUSMART: FROM GREEN MOBILITY TO GOVERNANCE FAILURE**

*Jinal Shah, Sejal Mishra and Swati Bapna*

**Abstract:** BluSmart was India's first and largest integrated, full-stack electric ride-hailing service, which became a lean option for regular city travel following the COVID-19 pandemic. In alignment with India's Net Zero and FAME-II goals, BluSmart presented itself as a green mobility pioneer supported by global investors. It offered zero ride denials while empowering thousands of driver-partners, including women drivers, through its Sakhi initiative. Partnering up with industry giants, they were quick to remove the hurdles of charging infrastructure across India. Still, financial dependencies and ethical lapses existed, intertwined below innovation. Questions on governance, fund diversion, and unsustainable scaling started rising, given that most of its EVs were leased from Gensol Engineering



Ltd., a related-party firm co-founded by BluSmart's masterminds. Delayed payments occurred in early 2025 when leadership crumbled, and communication was amiss. This mismanagement triggered widespread protests, which ultimately led to insolvency petitions and government investigations. The Case captures the aggressive scaling of startups with governance failure. It also raises critical questions concerning ethics, founder accountability, financial structuring, and just what the future holds for sustainable urban mobility throughout emerging economies. When ethical principles are not followed, then even the most inspiring ideas are jeopardized. Transparency is not effectively communicated, and development lacks responsibility, as exemplified by BluSmart. This Case asks future business leaders: Is a compelling mission and vision enough, even if the foundation is not built on trust?

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Submission ID: 707

Track 01: Unpacking the Indian Startup Story

## Innovative Startup Ecosystems in Rural India: A Tech-Driven Approach to Market Gap Resolution

*Dr. Asawaree Yadavh, Dr. Purushottam Petare, Mrs. Mugdha Deshpande and Mrs. Arpita Bidnurkar*

**Abstract:** The study aims to explore how rural entrepreneurs leverage technology to address business challenges and enhance success. Primary data was collected through a structured questionnaire using a non-probabilistic convenient sampling method. To analyze the socio-demographic profile of entrepreneurs, frequency distribution along with tables and charts was employed. Descriptive statistics, particularly mean analysis, were used to identify the most critical parameters of the tech-driven approach, including technology adoption, digital infrastructure access, government policy support, rural incubation availability, and efforts to reduce the urban-rural divide. Furthermore, inferential statistics such as independent sample t-test and one-way ANOVA were applied to examine significant differences in perceptions among entrepreneurs based on gender, age, education, and number of dependents. The findings offer meaningful insights into building inclusive and sustainable startup ecosystems in rural India through targeted technological interventions and policy frameworks.

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## More Than Just a Trait: Entrepreneurial Leadership as a Strategic Necessity for Sustainable MSMEs through Dynamic Capabilities

*Ruchi Mishra and Kiran K.B.*

**Abstract:** 1. Introduction In today's rapidly evolving global environment, Micro, Small, and Medium Enterprises (MSMEs) face intense challenges in sustaining competitiveness due to technological advancements, economic shifts, and resource constraints (Mishra & Kiran, 2024). Entrepreneurs play a pivotal role in driving innovation and growth, yet their success is contingent upon their ability to respond to environmental turbulence, market uncertainty, and institutional barriers (Murad et al., 2024). Particularly in developing economies like India, MSMEs experience high failure rates—often attributed to limited adaptability and strategic capabilities—with nearly 40% ceasing operations in the early years (Hashim et al., 2018). Dynamic Capabilities (DCs) have emerged as essential tools for enabling such adaptability. As higher-order capabilities, DCs allow firms to integrate, reconfigure, and renew their resource base to manage change, enhancing resilience and long-term sustainable performance (Drnevich & Kriauciunas, 2011; Shah et al., 2023). While the role of DCs in achieving sustainable performance (SP) is acknowledged, the process through which entrepreneurial attributes contribute to DC development—and how these DCs subsequently influence SP—remains underexplored, particularly in the context of Indian MSME manufacturing. This study focuses on three entrepreneurial attributes—Entrepreneurial Business Networks (EBN), Entrepreneurial Orientation (EO), and Entrepreneurial Leadership (EL)—and investigates their impact on DCs and SP. Among these, EL emerges as the most critical enabler, fostering opportunity recognition, innovation, and adaptive behavior (Bagheri et al., 2022; Renko et al., 2015). Furthermore, previous studies have largely overlooked whether DCs act not just as mediators but as necessary conditions for achieving SP. This study addresses that gap by evaluating the extent to which entrepreneurial attributes are prerequisites for DCs, and whether DCs, in turn, are essential for sustainable outcomes. 2. Methodology 2.1 Questionnaire Design and Measures The questionnaire comprised two sections. The first gathered demographic details of respondents and firm-related information, while the second captured the study's primary constructs using close-ended items on a 5-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree). To reduce common method bias, some items were reverse-coded. All constructs were reflective and adapted from validated literature. Entrepreneurial Business Network (EBN) included three sub-constructs: supplier interaction, customer interaction, and competitor interaction, measured using a 12-item scale (Huang et al., 2012). Entrepreneurial Orientation (EO) was measured using a 5-item scale (Covin & Lumpkin, 2011; Covin & Miller, 2014), while Entrepreneurial Leadership (EL) was assessed with a 5-item scale (Aljanabi, 2018; Chen, 2007; Koryak et al., 2015). Dynamic Capabilities (DC) were evaluated through four dimensions—sensing, learning, integrating, and reconfiguring—using a 13-item scale (Pavlou & El Sawy, 2011; Singh & Rao, 2016). Sustainable Performance (SP) included 17 items across environmental, social, and economic dimensions (Mousa & Othman, 2020; Nor-Aishah et al., 2020). A

panel of five academicians and five MSME managers reviewed the questionnaire for content validity. Feedback led to refinements to better align with the MSME context. A pilot study with 45 respondents confirmed internal consistency (Cronbach's  $\alpha > 0.7$ ). Face validity was confirmed by expert review.

**2.2 Data Collection and Sample Data** Data were collected from MSME manufacturing firms in Uttar Pradesh, India—a state recognized for its MSME density and ease of doing business (MSME Annual Report; BRAP, 2019). The target respondents were owners or mid-to-senior-level executives. Surveys were administered online and supplemented with telephonic/video interviews. To reduce bias, confidentiality was assured, and voluntary participation was emphasized (Nederhof, 1985). A total of 302 responses were received between May 2024 and January 2025 using convenience sampling. After screening, 294 responses were found complete and valid for analysis.

**2.3 Data Analysis** SmartPLS 4 was used for data analysis, integrating Partial Least Squares Structural Equation Modeling (PLS-SEM) with Necessary Condition Analysis (NCA). The two-stage disjoint approach first assessed the measurement model (reliability, validity), followed by structural model testing. NCA was used to determine whether certain entrepreneurial attributes or DCs are necessary prerequisites for SP (Dul, 2016; Richter et al., 2020).

**3. Results & Discussion** The study aimed to investigate how Entrepreneurial Orientation (EO), Entrepreneurial Business Network (EBN), and Entrepreneurial Leadership (EL) influence Sustainable Performance (SP) in MSMEs, both directly and through the mediating role of Dynamic Capabilities (DC). The findings offer a multidimensional understanding by integrating Partial Least Squares Structural Equation Modeling (PLS-SEM) with Necessary Condition Analysis (NCA).

**3.1 SEM Results and Interpretation** PLS-SEM results revealed that EL and EBN significantly enhance SP, while EO showed no direct influence on SP. Interestingly, EO strongly influences DC, which in turn significantly predicts SP, indicating that DC fully mediates the EO–SP relationship. Conversely, EL and EBN showed partial mediation through DC, suggesting their dual role in both directly driving SP and fostering DC. These findings reinforce the growing consensus in the literature that EO alone may not directly translate into sustainable outcomes unless MSMEs possess the requisite dynamic capabilities to sense, integrate, and reconfigure resources effectively. This aligns with prior studies arguing that EO is a strategic orientation that requires an internal enabling mechanism like DC to convert entrepreneurial intent into sustainable action.

**3.2 NCA Results and Interpretation** The NCA results further deepen the understanding by identifying conditions that are necessary but not sufficient. EO and EL emerged as critical prerequisites for DC, with very large necessity effect sizes ( $d > 0.75$ ), meaning high levels of these enablers are essential for DC to manifest. EBN showed a moderate effect, highlighting its supportive, though less pivotal, role. Moreover, DC itself was found to be a necessary condition for SP ( $d = 0.226$ ), confirming that without a threshold level of dynamic capabilities, MSMEs are unlikely to achieve sustainable outcomes. This insight is particularly valuable for practice, as it shifts the emphasis from merely improving entrepreneurial traits to strategically cultivating capabilities over time.

**3.3 Discussion and Implications** These results support the theoretical proposition that entrepreneurial input alone is not enough—what matters is how firms transform these inputs into adaptive capabilities and outcomes. The Resource-Based View (RBV) and Dynamic Capability View (DCV) jointly explain why EL and EO must operate through DC to affect SP. The study extends this logic by using NCA to empirically demonstrate that some factors must meet a minimum threshold before sustainable

performance is even possible. From a practical standpoint, the findings urge MSME leaders and policymakers to invest in leadership development and internal capability building rather than only pursuing external market opportunities. EO must be complemented by a robust internal mechanism—DC—to realize its true potential in driving sustainability. Similarly, EL plays a dual role, not only steering sustainable practices but also enabling the firm to adapt and innovate continuously. In sum, this integrated analysis highlights the nuanced but essential interdependencies among entrepreneurial constructs and capabilities in MSMEs, offering both academic insights and actionable direction. 4. Conclusion This study contributes to the growing body of knowledge on sustainable performance in MSMEs by integrating symmetric (PLS-SEM) and asymmetric (NCA) analytical approaches to uncover the underlying mechanisms through which entrepreneurial attributes—EO, EL, and EBN—influence SP via Dynamic Capabilities (DC). The findings underscore that DC acts as a crucial conduit, fully mediating the EO–SP relationship and partially mediating the effects of EL and EBN on SP. Notably, NCA results reveal that minimum thresholds of EO and EL are necessary for DC development, while DC itself is essential for achieving high levels of SP. By combining insights from the Resource Dependence Theory (RDT) and Dynamic Capability Theory (DCT), this study advances theoretical understanding and offers practical direction to MSME stakeholders. Firms must not only possess entrepreneurial traits but must also develop internal capabilities to translate these traits into sustainable outcomes. The study highlights the importance of leadership and capability development in enhancing sustainability in emerging economies. These insights provide a strategic blueprint for MSME policymakers and practitioners, emphasizing that fostering dynamic capabilities is not just beneficial—it is essential for long-term sustainability.

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Submission ID: 755

Track 01: Unpacking the Indian Startup Story

## Start Small, Struggle Big: The Growth Puzzle at Mind You Infotech

*Mitali Tiwari*

**Abstract:** Purpose: The case study provides an insight into the challenges of aa IT startup Mind You Infotech Pvt Ltd. which is located in a tier2 non-IT city. The protagonist Vipin Kushwaha was caught up in the scaling up dilemma as he was facing resource constraints, mainly related to availability of skilled manpower, retention of employees, absence of industry specific support systems in Lucknow, the city where his startup was based at. He was also struggling with securing regulatory compliances involved in availing startup benefits which the company was required to have before it could avail any benefits. After discussing the case study students will have an insight into the practical challenges faced by start ups in small cities and what strategies should be devised by the company to sail through these challenges. Design/methodology/approach: The paper opted for a field-based case study of the Mind You Infotech Pvt Ltd. by interviewing the co-founder Mr Vipin Kushwaha. The study majorly uses the

primary data, collected through the interviews. It also uses secondary data from the newspapers, government reports, print and visual media, movies etc to supplement the case. Findings: The findings of the case study depict how despite several initiatives taken by the government, the startups still struggle to sail through their operations particularly in small cities. Originality: The case is completely original and is based on the facts and data provided by the key persons of the organization.

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Submission ID: 831

Track 01: Unpacking the Indian Startup Story

## Like Parent, Like Child? An Examination of Intergenerational Entrepreneurial Transmission and the Limits of Gender Homophily

*Vikrant Yadav*

**Abstract:** This study investigates the intergenerational transmission of entrepreneurship and the moderating role of gender homophily within a unique sample of 4,894 youth with a demonstrated interest in entrepreneurial careers. Drawing on a rich body of literature that establishes parental entrepreneurship as a primary predictor of offspring entrepreneurship, this paper tests two core hypotheses: (1) that having an entrepreneurial parent is positively associated with youth entrepreneurial interest, and (2) that this association is stronger for same-gender parent-child dyads (gender homophily). The analysis employs Chi-Square tests to evaluate these propositions. The findings provide robust confirmation for the first hypothesis, revealing a powerful association between parental entrepreneurship and youth interest. However, the results offer no statistical support for the gender homophily hypothesis; the influence of an entrepreneurial parent does not differ significantly based on the gender of the parent or the child. This paper discusses this null finding in depth, proposing that in a sample of highly motivated individuals, the general role-modeling effect of having an entrepreneurial parent may create a "ceiling effect" that overshadows more subtle, gender-based mechanisms of influence. The study concludes that while the family remains a critical incubator for entrepreneurship, the specific dynamics of gendered influence are context-dependent and may be attenuated among cohorts with high pre-existing entrepreneurial ambition.

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Submission ID: 886

Track 01: Unpacking the Indian Startup Story

## **“CONTEMPORARY ENTREPRENEURSHIP EDUCATION; ITS IMPACT ON ENTREPRENEURSHIP; CONTEXTUAL FACTORS AND FUTURE DIRECTION: AN ANALYTICAL STUDY”**

*Srishti Kulshreshtha*

**Abstract:** This research aims to study the impact of Entrepreneurship Education (EE) on intention to start a new venture. What are the contemporary EE works which have been conducted on this topic. What are the challenges for EE. How EE can be made more effective in improving entrepreneurship culture. How can academic field benefit from EE beyond venture creation. What do EE influence. How EE programs be made more effective. In what direction EE is progressing. It studies what are the contextual factors affecting EE.

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Submission ID: 913

Track 01: Unpacking the Indian Startup Story

## **Ecosystem Genesis: From Individual Motivation to Platform Resilience through AI-Gamified Workforce Capabilities - A Study of Platform Startups**

*Shubhrakant Shadangi, Paawan Popli, Nimisha Awasthi and Shilpa Wadhwa*

**Abstract:** Platform startup ecosystems, especially in a fast-growing entrepreneurial economy such as India, rely more and more on motivated and effective workers to provide resilience in up-scaling transitions; however, existing theoretical frameworks do not help explain how ecosystem resilience materializes from motivated workers' capability to adapt through organizational capability in a high-growth startup ecosystem. The study investigated how artificial intelligence and gamification can facilitate the development of individual psychological needs into organizational dynamic capabilities, which lead to platform startup ecosystem resilience. A meta-theoretical topic modelling approach, along with a theory-intermeshing methodology, was implemented to systematically investigate 481 academic papers (216 grounded in Self-Determination Theory (SDT) and 265 grounded in Dynamic Capabilities Theory (DCT) studying artificial intelligence, gamification, and platform startup workforce development. Through rigorous theory-intermeshing employing the Delphi technique, a total of 58 first-order constructs were developed and synthesized into 16 Higher-Order Constructs at the individual, organization, and ecosystem level, including intriguing constructs such as Autonomous Learning Agency, which develops self-directed capability, Gamified Engagement Design which connects individual motivation and organizational performance, and Innovation Transformation Power which transforms motivated workforce engagement into a competitive advantage at the ecosystem level. The

research revealed the "Circular Integration Ecosystem Framework," revealing the emergence of resilient startup ecosystems that operate in dynamic feedback loops such that Artificial Intelligence (AI) -enabled individual motivation creates organizational sensing capability that creates innovation capacity within the ecosystem, which increases individual engagement, thereby forming self-reinforcing cycles of ecosystem emergence and resilience. Key theoretical contributions include the Motivation-Capability-Resilience framework that connects individual psychology to resilience in ecosystems, platform startup-specific expansions of SDT and DCT, and methodological contributions in meta-theoretical integration. In addition, ten testable propositions were developed, directly drawn from the relationships in the framework, including pathways showing how "Holistic Wellbeing Integration" creates positive feedback loops that reinforce the resilience at an ecosystem level. The framework also offers suggestions for Indian platform startup organizations wishing to harness the powers of AI and gamification, to enhance their workforce capabilities during periods of rapid scaling; and is further relevant for policy development related to India's startup ecosystem development, including enhanced digital skills programs and technology-enabled workforce development approaches to support the development of resilient startup ecosystems in India, through building individual psychological needs and associated organizational capabilities in India's emerging ecosystem of rising aspirational entrepreneurs.

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**Submission ID: 1056**

**Track 01: Unpacking the Indian Startup Story**

## **Driven to Thrive: Exploring Push and Pull Motivations of Women Startup Enterprises in India**

*Lijna Johnson and Dr.Sunilkumar Ambrammal*

**Abstract:** The study explores the motivation behind starting a business, using the push and pull theory of enterprises, by focusing on women-led startups in India. The study also identifies the effect of these motivations on the business sustainability of a firm. Both primary and secondary data collection methods were used for this study and a total of 368 startups were interviewed. We have framed a Sustainability Index by using Principal Component Analysis (PCA). The findings of the study show that women startup founders are primarily motivated by pull factors and the comparative analysis reveals that pull factor-motivated startups demonstrate significantly higher sustainability and long-term viability than those initiated due to push motivation.

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Submission ID: 1077

Track 01: Unpacking the Indian Startup Story

## Leveraging Sustainable Co-innovation for Regional Development: Towards Developing a Stakeholder-based Entrepreneurial Ecosystem in North Andhra

*Gaurav Tikas and Ravi Eswarapu*

**Abstract:** Sustainable co-innovation can expedite regional development. Through mutually reinforcing linkages between the stakeholders, critical time and resources required to develop and diffuse innovations can be shortened. Quicker diffusion can contribute to improving the circular economy and facilitating regional socio-economic development. Identifying synergies within regional stakeholders, aligning them towards mutual value addition and leveraging them for value appropriation demands a multistakeholder-based approach towards ecosystem creation. The stakeholder theory provides a robust underpinning for leveraging entrepreneurial ecosystems for regional development through inclusive stakeholder collaboration, multi-dimensional value creation, and equitable resource allocation. However, with diversified orientations, it might become difficult for any singular stakeholder to develop innovations, commercialize them, and create socio-economic impact for regional development. Despite the inherent complexities, the Northern Andhra region is developing a multistakeholder ecosystem to spark entrepreneurial innovation for regional economic development. With support from governmental agencies and societal help groups, entrepreneurial ecosystems like the Ratan Tata Innovation Hubs (RTIH) have been launched in the North Andhra Pradesh region. This study investigates the strategic dimensions that can be leveraged for global scalability. In doing so, it identifies the policy gaps in the regional start-up policy and suggests interventions that can guide the multistakeholder-based execution systems.

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Submission ID: 1120

Track 01: Unpacking the Indian Startup Story

## Sea6 Energy: A Case in Effectual Entrepreneurship

*Charu Rastogi and Srivardhini Jha*

**Abstract:** This case traces the evolution of Sea6 Energy, a science-based venture founded in 2010 by biotechnology graduates from IIT Madras, as they build a sustainable business from tropical seaweed. The three-part case invites students to examine how the founding team navigated high uncertainty, resource constraints, and scientific complexity to transform a nascent biofuel idea into a diversified marine biotech platform. Part A explores the team's formative experiences, their early effectual reasoning, and the shift from lab success to confronting a supply chain bottleneck. Part B follows the venture's parallel experiments in mechanized seaweed farming, product development, and fundraising,



culminating in a decision about the venture's future direction. Part C examines how Sea6 scaled its platform, balanced exploration with commercialization, and kept its long-term biofuel vision alive through staged bets. The case is anchored in effectuation theory and encourages students to engage with key principles such as affordable loss, means-driven action, stakeholder co-creation, and leveraging contingencies. Through role play, discussion, and trade-off analysis, students consider how entrepreneurial logic matures over time and how effectuation can inform strategic choices even as ventures scale. While Sea6 Energy is a science-based venture, this case is not about biotechnology per se. It is about how entrepreneurs navigate uncertainty, resource constraints, and path-dependence using a mix of effectual and causal logics and how these logics interact over time. The scientific context heightens the dilemmas, but the underlying questions are broadly generalizable across early-stage ventures.

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Submission ID: 1138

Track 01: Unpacking the Indian Startup Story

## Navigating the Key Entrepreneurial Challenges for Spacetechn Startups in Gujarat: A Case Study on SatLeo Labs

*Twinkle Trivedi and Dipti Gadhavi*

**Abstract:** This case explores the journey of SatLeo Labs, a promising spacetechn startup based in Ahmedabad, Gujarat. Founded by a team of innovators from diverse backgrounds, SatLeo aimed to harness thermal imaging and satellite data to deliver advanced solutions across sectors such as climate monitoring, national security, archaeology, and geology. Their technology enabled industries and researchers to detect underground heat patterns, revealing buried structures, mineral deposits, and seismic activity with high precision. Situated in Gujarat's vibrant startup environment—supported by the Gujarat Industrial Policy, institutions like ISRO, IN SPACe, and IIMA Ventures—SatLeo Labs benefited from a strong ecosystem that encouraged innovation and entrepreneurship. However, despite a sound technological base, the startup faced several challenges including attracting early-stage funding, communicating complex ideas to investors, acquiring deep-tech talent, and scaling operations beyond niche applications. The case encourages students to reflect on the unique challenges of building and growing a deep technology startup in India. It also provides a platform to analyze the effectiveness of startup ecosystem enablers and policy incentives, while inviting discussion on strategic decisions related to partnerships, funding, and long-term sustainability in a competitive and evolving global spacetechn market.

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## DIGITIZATION OF START-UP ECOSYSTEM IN BLUE FOODS: EVALUATING E-SERVICE QUALITY OF KERALA'S ONLINE FISH MARKET

*Jamshi J*

**Abstract:** Purpose: Online fish-buying platforms have witnessed accelerated growth since the COVID-19 pandemic outbreak. While several start-ups with digital platforms emerged to capitalize on the increasing demand for safe and traceable seafood, many struggled with operational sustainability and eventually exited the market. Ensuring reliable delivery of fresh fish through efficient and trustworthy systems remains a key challenge. Existing literature highlights barriers such as supply chain fragility, consumer mistrust, and food safety concerns. This study addresses these gaps by employing the E-S-QUAL and E-RecS-QUAL frameworks to investigate how digital service quality dimensions influence customer loyalty intentions in Kerala's emerging online fish retail landscape. Methodology: The E-SQUAL model was utilized to examine the relationship between the e-service quality dimensions and customer loyalty intention. Primary data were collected from the customers who purchase fish through online platforms in Kerala. 504 samples were collected by purposive sampling method. The path model and confirmatory factor analysis were created using the AMOS Software Findings: According to the study the total service quality has a significant influence on loyalty intention. Out of the E-S-QUAL dimensions, fulfilment and privacy were statistically significant in influencing loyalty intention, while efficiency and system availability were not. However, responsiveness and compensation of the E-RecS-QUAL construct were significantly positive in terms of influence on perceived service quality, while contact was not significant. Practical Implication: The online fish retailers could leverage the insights by developing the website prioritizing the fulfilment, privacy and responsive recovery dimensions, enabling the design of more reliable customer centric platforms tailored to the unique demands of perishable good in emerging markets like Kerala Originality: Current literatures shows a lack of attention to the online fish retail sector, a high-risk, perishable goods market. This research addresses that gap by empirically applying the E-S-QUAL and E-RecS-QUAL frameworks, uncovering the critical influence of electronic recovery quality in shaping customer loyalty within emerging digital commerce environments.

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## SUVIDHA SUPERMARKET: CONSOLIDATE OR CONQUER?

*Rakesh Kumar Meet, Ajit Yadav, Vijaya, Yog Mishra and Rahul Bodhi*

**Abstract:** It was April 2025, Garvit Gupta and Arpit Gupta sat across from his aunt, Amita, and father, Suresh Kumar Gupta in the modest yet bustling corporate office of Suvidha Supermarket in Dehradun, India, a city with a population of 10,41,000 . Suvidha had evolved significantly from its humble origins in 1971. Suvidha Retail's journey from a 10x10 Sq.ft kirana store to a tech-enabled, multi-store retail chain in Dehradun exemplifies resilience, innovation, and deep community connection. Built by the Gupta brothers on values of service and convenience, Suvidha consistently stayed ahead, offering home deliveries in the 1970s, launching loyalty programs in the 2000s, and digitizing operations by 2019. The COVID-19 crisis accelerated its digital adoption, leading to explosive app growth and operational strain, but also opened new avenues for scale. Amidst growing competition from Reliance Retail and quick-commerce disruptors, Suvidha reinforced customer loyalty through transparency and personalized engagement. However, internal challenges persist, ranging from attrition and Gen Z workforce dynamics to pricing inconsistencies and delivery vulnerabilities. Now, at a strategic inflection point, the next-gen leader Garvit envisions Suvidha as a regional disruptor expanding into Tier-2 cities . In contrast, his aunt Amita, a key pillar of the business, believes in the refinement, focusing on operational excellence, and fully tapping Dehradun's untapped potential before leaping. As ambitions diverge between bold expansion and strategic consolidation, Suvidha faces a defining choice. Should it leap into new markets and risk dilution, or deepen its legacy where it began? The decision holds lessons for India's evolving retail future.

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## Towards a Community-Based Entrepreneurial Ecosystems: A Proximity Approach

*Prajapat Gajendra Karanam, Prof Varadraj Bapat and Prof Ashish Pandey*

**Abstract:** Abstract The Entrepreneurial Ecosystem (EE) is a widely used term in entrepreneurship and has garnered considerable attention from scholars and policymakers over the past decade. With radical technological disruption and rapid digitisation, EE serves as a fertile ground for research. The current body of knowledge emphasises formal structural mechanisms of the entrepreneurial ecosystem driven by economic logic. However, several business communities or entrepreneurial communities actively engage in entrepreneurship within the larger ecosystem. Thus, this qualitative study, using a proximity approach, explains the community-based entrepreneurial ecosystem (CBEE) and how it is cultivated

within a larger EE. We developed the CBEE proximity framework. Finally, the study contributes to the EE literature and community-based entrepreneurship.

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**Submission ID: 1232**

**Track 01: Unpacking the Indian Startup Story**

## **Cult.fit: Pioneering Work-Life Integration through a Holistic and Flexible Fitness Ecosystem**

*Dr Sanjiwani Kumar, Neha Gangwani and Dr Poonam Chauhan*

**Abstract:** This research explores how Cult.fit, a leading Indian health tech company, has redefined the fitness landscape through a holistic, technology driven, and flexible ecosystem tailored to modern urban lifestyles. Adopting a blue ocean strategy, Cult.fit transcends traditional gym models by integrating physical fitness, mental wellness, and nutrition into a unified digital platform. Grounded in Self Determination Theory, Work Family Border Theory, and the Technology Acceptance Model 2, the study investigates how Cult.fit enables work life integration, sustains user motivation, and enhances long term adherence to wellness routines. Employing a mixed methods approach including secondary data analysis, structured observations of 150 fitness sessions, and a quantitative survey of 100 participants, this research finds that flexibility, digital engagement tools, and social motivation significantly influence consistency and commitment across diverse demographics. The findings demonstrate that hybrid fitness models, such as those pioneered by Cult.fit, are superior to traditional and digital only alternatives in addressing modern wellness needs. This study contributes to academic and industry discourse by identifying key success factors in the adoption of borderless fitness solutions and offers strategic insights for corporate wellness initiatives, policymakers, and fitness providers seeking to enhance sustainable well being in a post pandemic world.

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**Submission ID: 1299**

**Track 01: Unpacking the Indian Startup Story**

## **A BOON OR A BANE: IMPACT OF EMERGENCE OF UNICORNS ON THE VALUATION OF INDUSTRY PEERS**

*Deepti Mishra and Harish Kamal*

**Abstract:** We investigate whether the emergence of private ventures as unicorns (i.e., unicorn event) impacts the valuations of their public peer firms. We employ a difference-in-difference approach, and find that unicorn events significantly increase the valuations of industry peers versus non-peers. These effects are stronger for firms that are smaller, younger, have higher intangible assets, operate in high-tech industries, have higher growth, and have greater financial flexibility. The findings are robust to

identification concerns, alternative measures, placebo test, and sub-sample analysis. Overall, our results highlight that the rise of unicorns can engender positive externalities for industry peers.

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Submission ID: 1388

Track 01: Unpacking the Indian Startup Story

## Emotional Resonance and Rational Dissonance: How Q&A Dynamics Shape Startup Funding Outcomes and beyond

*Aditya Kashyap and Abhilash Mishra.*

**Abstract:** Entrepreneurial finance is a high-stakes domain where decisions are often made under time pressure, uncertainty, and incomplete information. Within this context, investor-entrepreneur interactions play a pivotal role in shaping funding outcomes. One of the most visible and dynamic instances of such interaction occurs in televised startup investment platforms such as Shark Tank and Dragon's Den, where entrepreneurs pitch their ventures and undergo intense Q&A sessions with potential investors. While considerable attention has been paid to the content of entrepreneurial pitches, relatively little is known about the non-verbal and emotional dynamics during the Q&A phase, when investor scrutiny is highest. This study investigates the role of cognitive and affective signals, specifically non-verbal gestures, facial expressions, and verbal coherence, during the Q&A segments of funding pitches and how these influence deal conversion outcomes. In particular, we explore whether similarities in emotional expressions between entrepreneurs and investors (e.g., mutual smiles, synchronized body language) during Q&A predict funding success. This is especially relevant in emerging markets like India, where platforms such as Shark Tank India have played a critical role in mainstreaming entrepreneurship. By combining video analytics and natural language processing (NLP), this study aims to advance our understanding of real-time emotional signalling and its influence on entrepreneurial financing decisions.

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## Track 02: Management in Health Services

Submission ID: 54

Track 02: Management in Health Services

### Bridging Healthcare Inequity through Digital Transformation: A Demographic Analysis in India

*Dr. Supriya Goutam and Dr. Sharad Kumar*

**Abstract:** Abstract: With the advent of technology advancement and digitalisation Indian healthcare witnessed a substantial growth where accessibility, affordability of healthcare is available in just a click. Mobile health application, electronic health records, and AI driven diagnostics are recent advancement in health care. This study identifies the population segments that is benefited from digital healthcare. Problem Statement: Due to poor infrastructure, exorbitant pricing, and a lack of medical personnel access to medical facility is frequently restricted in rural areas. Additionally, issues like digital literacy, internet connectivity, pricing, and sufficiently addressed, digital healthcare initiatives may unintentionally expand the gap. Methodology: This study utilizes a quantitative cross-sectional survey design, collecting data from 166 participants living in Kharagpur and its surrounding areas. A structured questionnaire gathered information on demographic characteristics, healthcare access, patient satisfaction, and trends in digital health adoption. Key Findings: The research offers crucial insights into how demographic factors affect the uptake of digital healthcare and service preferences. Implication for Research: Future research on focused interventions and inclusive digital health design will be guided by the findings, additionally, the study can help establish framework for evaluating fairness in digital health that can be modified for use in other developing countries with comparable issues. Implications for Practice: The study's conclusions provide useful advice for public health groups, legislators, technology developers, and healthcare professionals who want to establish a more inclusive healthcare system in India. For Companies and Tech developers there is a scope to build the user-friendly digital health application which can provide database to government and substantially it can be used at the time of pandemic or other health cause

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## Exploring the Thematic Evolution of Quality of Life in Non-Communicable Diseases: A Topic Modeling Analysis

*Richa Jha and Geeta Sachdeva*

**Abstract:** Introduction Non-communicable diseases (NCDs) such as cardiovascular diseases, diabetes, cancer, and chronic respiratory illnesses are now the leading causes of global mortality and morbidity, accounting for 74% of global deaths in 2019 (Santos et al., 2023). In response, the United Nations embedded the reduction of NCDs within Sustainable Development Goal (SDG) 3.4 (Van Wilder et al., 2020). While metrics like Disability-Adjusted Life Years (DALYs) and Quality-Adjusted Life Years (QALYs) capture disease burden and economic efficiency, they often overlook the lived experiences of patients (Murray et al., 2012; Whitehead & Ali, 2010). In contrast, Health-related Quality of Life (HrQoL) offers a multidimensional view of physical, emotional, cognitive, and social dimensions of well-being (Cieza et al., 2020; Yin et al., 2016). Conceptual models such as the Wilson-Cleary model and the WHO ICF framework provide structured approaches to the study of HrQoL, yet empirical research remains fragmented and disease-specific, especially in LMICs (Sousa & Kwok, 2006). This study systematically maps global research on Health-related Quality of Life (HrQoL) in Non-Communicable Diseases (NCDs) from 2015 to 2024. It uses Latent Dirichlet Allocation (LDA) topic modeling to identify latent themes and topic evolution over time. Addressing methodological and thematic gaps, the study seeks insights for researchers, practitioners, and policymakers through the following research questions: RQ1: What are the recent trends, and the impact of research on Health-related Quality of Life (HrQoL) in non-communicable diseases (NCDs)? RQ2: How do Keyword distribution, latent themes, and topic prevalence shape the research landscape of HrQoL in NCDs through topic modeling? RQ3: What is the future research direction in the domain of Health-related Quality of Life in NCDs based on topic modeling? Research Methodology This study employed Latent Dirichlet Allocation (LDA) topic modeling to map research trends in HrQoL in NCDs. Topic modeling is a stochastic technique for discovering hidden semantic structures in large textual datasets (Campbell et al., 2015). It was applied using LDA, which models each topic as a probability distribution over words (Blei et al., 2003). LDA is widely recognised for its ability to identify latent themes in a corpus, offering richer insights than traditional methods (Jelodar et al., 2019). Articles published between 2015-2024 were retrieved from Scopus and Web of Science (WoS) using an advanced search query based on established HrQoL literature shown in Figure 1. The search was restricted to English-language, peer-reviewed articles in fields like Medicine, Nursing, Social Sciences, Humanities, and Management. The PRISMA framework guided the screening process, yielding 270 articles from Scopus and 128 from WoS. After removing duplicates, 353 records were analysed. Text data from the title and abstract underwent preprocessing, including tokenisation, case normalisation, removal of punctuations, numerals, and stop words. Preprocessing was followed by stemming, lemmatization, and spell-checking (Aggarwal & Zhai, 2013). A Document-Term Matrix was constructed to quantify word frequencies.



Topic modeling was performed in R using established coherence algorithms, developed by Griffiths (2004), Cao Juan (2009), Arun (2010), and Deveaud (2014), to determine the optimal number of topics. These methods facilitated the creation of a “Topic Curve,” as shown in Figure 2. Based on Coherence scores in the topic curve, five topics ( $k=5$ ) with ten keywords each ( $n=10$ ) were selected for final analysis (Ponweiser, 2012). This approach enables both trend visualization and deeper semantic exploration in the domain (Zhang et al., 2022). Findings Publication Trends From 2015-2017, research on HrQoL was limited but gained momentum post-2018 due to SDG-3-driven health priorities as shown in Figure 3. Publications peaked in 2022-2023 during COVID-19, reflecting urgency in the health setup and policy (Budreviciute et al., 2020). The U.S. leads contributions (207 articles), followed by China (70 articles), with most output from high-income countries like Australia, UK, France, focusing on system-level interventions (Heine et al., 2021). LMICs like Iran, India, and South Korea contribute modestly. They address access gaps and chronic disease burdens, highlighting global disparities in health research capacity as seen in Figure 4 (Joshi et al., 2024).

**a)Topic Classification** The graphical output in Figure 5 depicts five main latent topics along with the top 10 terms associated with each topic. The length of each bar corresponds to the beta value of the specific term within that topic. Table 1 shows the topic probability matrix of the first 20 documents out of 353. The Matrix was produced by assigning a percentage alignment of each document across 5 topics. For instance, Document 1 shows a 98.39% alignment with Topic 4, indicating a strong thematic focus. Document 2 has a mixed distribution with 40.43% Topic 1, 37.34% Topic 2, and 21.75% Topic 3, suggesting it spans multiple themes but primarily aligns with Topic 1. Meanwhile, Figure 6 presents topic prevalence across the corpus. Topic 1 dominates with 25% of papers, followed by Topic 5 (22%), Topic 4 (20%), Topic 2 (18%), and Topic 3 (15%). This indicates varying degrees of research focus, with Topic 1 being most studied and Topic 3 the least.

**b)Topic Labelling** The LDA model identified five coherent topics ( $k = 5$ ) with 20 keywords each ( $n = 20$ ). Word cloud visualizations were generated in R Studio (see Table 2) to enhance interpretability, while Table 3 lists the top terms per topic. Following keyword extraction, meaningful labels were assigned through qualitative assessment to facilitate human interpretability, an essential step in topic modeling (Heimerl et al., 2014). The temporal trend for each topic was analysed year-wise from 2015 to 2024. Below is a topic-wise synthesis:

**Topic 1: Interventions and Disease Management** This topic was highly prevalent in the early years (2015-2017), focusing on disease-specific interventions, pharmacological treatments, and clinical outcomes. Its prominence has since declined, reflecting a possible saturation of intervention-specific research or a shift towards broader health dimensions.

**Topic 2: Psychosocial Health and Well-being** A consistent upward trajectory is evident in this topic, especially after 2020. It is driven by increased attention to mental health, stress, and subjective well-being issues that gained urgency during the COVID-19 pandemic (Holmes et al., 2020). With the global NCD burden rising, these psychosocial approaches like cognitive-behavioral therapy (CBT), motivational interviewing, and structured social support have become central to improving quality of life (Enyinnaya Calistus Jiaiponna et al., 2024).

**Topic 3: Digital Health and Healthcare Technologies** This topic gained significant momentum post-2019, aligning with the global shift towards telehealth, mhealth, and AI-driven health tools. The pandemic acted as a catalyst for this domain expansion (Topol, 2019). However, barriers like healthcare provider hesitancy, digital literacy, and digital exclusion of vulnerable sections

limit equitable usage (B. Gupta et al., 2018). Ethical concerns like data privacy, cybersecurity, and bias emphasize the need for a defined regulatory framework (Malasowe et al., 2024). Topic 4: Epidemiology and Health Research Peaking in 2020, this topic mirrors the surge in epidemiological studies and surveillance efforts in response to COVID-19 (Clark et al., 2020). Epidemiology and health research serve as foundational pillars in the international response to NCDs, offering vital insights into disease distribution, determinants, and burden (Patel & Webster, 2016). Topic 5: Preventive Healthcare and Health Literacy Initially underrepresented, this topic rose sharply between 2019 and 2021, focusing on awareness, patient empowerment, and health literacy. Non-communicable diseases are strongly associated with modifiable risk factors. These include unhealthy dietary practices, physical inactivity, tobacco use, and alcohol consumption, which are preventable through lifestyle changes and evidence-based strategies (Afrose, 2017; Budreviciute et al., 2020). Discussion This study comprehensively mapped global research on HrQoL in NCDs, analysing 353 peer-reviewed articles from Scopus and Web of Science. Findings revealed a sharp post-2020 rise in publications, influenced by global health goals like the SDGs and the systemic disruptions of the COVID-19 pandemic (Tang et al., 2020). The US and China led contributions, while LMICs remained underrepresented, addressing equity and access challenges (Chen et al., 2024). LDA topic modelling identified five dominant themes: Interventions and disease management (25%), 2) Psychosocial Health and well-being (18%), 3) Digital health and healthcare technologies (11%), 4) Epidemiology and health research (17%), 5) Preventive healthcare and health literacy (22%) (See Table 4). Over time, research has evolved from clinical interventions to integrative paradigms emphasizing mental health, patient empowerment, and technology-enabled care. Future research should incorporate more longitudinal designs, mixed-methods approaches, and equity-oriented frameworks to understand differential outcomes (M. Chen et al., 2024; Wilder et al., n.d.). Policy recommendations include integrating HrQoL into primary care, strengthening digital infrastructure, and tailoring community-based interventions in LMICs (M. K. Gupta et al., 2022). This study offers a panoramic overview of thematic trends, guiding inclusive research and policy to enhance chronic care and improve patient well-being. Conclusion and Limitations This study maps the evolving research landscape on Health-related Quality of Life in Non-Communicable diseases using LDA topic modelling. It reveals annual output, thematic clusters, and global disparities, offering insights for more inclusive and interdisciplinary approaches to chronic disease management. However, limitations must be acknowledged: the analysis is restricted to only English language articles from Scopus and Web of Science, excluding book chapters, dissertations, and non-indexed sources. Additionally, topic labelling through LDA involves interpretive subjectivity. Despite these limitations, the study contributes by informing future research and policy directions

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Submission ID: 93

Track 02: Management in Health Services

## The Power of Autonomy: Self-Selected Goals Outperform Assigned Goals in Reducing Mobile Phone Usage

*Ashish Sachdeva, Jeeva Somasundaram.*

**Abstract:** In this paper, we conduct a randomized controlled trial to compare the effectiveness of self-selected versus assigned goals in reducing mobile phone usage. Participants either chose their daily usage reduction goals (self-selected condition: 10%, 20%, or 30% reduction from their baseline) or were assigned a goal (assigned condition: 14%), based on the average of the self-selected goals. Despite facing similar goals on average and receiving identical monetary incentives, participants in the self-selected condition reduced their mobile usage by 73% more than those in the assigned condition. Additionally, the goal achievement rate was 11.3% higher in the self-selected condition compared to the assigned condition. By the end of the 5-week intervention, participants in the self-selected condition showed lower depression scores (PHQ-9), anxiety scores (GAD-7), and perceived addiction levels. In contrast, participants in the assigned and no-goal control conditions showed no significant improvements in mental health or perceived addiction.

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Submission ID: 216

Track 02: Management in Health Services

## Exploring the Impact of Women's Autonomy on Their Health Outcomes in India: Evidence from NFHS-5

*Mansift Kaur, Puneet Kumar Arora and Virender Kumar*

**Abstract:** This study investigates the relationship between women's autonomy and their health outcomes—specifically anaemia status and body mass index (BMI)—using data from the National Family Health Survey (NFHS-5) across Indian states and union territories. A composite index of women's autonomy was constructed and standardized, revealing significant regional disparities: Himachal Pradesh and Sikkim recorded the highest levels, while Lakshadweep, Madhya Pradesh, and Uttar Pradesh ranked lowest. Logistic regression analysis ( $N = 78,210$ ) shows that greater autonomy significantly reduces the likelihood of anaemia among women, even after adjusting for socioeconomic factors, education, and household characteristics ( $OR = 1.044$ ,  $p < 0.001$ ). Multinomial logistic regression ( $N = 81,779$ ) further reveals that autonomy is inversely associated with underweight status ( $OR = 0.904$ ,  $p < 0.001$ ) but positively associated with overweight/obesity ( $OR = 1.062$ ,  $p < 0.001$ ), suggesting a dual burden of malnutrition influenced by empowerment in different socioeconomic contexts. While past research has primarily focused on the association between women's autonomy and

healthcare access, this study extends the literature by examining its direct impact on women's health outcomes, specifically anaemia and nutritional status.

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Submission ID: 302

Track 02: Management in Health Services

## COMPASSIONATE WORK AS A DOUBLE-EDGED SWORD: A REVIEW AND CONCEPTUAL FRAMEWORK EXPLORING EXTRA-ROLE BEHAVIOURS

*Meghana Jalamangala and Rupashree Baral*

**Abstract:** INTRODUCTION Nurses serve as the backbone of the rapidly growing healthcare industry. Nursing theorist Jean Watson once said, “Nurses are a unique kind. They have this insatiable need to care for others, which is both their greatest strength and fatal flaw”. This quote encapsulates the core premise of this paper: that providing compassionate care can lead to either compassion fatigue (CF) or compassion satisfaction (CS) (Stamm, 2010). Figley (2002) defines CF as a formal caregiver's reduced capacity in “bearing the suffering of clients/patients,” and describes CS as the satisfaction derived from helping patients cope with their suffering. Stamm (2010) introduced the construct Professional Quality of Life (ProQOL), which encompasses both CS and CF. To optimise the impact of nursing, it is key to examine the influence of the ‘double-edged sword’ nature of compassionate care on nurse outcomes. Extra-role behaviours (ERB) aid in improved healthcare performance and quality of patient care, examples include, nurses speaking about the organisation favourably, making suggestions to team members on patient care improvement or boosting morale of colleagues (Lai et al., 2024). Family citizenship behaviours (FCB) is an extra-role behaviour of helping one's family, which contributes to the family's overall functioning as it indicates the willingness of the individual to go beyond their role expectation in the family (Sibthorp et al., 2013). For example, nurses volunteer to help their families in need. Moreover, comprehending the relationship between work and family domains and the effects of their mutual reliance has become increasingly important in the last decade (Allen & French, 2023). We use the JD-R theory to build our conceptual model according to which personal resources and demands can simultaneously influence performance through separate motivational and impairment pathways (Bakker & Demerouti, 2017). PURPOSE The purpose of this study is to develop a conceptual framework proposing direct relationships between nurses' ProQOL - specifically - CS and CF with extra-role behaviour at work and family citizenship behaviour at home. The study also posits the two dimensions of the work-family interface (WFI), i.e., work-family enrichment (WFE) and work-family conflict (WFC), as mediators between the relationships. METHODOLOGY We used a narrative review (NR), an ideal method to develop conceptual frameworks (Ferrari, 2015). The authors used appropriate keywords to conduct a search in Scopus and Google Scholar. A rigorous inclusion and exclusion criteria was followed, and results of the NR were discussed. Upon review, JD-R theory was identified as the foundational basis for developing the conceptual framework. RESULTS Drawing on JD-R theory and

other behavioural theories, our inquiry offers a conceptual framework that combines insights from organizational behaviour and relevant nursing literature. The conceptual framework diagram outlined the relationships between variables. Below are the formulated relationships. JD-R Motivational Path: Compassion Satisfaction to WFE and WFC: Proposition 1a - CS is positively associated with WFE Proposition 1b - CS is negatively associated with WFC JD-R Impairment path: Compassion Fatigue to WFC and WFE: Proposition 2a - CF is positively associated with WFC Proposition 2b - CF is negatively associated with WFE Compassion Satisfaction and Extra-role Behaviours: Proposition 3a - CS is positively associated with ERB Proposition 3b - CS is positively associated with FCB Compassion Satisfaction and Extra-role Behaviours through WFE and WFC: Proposition 4a - WFE mediates the relationship between CS and ERB such that individuals with CS experience an increase in WFE, increasing their ERB. Proposition 4b - WFE mediates the relationship between CS and FCB such that individuals with CS experience an increase in WFE, increasing their FCB. Proposition 5a - WFC mediates the relationship between CS and ERB such that individuals with CS experience a reduction in WFC, increasing their ERB Proposition 5b - WFC mediates the relationship between CS and FCB such that individuals with CS experience a reduction in WFC, increasing their FCB Compassion Fatigue and Extra-role Behaviours: Proposition 6a - CF is negatively associated with ERB Proposition 6b - CF is negatively associated with FCB Compassion Fatigue and Extra-role Behaviours through WFC and WFE: Proposition 7a - WFC mediates the relationship between CF and ERB such that individuals with CF experience an increase in WFC, decreasing their ERB Proposition 7b - WFC mediates the relationship between CF and FCB such that individuals with CF experience an increase in WFC, decreasing their FCB Proposition 8a - WFE mediates the relationship between CF and ERB such that individuals with CF experience a decrease in WFE, decreasing their ERB. Proposition 8b - WFE mediates the relationship between CF and FCB such that individuals with CF experience a decrease in WFE, decreasing their FCB. DISCUSSION To the best of our knowledge, the conceptual framework proposed is the first to explore these relationships. The paper provides practical implications for healthcare policymakers who strive to enhance patient care by understanding the factors influencing nurses' performance beyond their formal duties. It also makes theoretical contributions to the overarching theories on ERBs, compassionate work and WFI, adding to the growing field of positive organisational scholarship. Based on the research findings, future research directions were stated, offering avenues for high-quality research with an aim to achieve health equity.

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Submission ID: 558

Track 02: Management in Health Services

## A Three-Tiered Pricing Model for Healthcare Services: Balancing Equity and Sustainability in Emerging Economies

*Dr. Ashutosh Pandey*

**Abstract:** There is a significant difference in the price of healthcare procedures across private and public hospitals in India. This difference makes access to healthcare inequitable. The existing solutions proposes to make healthcare a public good but do not provide a solution that ensures quality of healthcare services. This paper proposes healthcare services price determination model that solves this twin problem of equity and affordability. The paper proposes a tier-based pricing model that first classifies hospitals based on three tier cities and then it categorises them into three categories based on the quality of services and infrastructure present. The model proposes a markup pricing over the base price of healthcare services that nudges hospitals to improve quality of healthcare. Also, the model allows for government intervention in the form of healthcare insurance schemes that ensures healthcare equity.

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Submission ID: 615

Track 02: Management in Health Services

## PSYCHOSOCIAL BARRIERS TO HEALTH AND SAFETY COMPLIANCE AMONG HARITHA KARMA SENA WORKERS IN KERALA

*Rakesh R, Dr. Althaf S and Dr. Dinesh Roy D*

**Abstract:** This study presents a qualitative assessment of the Lung health risks and psycho-social barriers faced by Haritha Karma Sena (HKS) workers in Thiruvananthapuram Corporation. Three focus group discussions (FGDs) each involving 10 participants and lasting around one hour were conducted using a semi-structured FGD guide. The discussions explored topics such as work patterns, respiratory symptoms, occupational risk factors, utilization of personal protective equipment and social perceptions surrounding respiratory illness. The data were analyzed thematically using NVivo 15. The findings reveal that HKS workers, particularly those already suffering from respiratory conditions are among the most vulnerable due to daily exposure to dust and waste without adequate protection. PPE usage is extremely limited owing to poor availability, discomfort, stigma and lack of peer usage. Disposable masks are reused over multiple days leading to increased health risks among them. Participants emphasized that job insecurity and the absence of alternate income compel them to prioritize work over health. They reported societal stigma and a lack of family support which further discourage health-



seeking behavior. Hence this study shows the need for community-based lung health interventions, improved PPE supply and behaviorally informed policy changes to support this workforce.

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Submission ID: 681

Track 02: Management in Health Services

## STRATEGIC TRAINING AND DEVELOPMENT PRACTICES IN CORPORATE HOSPITALS: A STUDY OF EFFECTIVENESS AND POLICY IMPLICATIONS IN HYDERABAD

*S.Mahaboob Syed and N.Hima Bindu*

**Abstract:** In the context of India's expanding healthcare sector, corporate hospitals play a critical role in delivering technologically advanced and specialized services. Training and development (T&D) practices in these institutions have evolved from operational support tools to strategic levers that influence care quality, patient safety, and institutional sustainability. This study assesses the effectiveness of T&D practices in corporate hospitals in Hyderabad, drawing from both primary data and a rich theoretical background. Employing a mixed-methods approach, the study collected data from 120 participants across five NABH-accredited hospitals through surveys, interviews, and document analysis. The Kirkpatrick Model was adapted to evaluate training effectiveness across four levels: Reaction, Learning, Behavior, and Results. Descriptive statistics, Cronbach's alpha, correlation, multiple regression analysis, and ANOVA were employed to interpret findings. The study also integrates systems theory and policy perspectives to propose a strategic T&D framework. Findings reveal robust initial training implementation, especially in induction and clinical skills. However, gaps persist in strategic alignment, behavioral follow-up, and ROI tracking. Hospitals with structured TNA, feedback mechanisms, and digital learning systems reported improved patient outcomes and staff engagement. Policy recommendations include integrating T&D metrics into accreditation, introducing national training registries, and incentivizing digital training innovation. The study contributes to the strategic HRM literature by linking training effectiveness with organizational outcomes in a high-stakes service sector. It underscores the need for healthcare administrators and policymakers to institutionalize training as a core strategic function aligned with national health priorities.

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## Assessing Value-Based Care in PMJAY: A Qualitative Inquiry Using the Social-Service Ecosystem Framework

*Vanita Singh*

**Abstract:** Introduction India's health policy landscape has long emphasized equity, with a consistent focus on addressing the needs of its poorest and most vulnerable populations. The National Health Policy (2017) underscored Universal Health Coverage (UHC) as a key national objective. In pursuit of this goal, the Government of India launched the Ayushman Bharat program in 2018, comprising two strategic components: Health and Wellness Centres (HWCs) aimed at delivering comprehensive primary healthcare, and Pradhan Mantri Jan Arogya Yojana (PMJAY), a national health protection scheme that provides financial coverage of up to ₹5 lakh per family per year for secondary and tertiary care, targeting the bottom 40% of the population as identified through the 2011 Socio-Economic Caste Census. While PMJAY has made strides in improving affordability and access, the broader objective of UHC—particularly the provision of quality care—remains underexamined, especially from the viewpoint of beneficiaries. In recent years, the National Health Authority (NHA), in collaboration with the Quality Council of India, has developed a Quality Certification System for empanelled hospitals to promote standardized care under PMJAY. However, research has revealed ongoing challenges, particularly in private sector facilities, where practices such as over-treatment, financial inducements, and inadequate patient communication have raised concerns. In response, the NHA has proposed a shift toward a Value-Based Care (VBC) model, which links provider payments to patient outcomes and satisfaction, rather than service volume. A WHO-supported survey using the PSQ-18 instrument found high satisfaction scores among PMJAY beneficiaries, but also identified key concerns: frequent out-of-pocket payments, unsatisfactory clinical outcomes, and a perceived lack of empathy from providers. Notably, while patient satisfaction is increasingly recognized as central to value-based care, current feedback mechanisms still fail to capture critical dimensions such as dignity, respect, and the patient's socio-cultural context. This study contributes to the ongoing discourse on value-based care by examining patient experiences with PMJAY services through the social-service ecosystem framework. This approach foregrounds the complex interplay of individual, social, institutional, and systemic factors that influence how care is accessed, experienced, and valued—offering insights essential for making the promise of value-based care a lived reality for India's most vulnerable. Methodology This qualitative study used in-depth interviews with 40 PMJAY beneficiaries to explore patient experiences and barriers in accessing care. The social-service ecosystem framework guided the study design, focusing on four domains: 1. Individual agency and access 2. Social networks and intermediaries 3. Institutional interfaces 4. Policy and structural enablers/barriers Study Design and Sampling Conducted in two districts in Uttar Pradesh, the study purposively sampled patients from four public and private empanelled hospitals. Participants varied by age, gender, caste, illness type, and geography (urban/rural). Eligibility required PMJAY use within the last 6 months. Ethical approval was obtained

from the Institutional Review Board of the author. All participants gave informed consent and were assured of confidentiality Data Collection Interviews were conducted in the local language at either hospitals or participants' homes. All interviews were audio-recorded with consent, transcribed verbatim, and supplemented with field notes. The interview guide explored the four domains of the ecosystem framework. Analysis Data were analyzed thematically using deductive coding within the social service ecosystem framework. Results Participant narratives revealed complex and layered barriers to accessing PMJAY services, summarized below under the four ecosystem domains: 1. Individual Agency and Access Low health literacy and limited awareness of PMJAY entitlements were significant barriers. Many patients, particularly those who were uneducated or elderly, reported confusion about their eligibility or the steps required to receive benefits. One respondent noted, "I am uneducated and these hospital people made me go here and there to confirm my eligibility." Financial hardship added to the burden, as delays and multiple visits often led to additional out-of-pocket expenses. 2. Social Networks and Intermediaries Access was often contingent on social connections. Respondents consistently noted that knowing someone within the hospital or community health network made it easier to avail of benefits: "If you know someone, it's easy to access the scheme." Intermediaries—ASHAs, hospital staff, or local leaders—played a critical role in navigating the process, underscoring the importance of social capital in service access. 3. Institutional Interfaces Many patients reported difficulties interacting with hospital systems, including slow approval processes and a lack of transparency. One respondent shared, "The approval process was very time-consuming. I had to make multiple visits just to get benefits under the scheme." The limited number of empanelled hospitals further compounded the problem, forcing patients to travel long distances: "There is no choice of hospitals... we have to travel long distances." 4. Policy and Structural Enablers/Barriers At a systemic level, several respondents perceived inequity in service provision. Some felt discriminated against by healthcare staff for being PMJAY beneficiaries: "Sometimes we could feel that doctors and nurses differentiate in providing care. They give more attention to self-paid patients." These experiences indicate that structural inequalities persist, and current mechanisms for grievance redressal or transparency are insufficient. Discussion This study highlights that while PMJAY has improved access to hospital care for vulnerable populations, significant barriers remain across individual, institutional, and systemic levels. Low awareness and literacy limit patients' ability to navigate the scheme independently, often making them reliant on intermediaries. Procedural delays, inadequate communication, and a limited network of empanelled hospitals add to the burden, particularly for those in remote areas. Critically, patients reported feeling stigmatized or receiving inferior care, pointing to a lack of empathy, dignity, and respect—elements central to the ethos of value-based care. Although policy efforts are shifting toward value-based models, current quality assessment tools under PMJAY inadequately capture patient experiences in their social and emotional context. The social-service ecosystem framework offers a more holistic lens for reform. To truly deliver on the promise of value-based care, PMJAY must integrate patient perspectives into quality metrics and ensure that empathy, equity, and transparency are embedded into care delivery and provider accountability systems.

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Submission ID: 772

Track 02: Management in Health Services

## Advancing Public Health Outreach: Examining efficacy of Human-AI Teaming in Tailored Donation Appeals

*Gaurav Gupta and Neha Chaudhuri*

**Abstract:** Global healthcare systems face an unprecedented blood shortage crisis, with donor participation declining 40% over two decades while billions inhabit "blood deserts" where clinical needs remain unmet in 75% of cases. Despite 38% of the U.S. population being eligible donors, only 3% contribute, revealing massive untapped potential that conventional recruitment strategies fail to mobilize effectively. This disparity is particularly acute in low-income countries, which represent nearly half the global population yet contribute merely 0.5% of donations, compared to high-income nations accounting for 40% despite comprising only 16% of the population. Traditional blood donation campaigns demonstrate fundamental limitations in achieving personalized engagement at scale across diverse cultural and socioeconomic contexts. This research investigates how human-AI collaborative communication approaches can optimize blood donation campaign effectiveness across diverse populations, utilizing Rosenstock's Health Belief Model as the core theoretical framework. Through rigorous analysis of campaign data, this study examines the synergistic potential of generative artificial intelligence and human expertise in revolutionizing health communication strategies, addressing critical gaps between donor potential and actual contributions in this life-threatening global health crisis.

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Submission ID: 1002

Track 02: Management in Health Services

## Evaluation of Family Planning Policy in India Using Synthetic Control Methods

*Kritagya Dhanda*

**Abstract:** Publicly funded family planning services have a considerable influence on fertility decisions of women and consequently maternal and child health. In November, 2016 an expansive family planning program was launched in 145 districts in seven provinces of India that had previously shown high fertility rates. The program featured (i) increase access of a range of contraceptives (ii) monetary incentives for beneficiaries who adopt family planning methods, and (iii) information dissemination using mobile vans covering all blocks of a district. This paper documents the effects of this family planning program on a broad set of maternal and child outcomes. I use the generalized synthetic control method to estimate the average treatment effect on the treated districts utilizing administrative data from Health Management Information System (HMIS) of India aggregated to the district level for periods 2009-19. The GSCM estimates suggest that the program increased deliveries by 4.6, institutional deliveries of infants by 3.9 and infants weighed at birth by 3.2 per one thousand women of reproductive age. New cases of pregnant women with hypertension decreased by 2 per one thousand women of

reproductive age. Heterogeneous treatment effects suggest that the program decreased fraction of infants born with low-birthweight in districts with high initial economic activity and increased it in districts with low initial economic activity.

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Submission ID: 1087

Track 02: Management in Health Services

## Institutionalising Tele medicine in a large Central public enterprise: Challenges and Experiences

*Narasimhan Ravichandran and Basant Kumar Behera*

**Abstract:** Tele medicine is being practised in multiple locations and medical facilities in India based on need affordability, and evolution of technology and the willingness of the medical professionals and the patients. The cost efficiency and effectiveness on treatment outcome varies from context to context. This paper documents the experience of introducing and nurturing Tele medicine in the context of a large central public sector undertaking. The Public sector unit under consideration has multiple facilities located in various parts of India. Some of the locations are easily accessible and some of them are not. The operations of the unit are critical and they need to be continuously monitored. Posting executives to remote areas of operation is a routine job requirement. To manage projects effectively in remote locations it is imperative the supply lines are properly maintained. Further the large project implementation would require posting of officers in the age group of 40 + to provide adequate expertise to manage project execution. Often constrained by the facilities in the project location(s) the officer(s) lived alone in the site location and their immediate and extended family lived in major cities. This placed an additional responsibility on the organisation to provide for the medical care of mid aged officers in remote locations. In the absence of such facilities the officers left the organisation leading to acute shortage of manpower in project locations which are critical for growth of the organisation. This situation propelled the organisation to consider seriously tele medicine to address routine as well as critical ailments of employees in remote locations. Pilot experiments were conducted. Based on the lessons learned scaling up of operations was considered. The covid -19 Pandemic provided an opportunity to deep dive this innovation. The evolution of technology, the comfort level of care providers in the acceptance the patients contributed to the overall stabilisation of this initiative. Today tele medicine-based care is a routine part of the health care delivery system in this organisation. Based on field level experiences we document the learnings under the heading of technology evolution, change management, and implementation strategy. Apart from services available 24x7 this initiative has also helped to leverage critical resources namely medical professionals and diminished the geographical distances in routine and critical care. It has also minimised the location disadvantage associated with posting medical professionals to needy remote areas. The overall impact has been positive. It is hoped this documentation would enthuse several other organisations in India and other similar countries to adopt this innovation.

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## Voice of Care: A Comparative Discourse Analysis of Palliative Care Policies in Kerala and England

*Hudha Fathimakunniyullathil and Ambigai Rajendran*

**Abstract:** Introduction Palliative care, once overlooked area in health care systems across the globe has gained acceptance in global policy discourses since it is recognized as a core component of Universal Health Coverage (UHC) by the World Health Organization (WHO, 2014). The policy responses for palliative care integration vary significantly in language, priorities, and ideological framing across regions depending on cultural, institutional, and political contexts. This study aims to conduct a comparative discourse analysis of two globally recognized, but structurally different palliative care systems, Kerala (India) and England to explore how these texts construct meaning, role and responsibility of palliative care. Despite the differences in institutional arrangements, cultural contexts, health system models and income levels, both regions have evolved as the pioneers in adopting policies in palliative care and institutionalization. Kerala, the southernmost state of India has illustrated a successful model of palliative care delivery in low-resource settings through community participation (Vijay, Monin, & Kulkarni, 2023) and was the first Indian state to implement a state level palliative care policy in 2008, later revised in 2019 thereby institutionalizing the community driven initiatives in palliative care. England which operates a centrally funded, professionalized care system under the National Health Service (NHS), has produced a series of end-of-life care strategies since 2008, culminating in statutory requirements under the Health and Care Act 2022 (Sleeman et al., 2021), provides a high benchmark in palliative care policy discourse. The study employs Critical Discourse analysis to examine how palliative care is constructed and evolved in the policy documents of these regions. Objectives •To examine how the concepts of care, death, and dignity are constructed and evolved over time within each region's policy texts. •To explore how different actors—such as the state, healthcare providers, communities, families, and patients—are positioned and assigned responsibility within the policy narratives and their ideological underpinnings. •To compare the discursive strategies used in Kerala and England to articulate goals, justify interventions, and define the scope of palliative care. Methodology The study qualitatively compares the policy texts of both regions through Critical Discourse Analysis, to uncover how language is constructing the social reality. Drawing on Norman Fairclough's three-dimensional framework of CDA (Fairclough, 1992), this study evaluates the policy document as a text, as a discursive practice and as a social practice. The primary documents analyzed in Kerala include , Palliative Care Policy (2008), Kerala State policy on Palliative (2019) and Palliative Care Action Plan (2023). Four documents were taken from England, which include End of Life Care Strategy (2008), Ambitions for Palliative and End of Life Care (2021–2026), Statutory Guidance for Integrated Care Boards (2022) and Service Specifications for Adult Specialist Palliative Care (2023) for comparison. Texts were manually coded and themes, metaphors and ideological frames were extracted and analyzed using NVivo software. Results Preliminary analysis reveal significant contrast between the policies of two regions. The discursive language signifies two distinct models of palliative care

policy alignment, decentralized, volunteer driven approach of Kerala and England’s professionalized, statutory care system. Kerala’s policy documents initially sees palliative care as a moral duty and collective responsibility, emphasizing on community participation, local self-governance, and social solidarity. Through 2023 Action Plan, the state operationalize its community- centric approach by outlining concrete implementation targets and establishing accountability mechanisms for local bodies, thereby reinforcing this solidarity making by formalizing it. In contrast, England’s policies adopted a more clinical and institutional tone, prioritizing patient autonomy, service standardization, and compliance with legal mandates from the beginning itself. Particular attention is given to advance care planning, coordinated service delivery, and outcome measurement. Later documents stresses on system integration, and performance metrics. Kerala bring out the themes of equity, dignity, and social justice—rooted in cultural narratives and socialist philosophy. On the other hand, England evokes professional efficiency, individual choice, and personalized care. Despite these differences in operationalization, both regions align to the World Health Organization’s ethical framing of palliative care. Discussion The findings of the study suggest that Palliative care policy documents are not just procedural but an abode of discourse production that frames responsibility, subjectivity and ethics of care. Kerala’s discourse evolved from 2008 to 2023 reveals how local governance and grassroots structures actively produce and adapt global health norms. In contrast, England’s discourse emphasizes a regulatory framework, echoing its centralized healthcare logic. These variations reflect broader ideological commitments—collectivist vs. individualist, rights-based vs. duty-based, and community-led vs. clinician-led care approaches. Policy documents reveal how and local, institutional and cultural priorities are negotiated with the global norms and standards. Conclusion This comparative discourse analysis reveals how the concept palliative care is discursively constructed in different cultural and political contexts. Kerala’s evolving policy landscape, culminating in the 2023 Action Plan, shows how local language and participatory logic can deepen public health commitments. England’s policies, while rich in clinical precision, point to ongoing challenges in ensuring equity and holistic integration across regions. By unpacking the ideologies and power relations embedded in policy texts, the study contributes to critical health policy scholarship and offers insights for designing context-sensitive and ethically grounded models of care (Townsend, Strazdins, Harris, Baum, & Friel, 2020).

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## Beyond the burden: Uncovering how meaningful work enhances work engagement among healthcare professionals

*Poonam Pal and Rahul Bodhi*

**Abstract:** Purpose: The healthcare professionals play a vital role in saving and improving the lives of people; therefore, they need to remain highly engaged in their work. Thus the present study examines the direct impact of meaningful work on work engagement along with mediating role of approach and avoidance crafting between meaningful work and work engagement and the moderating role of avoidance crafting between the indirect relationship of meaningful work and work engagement via approach crafting. We used a cross-sectional and quantitative survey method to determine the cause-and-effect relationship between the constructs. The data was collected using both online and offline modes using a purposive sampling technique. We purposefully collected data from doctors, nurses, and paramedical workers working in Indian hospitals (n=386). This study uses PLS-SEM to examine the cause-and-effect relationships. The result revealed that approach crafting mediated and avoidance crafting moderated in the relationship of meaningful work and work engagement.

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## Role of Informal Digital Platforms for Accessing Mental Health Support in Youth in Northern India

*Dr Shefali Goel*

**Abstract:** Mental health concerns among India's youth population have grown into a pressing issue. According to national estimates, nearly 10% of individuals between the ages of 18 and 29 in India experience mental health challenges such as depression, anxiety, and emotional stress (NIMHANS, 2016; WHO, 2022). Despite increasing awareness, clinical mental health services remain largely inaccessible to large segments of this demographic. Common barriers include the deeply entrenched stigma around mental illness, expensive treatment, the limited number of trained mental health professionals, and the absence of youth-friendly, culturally attuned mental health delivery models. These limitations often result in underreporting, self-silencing, or delayed treatment-seeking behaviour. Due to such current circumstances a growing number of urban youth have started seeking emotional support through informal, peer-led digital platforms such as WhatsApp, Telegram, and Reddit. These platforms are deeply embedded in the daily lives of young people. They are preferred as they help in providing anonymity, instant access, and social validation to its users. Unlike formal mental health clinics or helplines, these digital spaces are shaped by peer dynamics and informal cultural codes. They tend to be less intimidating, more expressive, and more aligned with how youth prefer to communicate.



As a result, platforms like WhatsApp groups that share motivational content, facilitate peer conversations about anxiety or academic pressure, or offer space to "vent" have emerged as low-threshold, organically formed support systems. Despite their widespread use, little research has been conducted to understand how these informal platforms function as mental health spaces. There is limited empirical data on who uses these platforms, what types of support they receive, how effective the support is, and what risks these spaces carry. Most importantly, no existing studies have systematically examined how Indian urban youth adapt these platforms to fulfill emotional or psychological needs. This study seeks to address this gap by examining the use of WhatsApp-based support groups and similar informal digital communities in the mental health help-seeking practices of urban Indian youth. This research is guided by two interrelated theoretical frameworks. The first is Uses and Gratifications Theory (UGT) (Katz, Blumler, & Gurevitch, 1973), which posits that individuals actively choose media to satisfy specific needs—whether cognitive, affective, personal, or social. UGT provides a suitable lens for understanding why youth might prefer informal platforms over formal therapeutic channels: they offer on-demand connection, privacy, peer validation, and culturally familiar communication styles. In the context of mental health, these gratifications can be particularly potent, as individuals may seek quick emotional relief, community support, or simply a safe space to articulate distress. The second guiding framework is Stigma Theory (Goffman, 1963), which helps explain how the perceived or internalized shame associated with mental illness shapes youth behaviour. This theory is essential to understanding why many young people remain passive or silent participants—often termed “lurkers”—in digital mental health spaces. Due to fear of being judged, exposed, or misunderstood can make anonymity a protective mechanism. By combining UGT and Stigma Theory, the study aims to capture both the motivational and sociocultural dimensions of informal digital support use. The study uses a mixed-methods approach, combining a structured online survey with in-depth qualitative interviews to generate a comprehensive understanding. The quantitative phase includes a survey targeting youth aged 15–24 who are members of informal WhatsApp, Telegram groups focused on emotional support, motivation, or mental health. The survey captures demographic information, frequency and purpose of platform use, engagement behaviors (active posting vs. lurking), perceptions of stigma, and self-reported emotional outcomes. It also asks participants to compare their willingness to seek help via digital vs. formal offline options. The qualitative phase involves semi-structured interviews that delve deeper into the lived experiences of individuals engaging with these platforms. Interview themes include: motivations for joining the group, emotional responses to group interactions, the role of anonymity, experiences of sharing or receiving support, trust-building among peers, and perceived emotional risks or limitations. Both active contributors and passive observers are interviewed to understand the spectrum of engagement and its implications for emotional well-being. The study is expected to yield insights across five key areas. First, it will map the demographic characteristics of youth most likely to engage with informal digital mental health platforms, including variables such as gender, city tier, education, and occupation. Second, it anticipates a strong correlation between mental health stigma and user engagement patterns, with higher stigma likely leading to more passive or anonymous participation. Third, the study will classify the types of support exchanged within these groups—emotional, informational, and narrative—shedding light on what forms of support youth find

most impactful. Fourth, it will examine how group participation influences emotional well-being, including mood regulation and perceived coping ability, particularly in relation to the nature of group dynamics. Finally, the research will identify key risks associated with these informal platforms, such as misinformation, emotional exhaustion, lack of moderation, and privacy concerns, to assess their long-term reliability as mental health support systems. The expected contributions of this research are threefold. First, it offers a theoretical contribution by extending UGT and Stigma Theory into the realm of informal digital mental health engagement—a setting rarely studied in the Indian context. Second, it makes an empirical contribution by providing original, mixed-methods data on a high-penetration platform (WhatsApp) and an understudied population (urban Indian youth). Third, the findings will have practical value for public health planners, NGOs, and digital product designers. For example, app developers could design mental health features that align with youth behavior on WhatsApp, while NGOs might use these findings to build moderated, youth-driven support networks that reduce stigma and promote early intervention. This study recognizes the importance of understanding not just how young people suffer in silence, but how they seek support on their own terms, using tools they already trust. By investigating these informal, digital-first pathways, the research sheds light on new models of low-cost, community-based mental health engagement in India—models that deserve both recognition and refinement.

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Submission ID: 1270

Track 02: Management in Health Services

## Role of ASHA workers in spanning the structural holes in healthcare

*Neelu Rohmetra and Hardeep Singh*

**Abstract:** This paper examines the role of Accredited Social Health Activists (ASHAs) in India as relational brokers who bridge structural gaps between marginalized communities and the healthcare system. Drawing on network theory and the concept of structural holes, the study reconceptualizes ASHAs not merely as service extenders but as embedded actors who span disconnections in trust, awareness, coordination, and technological access. Based on qualitative interviews, the paper highlights how ASHAs mobilize both bonding and bridging social capital to deliver culturally resonant care and institutional linkage in underserved areas. Their dual affiliation as community insiders and formal health system agents enables them to translate policy into practice and build relational infrastructure in places often excluded from effective service delivery. The paper contributes to sociological debates on state-community interfaces, frontline governance, and health inequality, arguing that the ASHA model offers valuable insights for inclusive health reforms in global contexts.

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Submission ID: 1276

Track 02: Management in Health Services

## Heat Stress and Neonatal Mortality: Evidence from India

*Shanchhith Singh Nayak (IIM Ahmedabad), Abhishek Dureja (Plaksha University), Harshit Singh (NYU Abu Dhabi).*

**Abstract:** What is the impact of heat stress exposure on newborn health? This paper examines the impact of heat stress on neonatal mortality by constructing a comprehensive retrospective panel using fertility histories collected in the two most recent rounds of the National Family Health Survey. We find that an additional day with wet-bulb temperature exceeding 82.5° F ( $\approx 28$  °C) leads to an additional 0.21 neonatal deaths per thousand births compared to an additional day with wet-bulb temperature in the range 70-75 ° F

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Submission ID: 1338

Track 02: Management in Health Services

## Implementing National Primary Health Reforms in India: A Practice-Based Study of Frontline Health Workers

*Areiba Arif, Rama Mohana R Turaga and George Kandathil*

**Abstract:** Frontline workers are central to the ways in which public policies materialize in everyday settings. As critical intermediaries between top-level policy design and the communities they serve, frontline health workers do not merely implement directives; they actively interpret, adapt, and often reshape reforms based on local needs and constraints. While bottom-up perspectives in public administration have emphasized their agency and discretion, such approaches often overlook the patterned, relational, and historically sedimented nature of frontline work. A practice-based approach provides a more situated lens, foregrounding how daily actions are shaped by institutional routines, material contexts, and social relations over time. This study adopts such a practice-based perspective to examine the implementation of national health reforms in India, with a focus on the expansion of Comprehensive Primary Health Care (CPHC) under the Ayushman Bharat-Health and Wellness Centre (AB-HWC) initiative. Launched in 2018, this initiative aimed to transform over 150,000 sub-centres and primary health centres into upgraded Health and Wellness Centres (HWCs) that offer a broader range of preventive, promotive, and curative services. Guided by New Public Management (NPM) principles—emphasizing performance metrics, task-shifting, digital integration, and decentralized governance—the reform sought to streamline service delivery and increase accountability. However, it also introduced significant structural and operational changes to the roles of frontline health workers, including Community Health Officers (CHOs), Accredited Social Health Activists (ASHAs), Auxiliary Nurse Midwives (ANMs), and Multipurpose Workers (MPWs). Drawing on 14 months of ethnographic fieldwork across multiple rural health facilities in North India—including participant observation, semi-structured interviews with health workers, and analysis of policy documents—this study examines how frontline actors engage with, reinterpret, and routinize these policy reforms in their everyday work. The

findings highlight important divergences between policy intent and implementation, shaped not only by structural resource constraints but also by the varied employment arrangements, training backgrounds, and historical identities of the different cadres. A key insight from the study is that contractual workers, such as CHOs and ASHAs—often operating under conditions of precarity—demonstrated a greater tendency to adopt, experiment with, and adapt the new policy mandates. Their work practices reflected a combination of institutional compliance (driven by job insecurity, performance-linked incentives, and surveillance) and personal aspiration (such as the hope for permanency or social recognition). In contrast, permanent staff—such as ANMs and MPWs—who have long been embedded in the public health system, tended to adhere to established routines and exhibited limited engagement with the newer service components. In several instances, this took the form of passive resistance, where older workers would selectively ignore or minimally engage with newer protocols, relying instead on historically established practices. However, even among those who actively implemented reforms, the nature of service delivery often drifted from its intended purpose. For instance, teleconsultation—envisioned as a bridge between rural patients and specialized urban providers—was largely reduced to a routine task, with little clinical integration or follow-up. Health workers were often observed initiating teleconsultations merely to meet daily targets or fill mandatory reporting formats, rather than to resolve patient concerns. Similarly, mental health services, included in the expanded package under AB-HWC, were reduced to basic verbal screening and referrals. Due to stigma, lack of training, and absence of on-site counselling infrastructure, few patients followed up at higher centres. A comparable pattern was observed in dental services. Although CHOs were expected to provide preventive and minor curative services, many consultations were limited to symptomatic treatment and referrals. However, the absence of dental professionals at referral sites meant that patients either abandoned treatment or sought informal/private providers—thereby bypassing the formal care system and undermining the gatekeeping role of primary care. The gap between vision and practice was also evident in cancer screening services. While breast and oral cancer screenings were often reduced to brief educational interactions, cervical cancer screening faced widespread reluctance among health workers, many of whom lacked sufficient training and confidence to conduct sample collection. Default referrals to distant facilities became common, significantly affecting service uptake. These findings underscore a persistent tension between the policy's expansive vision and the ground-level realities of implementation. In many cases, the drive to meet performance targets led to superficial compliance, with little substantive improvement in care quality or access. This disconnect was further exacerbated by limited training, inconsistent supplies, fragmented digital systems, and the absence of team-based work culture. Emerging concerns such as worker burnout, increased attrition among CHOs, and growing frustration among ASHAs have begun to surface in the form of unionization, protests, and public resignations in several states. These developments point to deeper systemic challenges in workforce management and raise critical questions about the sustainability of such ambitious reforms without parallel investments in worker support, long-term employment stability, and meaningful capacity building. By foregrounding the lived realities of frontline implementation, this study contributes to policy debates in three key ways. First, it challenges linear models of policy transfer by showing how reforms are continuously reshaped by local practice. Second, it demonstrates how employment conditions—particularly contractual and precarious

arrangements—influence the willingness and ability of workers to adopt new practices. Third, it highlights how everyday service delivery is shaped as much by routinized behaviors and structural pressures as by individual discretion or training. In doing so, the study offers a grounded critique of NPM-inspired health governance models that emphasize quantifiable outputs over substantive engagement with care processes. It calls for a shift towards more relational, context-sensitive models of workforce policy—where frontline discretion is not merely seen as compliance or resistance, but as a form of situated practice shaped by time, institutional memory, and social relations. Ultimately, the study argues for reimagining health policy implementation as a dynamic, negotiated process. Strengthening India’s primary healthcare system will require not only new technologies and service packages but also a deeper understanding of how reforms travel, stall, and transform within the everyday routines of frontline actors. Attending to these micro-level realities is crucial for designing reforms that are both ambitious and achievable.

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Submission ID: 1427

Track 02: Management in Health Services

### Improving delivery of last-mile health services using drones: Evidence from Odisha, India

*Professor Namrata Chindarkar (Indian Institute of Management Ahmedabad), Prof. Maya Ganesh (Indian Institute of Management Bangalore (IIMB).), Prof. Devyani Pande (National Law School of India University, Bengaluru), Mr. Kundan Madireddy (Redwing Labs), Mr. Milind Gupta (IIMA)).*

**Abstract:** Many parts of rural India continue to lack timely access to medical services such as diagnostics, which are vital for early detection of life-threatening health conditions and timely medical treatment. The absence of efficient and agile supply-chains at the last mile poses a significant problem, resulting in the unavailability of these essential services, increased out-of-pocket expenses for patients, and even loss of lives. Dronebased autonomous systems have shown great promise and success in addressing lastmile delivery challenges in healthcare systems worldwide. Although drones hold the potential to overcome this challenge, there is a need for evidence to understand and quantify their impact. Considering that a substantial section of rural population must travel more than 100 kilometers to access basic healthcare, drones offer immense potential in improving access to quality healthcare. In this study, we examine a first-of-its-kind intervention in the Kandhamal district of Odisha aimed at increasing last-mile delivery of diagnostics in remote areas. The intervention was implemented in partnership between Redwing Labs, a company that designs and operates autonomous drone logistics systems to automate last-mile healthcare supply chains, and the Department of Health & Family Welfare Government of Odisha.

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## Track 03: Gold & Precious Metals: Business and Economic Policies

Submission ID: 206

Track 03: Gold & Precious Metals: Business and Economic Policies

### A Study of Financial Landscape Post COVID Exploring Intermarket Linkages of GODS

*Dr. Sugandha Sharma, Dr. Manmeet Bawa and Dr. N P Singh*

**Abstract:** Purpose with the change in the outlook of the global business cycle due to COVID-19, there is a need to determine the connectedness in the price returns of the commodities, foreign exchange, and stock market. The current study intends to add on the bandwagon of the available researchers for interdependent relationships among GODS variables in financial markets. Methodology: To achieve the objectives of the study, TVP-VAR approach to dynamic connectedness has been used, which overcome the challenge of choosing the optimal rolling-window size arbitrarily. Findings: The study presents evidence of connectedness across the network of GODS variables as Gold is a net receiver of shocks in both pre and post COVID period. There is a robust and clear strong relation between crude oil and US dollar forex returns in pre COVID period and during the COVID period, the stock market is the net transmitter while crude oil is the net receiver. Practical implication: The clear high spill-over effect reflects the investors to be cautious for diversifying the portfolio as the unpredictable fluctuations in stock prices due to crises may impact the other assets like crude oil, dollar prices and gold prices. There is network in changes in prices for GODS variables which implies that economy and markets has a pass through mechanism. Originality This research paper is unique as the interdependence and spillover among the huge four variables, GODS has been examined and compared in the two periods the pre Covid-19 crises, and the post-crisis periods.

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## ASSESSING THE EFFECTIVENESS OF INDIA'S AUCTION-BASED FRAMEWORK FOR GOLD MINING: REGULATORY, FINANCIAL, AND INSTITUTIONAL BARRIERS TO PRIVATE SECTOR PARTICIPATION

*Kuhu Singh, Aishwary Kant Gupta and Abhishek Jha*

**Abstract:** 1. Introduction: Gold holds enduring cultural and economic importance in India, symbolising wealth, status, and security. This deep-rooted affinity makes India the world's second-largest consumer, accounting for about 25% of global demand (NITI Aayog, 2018). However, domestic production remains stagnant at just 1.5 tonnes annually (authors' calculation based on Ministry of Mines, 2024a; see Figure 1), while demand continues to soar. To meet this large gap, India imports nearly 757 tonnes of gold annually, worth around \$45 billion in 2024–25 (Ministry of Commerce and Industry, 2024; see Figure 2). This reliance on imports strains foreign exchange reserves and exposes the economy to global price swings and supply chain risks, highlighting the urgent need to strengthen domestic gold mining capacity. Auctions of gold blocks in India: To boost private participation in mining, including gold, the Government of India introduced key reforms through amendments to the Mines and Minerals Development and Regulation (MMDR) Act, 1957 (Parliament of India, 1957/2023). The 2015 amendment replaced the discretionary First-Come-First-Serve system with auctions to ensure transparency and higher state revenue. The National Mineral Exploration Trust (NMET) was created to fund exploration. The 2020 and 2021 amendments removed end-use restrictions for captive mines, allowed easier transfer of clearances, and enabled quicker reallocation of expired leases. In 2023, Exploration Licences were launched to attract foreign investment. Following these amendments, the Government has conducted a series of gold block auctions since 2015. According to the Ministry of Mines (2025), 24 gold blocks have been auctioned to date, encompassing both primary gold metal and associated minerals (see Figure 3). Notably, the majority of these auctions have been concentrated in a few states, namely Karnataka (5), Madhya Pradesh (5), Andhra Pradesh (4), and Uttar Pradesh (3) (see Figure 4). A distinctive feature of these auctions is the prevalence of composite licenses (CLs) over mining leases (MLs). Of the 24 blocks auctioned, 18 were CLs, integrating both prospecting and mining rights under the MMDR Act 2015 (see Figure 5). This theoretically simplifies the transition from exploration to mining by granting the licensee the right to explore for mineral deposits and subsequently extract them without applying for a separate mining lease. However, despite policy focus on expediting exploration and mining activities through CLs, the ground-level reality reveals a stark disconnect. As of FY 2025, only two gold mines – Hutti in Karnataka and New Patliputra in Jharkhand – are currently operating in India (Indian Bureau of Mines, 2023). However, both of these mines have been operational since before the introduction of the auction system. According to the Ministry of Mines' Annual Report 2024-25, 98% of gold production in India remains concentrated in the public sector even after a decade of reform in the mining sector. Issues with gold mining in India: Even after extensive reforms, India's gold mining sector continues to languish. The World Gold Council's 2022 report titled 'Gold Mining in



India' highlights persistent regulatory challenges that deter private sector investment in gold mining. A key hurdle is the need for up to 15 approvals from multiple agencies, causing delays and escalating costs. (World Gold Council, 2022). Additionally, while the shift to auction-based allocation was intended to enhance transparency, it has paradoxically inflated bid prices. Since 2015, bid prices in gold auctions have ranged from 5.45% to 40% of production value, plus a 4% royalty and DMF/NMET charges (see Figure 6). In top gold-producing countries such as China, Russia, the USA, Canada, and Australia, royalty rates range from 2% to 5%, making India's higher cumulative costs a deterrent to private investment (Chakraborty, 2014; Federation of Indian Mineral Industries [FIMI], 2017). These costs have significantly eroded the financial viability of gold mining projects. Furthermore, multinational firms with advanced mining technologies and expertise have largely abstained from participating in Indian gold auctions, citing uncompetitive cost structures and regulatory uncertainties (FIMI, 2017). The underperformance of India's gold mining sector presents a compelling case for reevaluating the existing auction framework, particularly through the lens of ease of doing business. Questions arise as to why prospective miners, including multinational firms, refrain from participating in India's gold auctions, and why auction winners are unable or unwilling to operationalize awarded blocks. Are CLs effectively facilitating private sector entry? Addressing these questions is vital for identifying and rectifying the existing shortcomings in India's gold mining auction framework.

2. Research Objective: This study aims to evaluate the effectiveness of India's auction-based framework in facilitating private sector participation and operationalizing gold blocks. It also seeks to identify key regulatory, operational and financial barriers that impede the growth of a competitive domestic gold mining industry.

3. Research Questions: i) What are the key regulatory and institutional challenges in operationalizing auctioned gold blocks in India, despite reforms under the MMDR Act? ii) How have auction design features—such as high bid premiums and cumulative levies (royalties, DMF, NMET)—affected the financial viability of private investment in gold mining, and whether they have led to a market failure? iii) Why have multinational mining firms largely abstained from bidding in Indian gold auctions, and what policy changes could attract their participation? iv) Have CLs succeeded in facilitating seamless transition from exploration to mining, and what gaps remain in enabling ease of doing business for prospective gold miners?

4. Methodology: The paper will adopt a mixed-methods approach, combining qualitative policy analysis with quantitative assessment. It will rely on: i) Secondary research - Review of existing literature, government reports, industry studies, and global comparisons. ii) Stakeholder consultations - Interviews with policymakers, industry experts, mining companies, and civil society representatives. iii) Case studies - Focused analyses of policy frameworks in few gold mining economies (e.g., Australia, China, USA, Canada, Russia) for comparative insights.

5. Expected outcomes: The study will provide a critical assessment of India's gold mining policy reforms and identify practical measures to enhance private sector participation. By analysing auction design, cost structures, and regulatory processes, it will propose actionable recommendations for a more efficient and competitive framework. The findings aim to support policy decisions that strengthen domestic gold production, reduce import dependence, and promote sustainable growth of the mining sector. Note: Figures referenced in this abstract are available upon request and can be shared during the full paper submission process

## GOLD – A 360 DEGREE PERSPECTIVE

*Anshul Srivastava*

**Abstract:** Background: - In the world of investment, gold has been cynosure of all eyes in the recent times, thanks to the surge in the prices owing to increased uncertainty due to geopolitical stress and hedging by fund managers and central banks across the globe. Owing to high price, the consumption demand for gold has fallen (38%) while the investment demand for gold has been at a record high level. As a result, gold has given 44% y-o-y return in dollar terms while the same figure is 33% in rupee terms. Traditionally considered a hedge against inflation, and a store of wealth, the performance of the gold has confounded the economists, fund managers and policy makers across the world. The question is whether the momentum in the gold prices will continue, is it still worth to bet on gold or the halcyon days are gone and the yellow metal will return to its familiar territory of sub-8% p.a. return. The proportion allocated to the gold in the portfolio is being reviewed. Does the weightage of gold need to increase, maintained or reduced. Still seen as a prominent asset class with a negative correlation to the US dollar, will gold hold its own or this was a temporary phase that has passed? With all the underlying factors intact i.e. the non-corrosive nature, beautiful lustre and finite supply, it is unlikely that gold is going to lose its attraction value both for consumers and investors. But has the position of gold shifted in the risk- return continuum, is it still a hedging tool or can it be used for speculation too. Can fund managers afford to be invested in gold for long term for earning a high return. These are some of the questions that this paper will endeavor to find answers to. Objective: The objective of the research is to understand the nature of gold as an asset class for investment, its correlation to other asset classes, its fit in the traditional portfolios. The paper will also investigate the role of gold in the continuum of risk and return and its use as a hedging tool. Additionally, the use of the gold as a tool for economic policy in the post-world war-II era (gold standard) and its discontinuance will also be investigated. The supply and demand of the gold (investment and consumption)- the production of gold- mining, extraction and fabrication will also be covered in detail. How to invest in gold- bullion, gold bars and coins, digital gold, gold exchange traded funds, gold bonds, jewelry -the pros and cons of each will also find coverage in the paper. Trading is a major activity that goes on in commodities and so is the case with gold. Major gold trading centers across the globe, gold trading in India on multi commodity exchange, the trading essentials, lot size, margin and other trading requirements will find ample mention in the paper. Gold pricing-LBMA and global price, local adjustments and spot polling mechanism will be discussed in the paper. The use of gold reserves by major central banks and the current scenario will also find a place in the research. Methodology: The methodology of the research will comprise of the following steps I. Data Gathering II. Analysis III. Conclusion IV. Implications I. Data gathering will be mostly in form of secondary sources where in the journals, reports and websites of the stake holders will be researched and referenced wherever required. The stake holders may involve a. Central Banks (e.g. RBI, Federal Reserve etc.) b. Exchanges (NSE, BSE, LBMA) c. Industry Bodies doing advocacy for gold investment

(World Gold council) d. Fund Houses (Mutual fund running gold schemes) e. Any other sources (Gold bonds, brokers, investment specialist, Jewelry retailing organizations f. Derivative Exchanges (LBMA, Multi commodity exchange, London metal exchange various bullion exchanges) g. Other sources- World Bank, www.goldprice.org www.lbma.org.uk ) II. Analysis- The collected data will be analyzed both qualitatively and quantitatively to understand the insights it provides in our understanding of the gold. The methodology of the analysis will be clearly mentioned in the final paper. It will be ensured that at the end of the analysis the reader of the report has clear tangible deliverables in terms of findings of the report. These will lead to conclusions that will form the subsequent part of the submission in form of results and implications. The qualitative analysis will lie in understanding gold as an asset class, its history and its implication in terms of policy making and as well as behavioral aspect on an individual basis. The quantitative analysis will be done on the price history, return history, risk measurement and management basis and a judicious combination of both will lead to the result III. Result: - The findings of the research mapped with the initial objectives will find a place in the result section of the report. Ther result section will tell the reader that what are the answers to the questions initially raised in the background of the research IV. Implication/Discussion: - In this part of the paper the results as presented above will be interpreted for the reader/end user. The impact of the results will be understood in this section. After going through the section, the reader will be able to understand what the analysis of the report says Conclusion In the final section of the paper, the results and implications of the research will be summarized. Final recommendation/call to action will make the part of this section of the research paper.

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Submission ID: 455

Track 03: Gold & Precious Metals: Business and  
Economic Policies

## **Lab-Grown Diamonds and Spiritual Legitimacy: A Multidimensional Consumer-Astrologer Study on Sustainability, Trust, and Astrological Substitutability in India**

*Sidhharrth S Kumaar*

**Abstract:** Lab-grown diamonds (LGDs) are changing the worldwide gemstone market by providing ethical, inexpensive, and long-lasting options to diamonds that are mined from the ground. But in a country like India that has a lot of culture and spirituality, gemstones can mean more than just looks and money. Astrologers often employ diamonds to fix problems, notably to make the planet Venus (Shukra) stronger. This study is the first of its type to look into how Indian consumers think about LGDs on a big scale. It does this by combining the ideas of luxury consumerism with astrology. It wants to find out if people not only embrace LGDs as fashion items, but also think they are spiritually and energetically the same as their natural counterparts for the good of the earth. There is more and more research in the field of consumer behavior that shows people are becoming more open to sustainable luxury. High Pressure

High Temperature (HPHT) or Chemical Vapor Deposition (CVD) are two ways to make LGDs that are just like mined diamonds in every way. Millennials and Gen Z are driving demand for these kinds of ethical options around the world because they care about the environment and want to get the most for their money. At the same time, spiritual and astrological factors still have a big impact on Indian consumers, and the belief in planetary gem therapy still guides many high-involvement purchases. Vedic astrology says that diamonds are more than simply pretty things; they are planetary enhancers that are said to make Venus's influence stronger or fix it. Traditional writings say that natural, earth-born diamonds are best for these applications because of their pranic (life-force) activity. This study looks at both sustainable luxury and spiritual symbolism to see if LGDs can meet both physical and spiritual needs. This study used a mixed-method descriptive technique. We did two separate but related surveys: one for consumers and one for professional astrologers. The poll of consumers got answers from 10,000 people in 28 states and 8 Union Territories in India. The astrological survey got opinions from 2,000 practicing astrologers, who came from both classic and current schools of Vedic philosophy. The survey took place from February to April 2025 and used a structured questionnaire that was given out in person and online in four languages: English, Hindi, Gujarati, and Tamil. The sample of consumers was very diverse in terms of age, gender, region, and beliefs. 51% were female, 47% were male, and 2% were non-binary. 62% said they believed in astrology, and 47% had worn a gemstone for astrological purposes before. We divided the respondents into four groups: Gen Z (ages 18–25), Millennials (ages 26–40), Gen X (ages 41–55), and Baby Boomers (ages 56 and up). We also made sure that the cities were Tier 1, 2, and 3 to make sure there was geographic variety. The main results show that there are two sides to the story: people have a lot of trust in LGDs when it comes to monetary things, but not so much when it comes to spiritual things. 87% of people knew of LGDs, with Gen Z and Millennials being the most aware. About 78% of Gen Z and 64% of Millennials said LGDs were "real diamonds," and 74% of respondents said that affordability was the main reason they were interested. Promotions guided by influencers and sustainability came next. Women aged 26 to 35 who lived in Tier 1 cities and were interested in fashion were the most likely to be interested. When it came to looking at the spiritual validity of LGDs, though, the results were different. Among people who believe in astrology, 47% said they wouldn't use LGDs for astrological purposes, 35% said they would only use them if an astrologer specifically advised them, and only 18% said they would wear LGDs instead of genuine diamonds in planetary remedies. Younger women in cities were far more likely to be open to LGDs for both beauty and spiritual purposes. On the other hand, older customers and people who lived in rural areas preferred natural stones. The results of the astrological survey show a strong parallel. Out of 2,000 astrologers asked, 61% said they would not use LGDs for planetary purposes. They said this was because they didn't come from nature and didn't have any pranic energy. Another 27% said they would prescribe LGDs if they were ritually charged, blessed, or accompanied by mantras. A modest but important 12% were hopeful that LGDs will become real spiritual tools in modern astrology, especially for clients who couldn't afford them or who were looking for long-lasting alternatives. The differences amongst astrologers also showed a change in philosophy and generation, with younger, tech-savvy astrologers being more open-minded than their more traditional colleagues. The data shows key trends in segmentation. Women between the ages of 26 and 35, especially in Tier 1 cities, were the most open to

LGDs for both fashion and astrology. On the other hand, men between the ages of 36 and 50 and people who lived in rural areas were the most resistant. Urban Gen Z was quite open to new styles, but they were careful about switching religions unless astrologers said it was okay. Astrologers themselves are still split, and a new category of "conditional spiritual openness" has appeared. This suggests that there is a chance for sustainability and astrology to come together through thoughtful rituals and endorsements. This study has a lot of effects on the jewelry business, astrologers, and people who write laws. Jewelry companies can make more money by splitting out their LGD lines. They can do this by making them not only fashion statements but also by teaming up with astrologers to give spiritual charging services. This might help close the gap between the spiritual and the material. On the other side, astrologers should look at how LGDs might be used as spiritual tools by testing them in real life. This gives politicians a chance to control gemstone marketing claims and back eco-spiritual education efforts that encourage consumption that is both ethical and in line with one's energy. To sum up, lab-grown diamonds are quickly becoming a symbol of modern, ethical luxury in India's consumer economy. However, their acceptance as spiritual allies is still restricted and complex. This study shows that belief systems still play a big role in buying gemstones, especially in countries like India where astrology is popular. As spirituality and sustainability come together in modern minds, LGDs may be able to play two roles—if brands, astrologers, and customers all adopt a more holistic view of the universe. In a world where stars help people make decisions and sustainability shapes the future, lab-grown diamonds need to show that they shine not only on the outside but also on the inside.

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Submission ID: 568

Track 03: Gold & Precious Metals: Business and  
Economic Policies

### Case Study on the Glitter Shift: Gold Prices and the Rise of Imitation & Silver Jewellery in India

*Geeta Sharma and Priyanka Gandhi*

**Abstract:** In recent years, the rise in gold prices has reshaped consumer behaviour in the Indian jewellery market. While gold continues to be a symbol of wealth and tradition, its increasing cost has led consumers, especially millennials and Gen Z, to explore affordable alternatives such as imitation and silver jewellery. This case study examined this shift and highlighted how brands like Palmonas, Voylla, Giva, Bluestone, and Shaya by CaratLane capitalised on this trend by offering stylish, budget-friendly, and high-quality jewellery options. The glitter offered by these companies was no less than any gold item. The case also investigated changing consumer preferences, digital-first strategies, and the shift of jewellery from a long-term investment to a fashion accessory. This case discussed the challenges and opportunities for such brands in the glitter shift.

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Submission ID: 711

Track 03: Gold & Precious Metals: Business and  
Economic Policies

## Asymmetric Effects of Exchange Rate Movements on Gold Prices in India

*Manav Nagi and Manav Nagi*

**Abstract:** India's high dependence on gold imports makes domestic gold prices highly sensitive to exchange rate movements. While existing studies often assume a linear and symmetric relationship between exchange rates and gold prices, this research examines whether currency depreciation and appreciation have asymmetric effects. Using monthly data from January 2010 to December 2024, the study applies a Nonlinear Autoregressive Distributed Lag (NARDL) model to estimate short-run and long-run asymmetries. Control variables include CPI inflation, crude oil prices, and international gold prices. The analysis is segmented across pre-COVID, COVID, and post-COVID phases to capture regime-specific dynamics. Preliminary expectations suggest that INR depreciation has a stronger and more persistent effect on gold prices than appreciation. Robustness will be assessed using GARCH-family and Markov-switching models to capture volatility and structural changes. The study contributes to the limited Indian literature on nonlinear exchange rate pass-through and offers policy-relevant insights for gold import regulation, inflation targeting, and reserve management.

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Submission ID: 858

Track 03: Gold & Precious Metals: Business and  
Economic Policies

## Safe Haven Properties of Gold and Gold ETFs Against Risk-Class Assets in the Indian Financial Market: A Wavelet Quantile Correlation Approach

*Anoop S Kumar, Moni M and Sreeraj V*

**Abstract:** Introduction Financial markets often experience sudden shocks such as crises, wars, or inflation. During such periods, investors seek assets that remain stable when others decline (Baur & McDermott, 2016). Gold is widely regarded as a safe haven, particularly in India where it holds significant investment value (Boubaker et al., 2019). Kumar and Padakandla (2022) found that spot gold offered strong protection during market crashes. However, their study did not examine digital gold instruments like exchange-traded funds (ETFs). Our study addresses this gap by comparing spot gold with four major gold ETFs in India. It assesses their role as safe havens against several risky assets, including small-cap, mid-cap, and large-cap Indian equities, Bitcoin, and the USD/INR exchange rate. The objective is to determine whether gold ETFs provide similar protection as spot gold during times of market stress and to assess the duration of this protective effect. As digital investment products become more common, understanding the safety of digital gold instruments has become increasingly

relevant. This study offers insights using updated and robust analytical methods.

**2. Data and Methodology** This study used daily returns of NIFTY50, NIFTY Midcap, NIFTY Small Cap, Bitcoin, USD-INR exchange rate, Physical Gold, Bullion and SBI, HDFC, ICICI, Nippon, UTI Gold ETFs between 01-Jan 2015 to 12-June-2025. We employ Wavelet Quantile Correlation (WQC) to understand how gold and gold ETFs safe haven behavior during different market conditions against fluctuation in Equity, Forex and Crypto markets. WQC is useful because it shows how the relationship between assets changes over both short and long-term periods. It employs Maximal Overlap Discrete Wavelet Transform (MODWT) to break down the data into different time scales, in order to see short-term and long-term behavior separately. Second, quantile correlation is used to see how the connection between gold (or gold ETFs) and other assets changes at different return levels during extreme losses or gains. This method, proposed by Kumar and Padakandla (2022), helps us capture how gold behaves under different market conditions. WQC works without assuming a linear relationship, making it ideal for studying safe haven behavior. Li et al (2015) define quantile correlation as follows For variable  $Y$  and quantile  $\tau$ :  $\phi_{\tau}(Y) = \tau - I(Y < q_{\tau})$  where  $I(\cdot)$  is the indicator function, and  $q_{\tau}$  is the empirical  $\tau$ -quantile. Then, the Quantile Covariance:  $qcov_{\tau}(Y, X) = Cov(\phi_{\tau}(Y), X) = E[(\phi_{\tau}(Y) - E[\phi_{\tau}(Y)])(X - E[X])]$  Quantile Correlation (QC):  $\rho_{\tau}(X, Y) = (qcov_{\tau}(Y, X)) / \sqrt{Var(\phi_{\tau}(Y)) \cdot Var(X)}$  Wavelet Quantile Correlation (WQC): Let  $X_t$  be a time series. Then for wavelet filter  $h$  and scaling filter  $g$ : Approximation and detail coefficients at level 1:  $a_1[t] = \sum_k h_1[t-k] \cdot X[k]$ ,  $d_1[t] = \sum_k g_1[t-k] \cdot X[k]$  Recursive for level  $j$ :  $a_{(j+1)}[t] = \sum_k h_{(j+1)}[t-k] \cdot a_j[k]$ ,  $d_{(j+1)}[t] = \sum_k g_{(j+1)}[t-k] \cdot a_j[k]$  with  $h_{(j+1)} = U(h_j)$ , where  $U(\cdot)$  is a dyadic upsampling operator. Let  $d_j^X$  and  $d_j^Y$  be MODWT detail coefficients for  $X$  and  $Y$  at level  $j$ :  $WQC_{\tau}(d_j^X, d_j^Y) = (qcov_{\tau}(d_j^Y, d_j^X)) / \sqrt{Var(\phi_{\tau}(d_j^Y)) \cdot Var(d_j^X)}$  WQC analyses how the relationship between both series shifts across both time scales and market conditions by combining MODWT with quantile correlation (Kumar & Padakandla, 2022).

**3. Key Findings** The results show that both spot gold and gold ETFs acted as safe havens during equity market shocks. Spot gold had a significant negative correlation with small-cap, mid-cap, and large-cap stocks, which supports earlier findings by Kumar and Padakandla (2022). This study adds that the four tested gold ETFs also showed similar safe haven behaviour. Gold and gold ETFs offered clear protection against Bitcoin, which is important due to its high volatility and growing use among new investors. Against the USD/INR rate, both gave short-term protection, but their safe haven role faded in the long run. This suggests gold may not help much with currency risk over longer periods. Gold ETFs performed much like spot gold across all asset types. They gave consistent results across small, mid, and large-cap stocks. This makes them a useful digital option for investors looking for safety during market stress.

**4. Implications for Research** This study adds new understanding to what is already known about safe haven assets. Earlier studies mostly looked at spot gold. This study includes gold ETFs, which are now more common because of easier access. The results show that gold ETFs act much like spot gold. This is useful for future research on digital forms of investment. The method used in this study how how gold's safe haven role changes over time and in different market situations. The study also compares how gold protects against different asset types, market capitalization, Crypto, and foreign exchange. This gives a clear picture of how gold fits into a mixed investment portfolio. The results support the idea that digital forms of gold can also act as safe havens. This opens the way for future



research on other digital assets like token-based commodities or stablecoins. Future work can also test gold ETFs in other countries and see how rules and policies affect their role. Overall, this study connects older ideas in finance with the newer digital world. 5. Implications for Practice This study gives clear advice for Indian investors. Both gold and gold ETFs act as safe havens when markets fall. They work well across all stock types such as small, mid, and large cap. For those worried about Bitcoin's volatility, gold is a steadier option. Gold also helps with currency risk, but only in the short term, so it should be used with care in forex planning. Gold ETFs are as effective as spot gold and easier to buy or sell online. This makes them a good fit for younger or digital-first investors. Advisors can include gold ETFs in mixed portfolios. Policy makers can support digital gold access to help more investors. Banks and fintech firms can also include gold ETFs in savings or hedge plans. In short, gold ETFs are a simple, digital way to stay safe in a changing market.

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Submission ID: 894

Track 03: Gold & Precious Metals: Business and  
Economic Policies

## Gold and the U.S. Dollar Index: A Cointegration and Vector Error Correction Analysis

*Akanksha Sehgal*

**Abstract:** This study examines the long-run and short-run relationship between gold prices and the U.S. Dollar Index (DXY) using monthly data from January 2006 to June 2025. Gold is widely regarded as a hedge against currency depreciation, while the DXY reflects the international value of the U.S. dollar. To explore their interaction, we apply Johansen cointegration testing and estimate a Vector Error Correction Model (VECM). Initial stationarity checks confirm that both series are integrated of order one (I(1)). Johansen's test reveals evidence of cointegration suggesting a stable long-run equilibrium between the two. The VECM, estimated using the optimal lag length based on the Akaike Information Criterion, shows that gold prices adjust significantly toward the long-run equilibrium. Short-run dynamics further reveal that changes in DXY have a significant and negative effect on gold price movements (coefficient  $\approx -1.99$ ), whereas gold exerts negligible influence on the dollar. Granger causality tests confirm that DXY does not predict gold returns in the short run, but gold may weakly predict DXY at a 10% level. Overall, the results confirm a strong, asymmetric relationship: gold responds to dollar movements in both the short and long run, but not vice versa. These findings have practical implications for investors, policymakers, and those modeling commodity-currency interactions.

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## Gold's Shifting Significance: A Study of Its Determinants in a Volatile Global Economy

*Abhishek Kumar and Dr. Vikas Jaiswal*

**Abstract:** Abstract Gold's legendary status as a "safe haven" has been examined from 2020 to 2024, a whirlwind period packed with pandemics, geopolitical clashes, inflation spikes, and global market turmoil. This study dives deep into gold's roller coaster ride during these turbulent years, analyzing how its price interacted with inflation, interest rates, and the U.S. dollar. Major global events such as the COVID-19 pandemic, the Russia-Ukraine war, and rising tensions between the U.S. and China steered gold's often unpredictable path. While inflation is traditionally seen as a primary driver of gold prices, our findings challenge this assumption. Instead, we highlight that inflation played a less significant role than expected. Geopolitical instability, market shocks, and heightened uncertainty were far more critical in shaping gold's price trajectory. This research sheds new light on the evolving dynamics of gold as a financial asset, offering insights into how it behaves in the face of unprecedented global crises.

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## Gold Loans and Financial Inclusion in India: A State-Level Comparative Analysis

*Shweta Dasgupta*

**Abstract:** In India's evolving financial landscape, gold is not just as a store of wealth but also as a vital source of collateral-based credit, particularly for low-income and rural households. The expansion of Non-Banking Financial Companies (NBFCs) offering gold loans—such as Muthoot Finance, Manappuram Finance, and others—has created new pathways for accessing formal credit outside traditional banking systems. This study examines the relationship between gold loan availability and financial inclusion across Indian states, using publicly available secondary data. The objective of the study is to assess whether greater gold loan penetration is associated with improved financial inclusion outcomes. Financial inclusion is broadly defined in terms of bank account ownership, access to formal credit, digital transactions, and women's participation in financial systems. The analysis is conducted at the state level, leveraging secondary data sources from the Reserve Bank of India (RBI), the Pradhan Mantri Jan Dhan Yojana (PMJDY) dashboard, the National Family Health Survey (NFHS-5), and NBFC annual reports. Additional socioeconomic indicators such as literacy, urbanization, and poverty levels are drawn from the Census of India and the National Statistical Office (NSO). Gold loan penetration is approximated using data on NBFC branch density, reported loan disbursements, and asset

under management (AUM) values reported by leading gold loan providers. These are used as proxy indicators due to the unavailability of district-level or borrower-level disbursement data. States such as Kerala, Tamil Nadu, and Andhra Pradesh—with a strong presence of gold loan NBFCs—are compared against states with relatively lower penetration, such as Bihar, Jharkhand, and the North-Eastern states. The methodology involves descriptive statistical comparison across states, supported by correlation analysis to explore relationships between gold loan activity and financial inclusion outcomes. Key variables include the number of PMJDY accounts opened per capita, percentage of women with operational bank accounts (from NFHS-5), and state-wise household credit figures. Where possible, multi-year data is examined to understand directional trends. Preliminary analysis suggests that states with a higher presence of gold loan institutions tend to exhibit relatively higher levels of credit access and account ownership, particularly among women and rural populations. However, the relationship is not strictly linear, and regional disparities in education, digital infrastructure, and financial literacy may mediate the outcomes. For instance, high gold loan usage in southern states coincides with both cultural factors (gold as a household asset) and more mature financial infrastructure. The study concludes that gold loans are not a direct substitute for broader financial inclusion reforms. It plays a meaningful role in expanding access to credit, many a times to economically vulnerable groups. Gold-backed lending can act as an entry point into formal finance, especially where traditional collateral or credit history is lacking. Policymakers are encouraged to integrate gold loan providers into the financial inclusion framework. They can add or improvise regulatory oversight, encouraging responsible lending, and supporting complementary programs in financial literacy and consumer protection. This research contributes to the limited literature linking asset-based lending mechanisms to financial inclusion outcomes. The study becomes significant in emerging economies. It offers policy insights for more inclusive credit design in gold-dependent regions. It also helps remove inefficiencies associated with the latent wealth.

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Submission ID: 1301

Track 03: Gold & Precious Metals: Business and  
Economic Policies

## Revisiting the Consumer Psychology of Gold: Implications for Policymaking

*Priya Narayanan*

**Abstract:** (refer attachment) What does gold jewellery mean to the Indian consumer – a form of adornment, a safe investment, a status symbol, a source of credit, or just a habit? The question has been addressed time and time again but continues to remain unanswered due to the evolving nature of the market, particularly over the last decade. The question is important as the implications for policymaking are multi-fold. This paper aims to provide a rigorous and theoretically informed perspective which would be useful for all stakeholders in the gold ecosystem. The paper is based on the author's research

over the past eight years, as well as research by scholars at the India Gold Policy Centre (IGPC). In this abstract, we develop a series of research questions (RQs) to address the following key areas. In the full paper, we will address these research questions. 1. A theory-driven understanding of the evolving consumer psychology of gold in India. 2. Policy implications that arise from this understanding of the consumer psychology of gold, particularly related to gold monetization and jewellery pricing. When viewed in the light of theories in consumer research, the psychology of gold is characterized by unique and potentially inexplicable elements. Aspects of gold consumer psychology and behavior contradict received wisdom in the form of theories situated and developed in the West. Through this research, we aim to contribute in three main ways. First, investigating contradictions with respect to accepted theory enables theory development through application and testing in a distinct context. Second, our research enables a clearer understanding of gold consumption, driving future research in this domain. Finally, our work holds considerable implications for policy in the gold jewellery space, including aspects that have hitherto remained outside the review of policy. Price-quality relationship The well-accepted notion that higher price indicates higher quality (Grewal et al. 1998; Monroe and Dodds 1988) faces a contradiction when considering how gold is purchased. As Narayanan and Baghel (2024) describe in their study of gold pricing, the pattern of pricing across products is highly uniform. Variation arises only with respect to the making charges component which makes price setting opaque to the consumer. In turn, due to the inherent value of gold, consumers tend to be price sensitive. Importantly, this reinforces jeweller tendencies to offer discounts on making charges, reducing the margin available for upstream payments to jewellery vendors and artisans. RQ1.1 Does the price-quality relationship apply to gold jewellery? RQ1.2 What factors determine the extent to which the price-quality relationship is observed in gold jewellery? For example, does the type of product matter? RQ1.3 Would consumers benefit from greater transparency over making charges? RQ1.4 How can policy measures ensure lower opacity in terms of how making charges are imposed on gold jewellery products? What could be potential reactions from jewellers and other industry stakeholders and how could these be managed? Cognitions (return on investment) In general, consumers are assumed to be rational when making investment decisions and financial choices. This notion, again, breaks down in the context of gold consumption. Gold in the form of bars and coins, as well as jewellery (with lightweight studded jewellery being a possible exception) is typically considered an investment. However, a true investment is one that reaps its value at the end of a maturity period. Gold as an investment never attains its return because, as consumers stated in interviews (Narayanan and Baghel 2024), they do not return gold that they own. Indeed, in such interviews, descriptions of return attempts emerge as painful memories in interviews. Such consumer perceptions and associated behaviors tend to counter government attempts at monetization of gold in private hands (Narayanan, Gopalakrishnan, and Sahay 2020). RQ2.1 Can the investment and adornment aspects of gold be segregated in a manner that consumers take a more rational view of gold purchased as investment? RQ2.2 How can policy be crafted and implemented in order to guide consumers towards thinking rationally with respect to gold? RQ2.3 To what extent will rational considerations of gold as investment enable monetization of privately held gold? How can policy implementation support policy formulation? Mental accounting The notion that money is not fungible and that money earmarked for specific purposes could lie in different mental accounts – despite being in the same bank account or

even if held as cash – is well known following Thaler (1985). However, the idea of mental accounting would suggest that consumers would be open to exchanging gold for cash and vice versa, as well as replacing gold with other types of investments. However, a common observation is that consumers are averse to changing between different forms of gold. Gold in physical form possesses an inertia with respect to change of form. RQ3.1 What is the nature of mental accounting with respect to physical gold held in different forms? RQ3.2 How can novel characterizations of mental accounting of gold enable consumers exchange jewellery or monetize gold? Possessions and endowment One theoretical perspective that might explain the observation above – violation of the rules of mental accounting – is the idea of possessions as the “extended self” (Belk 1988) whereby possessions can become part of one’s self and help extend the self beyond one’s physical form and actions. Relatedly, a high level of attachment to owned gold could result in a strong endowment effect (Marzilli Ericson and Fuster 2014) whereby mere ownership raises the value of the possession for the owner. However, the phenomenon of gold consumption is complicated by the observation that unlike most personal possessions, the market value of the possession does not decline over time. RQ4.1 How does gold jewellery act as the extended self? RQ4.2 How does the notion of gold as one’s extended self differ from Belk’s conceptualization given that gold from a monetary perspective is just as valuable for others as for oneself? RQ4.3 How can the idea of endowment effect be utilized in policy measures to enable better monetization of gold?

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Submission ID: 1425

Track 03: Gold & Precious Metals: Business and  
Economic Policies

## The role of Gold in Evolving World Order and Options for India

*Chandan Satyarth*

**Abstract:** This paper explores the evolving world order, the role of Gold in this evolving world order and the options for India. Looking at the world order in last few decades, the world changed from Bipolar to unipolar in 1990s. After collapse of Soviet Union in 1990s, in “The End of History and the Last Man”, Francis Fukuyama claimed that the liberal democracy is the ultimate form of human government. Now, the world is witnessing the rise of People’s Republic of China at the world stage. At this stage, the world is debating the rising debt of US and effect of the debt on US Dollar as a reserve currency, the increasing role of digital currencies, repatriation of gold by countries from Bank of England and Federal Reserve Bank of New York to home jurisdiction (e.g. India brought back almost 200 tonnes in last one year (2024-25)), trade and settlement in local currency, rising gold reserve of emerging countries (e.g. Official gold holdings increased for more than 1000 tonnes/year for last 3 consecutive year post the sanctions imposed by Western World on Russian due to Russia-Ukraine war), investment by High Net Worth individuals and Family Offices, who are looking at gold as a safe-haven asset, in gold, and storage in regional storage hubs like Singapore, investment by Financial

Institutions (e.g. China permits Insurance companies to invest 1% to the asset in gold) among other developments. Looking at the history, Pliny the Elder described India as "the sink of the world's gold" in the 1st century. In 1717, Sir Issac Newton, then the master of Royal Mint in Great Britain, played an important role in moving Great Britain towards the gold standard. Classical Gold Standard (1870s to First World War), Interwar Period & the end of gold standard (1915-1944) and Bretton Woods System (1944-1971) saw the role of gold changing from one form to another. In 1933, through Executive Order 6102, President Franklin D. Roosevelt restricted the private ownership of gold, and the people were required to surrender their private gold holdings. Post 1944, through establishment of Bretton Woods System US dollar was pegged to gold and currency of member countries were pegged to US Dollar. The Global Monetary system entered into the realm of fiat currency post 1971, when US suspended the convertibility of US Dollar into gold. Through studies of historical evolution of gold's role in the financial system, the evolution of currency in different countries, role of debt in the fall of an empire and therefore the loss of status of reserve currency, central banks' growing reliance on gold amid increasing financial uncertainty among others point towards increasing role of gold as a safe haven and monetary asset amid global uncertainty. China, which is a strategic rival of US, has also taken various steps for gold including the launch of Shanghai Gold Exchange and Shanghai Future Exchange to financialize the gold ecosystem in China and to influence the gold price, increasing the official holdings of gold especially post 2008 financial crisis (total holdings more than 2290 tonnes as of July 2025), increasing role of Chinese Bank in gold, China as one of the largest producer of gold (almost 370 tonnes produced in 2024), the internationalization of yuan, investment by Chinese Insurance Companies in Gold, opening of physical vault in Hong Kong and Yuan based gold products among others. In this context, India, being the 2nd largest consumer of gold, which imports gold mainly through consignment model, is standing at a critical juncture. India may need to ponder upon and look at gold not just as a commodity but also as a geoeconomic tool. India International Bullion Exchange IFSC Limited (IIBX), launched in July 2022 in GIFT-IFSC by Hon'ble PM Sh. Narendra Modi, aims to establish India as a price setter and is an important step in this regard. Total import through IIBX crossed 100 tonnes in the last financial year. The research identifies that there are many steps which may be required to be taken which may range from increasing participation of banks on IIBX, investment in upstream supply chain of gold like investment in mines abroad and exploration of gold reserves in India, development of India Good Delivery Standard and acceptance of India made gold bars globally, developing India as regional storage hub where family offices and high net worth individual store their gold, acquisition of monetary gold through IIBX and storage of monetary gold in India by central banks, routing the recycled gold through IIBX, development of vibrant derivatives ecosystem for gold among others. The research identifies that the world is rapidly evolving, and gold is increasingly being used as a geoeconomic tool. India may need to evolve too to be identified as an important fulcrum or a hub in this evolving world order.

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## Track 04: Finance, Accounting, and Economics

Submission ID: 23

Track 04: Finance, Accounting, and Economics

### Does Institutional Quality and Clean Energy Investment Matter for Foreign Direct Investment Inflows? A Panel Threshold Evidence from the BRICS Economies

*Sodiq Bisiriyu and Manzoor Malik*

**Abstract:** Institutions and energy infrastructures significantly influence cross-border capital flows. This study employs panel cointegration and threshold estimation approaches to investigate the nexus between institutional quality, clean energy investment, and FDI inflows in BRICS economies from 1996 to 2021. The findings reveal evidence of cointegration and a threshold effect of clean energy investment on FDI inflow into BRICS, with a significant linear positive impact. Additionally, market size and renewable energy investment emerge as principal persuasive indicators of foreign investments. The results also suggest that economies with moderate institutional quality attract more FDI. Overall, our results highlight the nuanced role of energy infrastructure, institutions, and market size in investment decisions.

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Submission ID: 122

Track 04: Finance, Accounting, and Economics

### Creditor Empowerment and Capital Efficiency: The Case of India's IBC, 2016

*Rajeev Parashar*

**Abstract:** This paper investigates the impact of India's landmark insolvency reform—the Insolvency and Bankruptcy Code (IBC), 2016—on corporate borrowing, investment, and capital productivity. The IBC marked a significant shift in the legal treatment of creditor rights by formally incorporating operational creditors into the bankruptcy resolution process. Exploiting this change, we use firm-level panel data from 2009 to 2023 and construct a difference-in-differences framework based on firms' pre-reform exposure to operational credit. We find that firms with high operational credit exposure responded to the reform by significantly reducing their bank borrowings and investments in fixed assets. However, these firms simultaneously experienced a notable increase in the productivity of installed capital, suggesting a shift toward more efficient capital utilization under the threat of stricter creditor enforcement. Placebo tests and robustness checks support the causal interpretation of our results. Overall, the findings highlight how creditor rights reform can induce firms to adopt more disciplined financial strategies, thereby improving capital efficiency in the corporate sector.

Submission ID: 131

Track 04: Finance, Accounting, and Economics

## Analysing Participation and Intensity of Household Savings in Rural India: A Double Hurdle Approach

*Arjun Upadhyay, Pankaj Baag and Shaji Kv*

**Abstract:** Policymakers are actively trying to expand the net of financial inclusion to bring marginalized segments of society to the mainstream, especially in emerging economies. Consistent attempts are made to understand the determinants of household savings, especially in rural settings. Using a large financial inclusion survey conducted in rural India, we attempt to answer this question. We use a double hurdle model to first identify the determinants that cause savings and then those that impact the quantum of savings. We find that financial literacy, along with social security measures like insurance and pension, hold significance in strengthening household savings. We tested for robustness under agricultural and non- agricultural households and found support. Our findings suggest that an increased focus on institutional support for the rural household is required to improve financial knowledge and attitudes toward financial products of the rural population while providing institutional support for the establishment of financial bodies.

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Submission ID: 132

Track 04: Finance, Accounting, and Economics

## Assessing Securitization Impact on Bank Profitability and Rural Credit Supply: Evidence from India

*Arjun Upadhyay and Pankaj Baag*

**Abstract:** Securitization has long been used as a tool to provide liquidity and funding to banking institutions, enabling them to increase credit supply within the financial system. This becomes critically important in countries pursuing financial inclusion goals. In such contexts, credit supply is often severely rationed due to multiple structural constraints, and policymakers are constantly seeking ways to address this shortage. With the introduction of Priority Sector Lending Certificates (PSLCs) - which allow banks in India to trade their lending obligations - the supply of credit is expected to improve, particularly for the marginalized segments of society. However, the issues of bank profitability and regional variations in credit supply have not been adequately assessed. Using a combined dataset of all Regional Rural Banks (RRBs) in India from 2013 to 2023, this study evaluates these aspects and finds that the profitability of banks engaging in PSLC trading has declined. In addition, banks in the western and southern regions demonstrate higher profitability compared to those in other regions. We also

examine the impact of PSLCs—along with the different types of PSLCs—on Priority Sector Lending (PSL) and find mixed results, suggesting that regional differences in existing economic policies and challenges to systemic implementation play a significant role.

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Submission ID: 154

Track 04: Finance, Accounting, and Economics

### **Working Capital Policy and Speed of Adjustment across the Firm Life Cycle: Evidence from an Emerging Economy**

*Himansu Sekhar Sethi and Varadraj Bapat*

**Abstract:** This study examines the target level of working capital and the impact of working capital strategy on the speed of adjustment in different life cycle stages. We use the two-step system GMM in a dynamic panel model on a dataset comprising 1645 Indian manufacturing firms from 2011 to 2022. The cash conversion cycle is used for working capital management, and the current and fixed assets ratio is used for working capital strategy. The dynamic partial adjustment model is used to determine the speed of working capital measurement. We find that optimal working capital levels exist in Indian manufacturing firms and the speed at which firms adjust their working capital towards their target level. Firms in the introduction and decline stages exhibit a lower speed of adjustment than the growth and mature stages, suggesting that the speed of adjustment is inverted U-shaped across the firm's lifecycle stages. The impact of a working capital strategy on the speed of adjustment is negative, implying that firms following aggressive strategies quickly adjust their working capital towards their target level. The findings suggest that firms should adopt an aggressive working capital strategy to achieve quicker convergence to target levels, especially in growth and mature stages. This approach enhances operational efficiency, financial flexibility, and strengthens stakeholder relationships. However, firms must also implement robust risk management practices to mitigate potential downsides and make strategies for their specific industry needs to maximize performance and value creation. To the best of our knowledge, this study is possibly among the first to investigate the relationship and behavior of working capital strategy on speed of adjustment in different life cycle stages.

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Submission ID: 174

Track 04: Finance, Accounting, and Economics

### **Complementarities in Information Acquisition: Evidence from Mandatory Portfolio Disclosures**

*Raja Reddy Bujunoori*

**Abstract:** In this study, I examine whether there are complementarities in information acquisition across investors. I use an increase in mandatory portfolio disclosure frequency as a negative shock to information acquisition by mutual funds and study the impact on (other) informed traders. Using tick-by-tick trading data from a stock exchange with trader identifier, I find that informed traders reduce trading in stocks affected by the disclosure mandate. The decline in informed trading is concentrated in stocks where mutual funds and informed traders acquire information about different fundamentals, which suggests that the mechanism could be an increase in the residual uncertainty for informed traders. Furthermore, I observe a decrease in stock price efficiency and investment efficiency in firms where mutual funds and informed traders specialize on different dimensions. Overall, my study provides evidence for the existence of complementarity in information acquisition across investors.

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Submission ID: 191

Track 04: Finance, Accounting, and Economics

## Assessing the 2018 LTCG Tax Reform: Effects on Stock Returns and Holding Periods in the Indian Equity Market

*Torsanil Majumder and Vineet Shukla*

**Abstract:** Long-term capital gains (LTCG) tax is the levy on the profit from selling financial assets such as stocks, held for more than a year. The study analyses the impact of LTCG taxation on stock returns and investment behaviour in India. A dataset comprising of total 169 companies listed in the nifty large midcap 250 index, with data spanning from 2011 to 2024 is taken into consideration. The 10% LTCG tax, introduced by the government in the 2018-19 budget, is examined for its effect on market performance and investor behaviour. The main aim of the research is to determine whether LTCG tax lowers stock returns and encourages investors to hold for a longer period, thus making an investor exhibit less trading frequency. For this, a fixed effects (FE) panel EGLS model is used to study variations in stock returns, while the average holding period of assets is investigated through the generalized method of moments (GMM) model. The findings reveal that the LTCG tax significantly influenced stock returns and the average holding period of assets, with observable changes in investor behaviour. The tax altered trading patterns, leading to adjustments in how long assets were held. A key discovery of the study is that a positive relationship was found between the interaction of LTCG and market capitalization with the average holding period, which indicates that LTCG promotes long-term investment behaviour, mainly among large-cap firms. The results provide valuable insights for policymakers in designing tax policies that balance the need for revenue generation with the goal of maintaining a stable and efficient market.

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Submission ID: 219

Track 04: Finance, Accounting, and Economics

## DOES BIDDERS' COMPLEXITY AFFECT THE MARKET REACTION TO M&A DECISIONS?

*Rajib Chowdhury and John Doukas*

**Abstract:** We examine whether and how bidders' complexity influences investor reactions to merger and acquisition (M&A) announcements. Using an established complexity measure, we find a significant positive relationship between acquiring firm complexity and cumulative abnormal returns (CAR). This suggests that investors perceive more complex firms as capable and valuable participants in M&A activities. This association is stronger for bidders with high operating risk, greater R&D intensity, and larger firm size. We also find that more complex bidders tend to offer higher takeover premiums. Our study contributes to the literature by demonstrating that bidder complexity can shape market reactions to M&A announcements.

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Submission ID: 256

Track 04: Finance, Accounting, and Economics

## Lead Effect of Debt Burden on Household Investment Decision: Insight from Debt Overhang Theory in India

*Akash Kumar Biswal and Dr. Biswajit Patra*

**Abstract:** The paper examined the lead effect of debt burden on household investment with the mediating role of borrowing for productive purposes in India, by exploring both theoretical and empirical evidence. The study uses the monthly household balanced panel data from September 2015 to December 2024, which is collected from CPHS. For the regression analysis, the study has used the fixed effect model, and the fixed effect logit model is employed for the robustness test of this study, which is decided as per the data structure and through some pre-diagnostic tests. The findings of this study reveal that the inverted U-shape association exists between the debt burden and household investment, with the overhang point around 40 percent of their income. However, the mediating role of borrowing for productive purposes with the debt burden of households has a positive effect on household investment. Based on this insight, policymakers should have to fix a ceiling of 40 percent of their income that a household can pay as an EMI, along with government should have to focus more on borrowing for productive purposes to enhance household investment.

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## Timeliness in Loan Loss Provisions Under CECL: Evidence Using Deposit Rates

*Manoj Devarala, Karthik Balakrishnan and Jose Torres*

**Abstract:** Allowing banks to set aside provisions in line with their views about the future fundamental credit quality of loans is at the heart of the recently implemented expected loan loss method (CECL). To what extent do managers incorporate their forward-looking information into loan loss provisions under CECL? Providing empirical evidence on this important question is challenging for researchers because it is impossible to directly observe banks' private information. For example, market metrics capture market's aggregate information but that may not correspond to the bank's information set. We overcome this empirical challenge by focusing on deposit rates as an observable metric of banks' private information. Banks alter their deposit rates based on their information about future economic conditions. Thus, deposit rates serve as an instrument for managers' private information. Employing these rates, we find that banks indeed incorporate their forward-looking information into provisions when they are allowed to do so under CECL framework, making them more timely albeit not fully.

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## Incentivizing Green Strategies: Managerial Incentives and Sustainability Agreements

*Ajay Sharma and Nitin Shahi*

**Abstract:** Welfare effects of sustainability agreements among competitors are widely debated. Recent literature has shown that when consumers value sustainability, sustainability agreements adversely affect investment in sustainability and consumer welfare as compared to the competitive benchmark. On the contrary, we demonstrate that investors incentivize managers to be more aggressive in the presence of sustainability agreements which may increase investment in sustainability. Further, in the presence of such delegation, sustainability agreements are always beneficial for consumers as compared to the competitive benchmark. We use two types of managerial incentive structure, sales delegation and sustainability delegation. We also show that delegation increases both sustainability investment and consumer welfare and is the dominant strategy for the firms. Thus, this study indicates that a more accommodating outlook towards sustainability agreements among competitors may be required.

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## Contagion effects of equity financing announcements within business groups

*Douglas Cumming, Sanchit Jain and Varun Jindal*

**Abstract:** We examine whether announcements of financing decisions by group-affiliated firms have any spillover effects on the value of their member firms. Employing data on rights offerings, private placements of equity, and follow-on public offerings by group-affiliated firms in India, we find that a positive (negative) market reaction to the announcement of a financing decision by a group-affiliated firm also leads to a positive (negative) market reaction for non-event firms within the same business group. Further, this contagion effect is stronger for the group's leading firms, firms that announce relatively large issues of equity, and financially constrained firms. Our results are robust to several checks as well as alternative measures of our main variables of interest.

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Submission ID: 351

Track 04: Finance, Accounting, and Economics

## Vertical Integration and Cost of Private Debt

*Swetha Agarwal*

**Abstract:** I examine the relationship between a firm's degree of vertical integration (VI) and the cost of private debt. My study explores two channels: reduced dependence on the supply chain partners (Resource dependence theory) and decreased information friction. Using mediation analysis, I document that VI reduces customer/supplier concentration, reducing the focal firm's dependence on supply chain partners and leading to a decline in the cost of borrowing. Further, using proxies such as the bullwhip effect, social capital score, analyst following, and forecast, I find that this association is more pronounced in environments with high information friction. Additionally, the association between VI and borrowing cost is stronger for cash-rich and large-size firms. My study contributes to the VI and debt contracting literature by highlighting that savings in financing costs is a critical benefit that managers should incorporate before implementing the VI, and lenders should factor in organizational structure changes in their loan contract terms.

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Submission ID: 449

Track 04: Finance, Accounting, and Economics

## Does agglomeration effects explain the existing taxation regimes?

*Kaushal Kishore*

**Abstract:** We analyze the taxation regimes that emerge when two symmetric countries simultaneously and non-cooperatively choose taxation regimes before competing for foreign investments over two periods with new capital entering the economy each period. The investment is irreversible and a country that attracts investments during the initial period gains agglomeration advantages in attracting investments in the later period. Non-preferential or mixed taxation regimes emerge when the agglomeration effect is relatively small, or the size of the capital entering the economy during the later period is significantly large. A mixed taxation regime where one country adopts a preferential and the other adopts a non-preferential regime emerges when the agglomeration affect is substantial and the size of the capital that enters the economy during the later period is relatively small.

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Submission ID: 452

Track 04: Finance, Accounting, and Economics

### **Banking Against the Odds: Performance and Lending Efficiency of Government Banks during Crisis.**

*M Joel Christopher, Sankarshan Basu, Abhinav Anand and Nitin Vishen*

**Abstract:** Government-owned banks are often inefficient but can stabilise economies during downturns. Using difference-in-differences analyses of Indian banks during the COVID-19 crisis, we show that government-owned banks significantly expanded lending, especially in severely impacted regions. However, contrary to prior literature, these banks outperformed private banks in terms of stock market returns by significantly improving profitability as well as lending quality. We attribute this outperformance to pre-pandemic policy interventions, including the adoption of digital banking and regulator-driven balance sheet clean-ups, which enabled sustainable counter-cyclical lending. Deposit growth and non-banking activities do not explain the observed increases in lending and profitability.

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Submission ID: 595

Track 04: Finance, Accounting, and Economics

### **Can growth seal the renewable energy gap in India? A state-level study using spatial and panel threshold models**

*Sheo Rama*

**Abstract:** India is at a critical stage in its energy transition, balancing rapid economic growth with ambitious renewable energy targets. This study proposes a novel approach to assess state-level

renewable energy (RE) deployment by quantifying the "renewable energy gap," defined as the normalized difference between potential and installed RE capacity. Utilizing a comprehensive panel dataset for 25 Indian states from 2011 to 2022, this study examines the heterogeneous relationship between economic growth and renewable energy gaps using Hansen's fixed-effects panel threshold regression methodology. We identify a significant threshold effect of NSDP per capita levels, revealing that states below the threshold exhibit fundamentally different renewable energy development patterns compared to economically advanced states. Crucially, the study investigates the presence and nature of spatial spillover effects of sulfur dioxide (SO<sub>2</sub>) on the gap, examining how RE development in one state is influenced by factors in the neighbouring states. A threshold of approximately ₹115,875 in per capita NSDP was observed to split the sample into two regimes, revealing distinct income–gap dynamics above and below this threshold. The findings underscore the necessity of differentiated, spatially coordinated, and environmentally integrated policy recommendations to accelerate India's transition towards a sustainable energy future.

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Submission ID: 609

Track 04: Finance, Accounting, and Economics

### Price path convexity and analyst recommendations

*Huzaiifa Shamsi*

**Abstract:** This study examines whether analysts' recommendation changes are influenced by the shape of recent stock price paths—specifically, convex trajectories (decline followed by recovery) and concave ones (rise followed by decline). Such patterns may influence expectations of future returns, with convexity potentially signaling continued gains and concavity suggesting reversals. We investigate whether analysts respond to convex price paths with optimistic recommendations, indicating extrapolative behavior similar to that of retail investors, or with pessimistic recommendations, suggesting a contrarian approach that anticipates mean reversion and corrects investor mispricing. We further explore how this relationship varies with analyst experience, firm-level information asymmetry, and broader market conditions such as uncertainty and investor sentiment. By analyzing these dynamics, the study aims to shed light on whether analysts behave as rational, stabilizing agents or exhibit behavioral biases that may reinforce extrapolation-driven inefficiencies in financial markets.

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Submission ID: 646

Track 04: Finance, Accounting, and Economics

### Sources of Return Variation and Options Pricing: Evidence from Indian Options Market

*Shubhankar Mishra and Sobhesh K. Agarwalla*

**Abstract:** This study examines whether analysts' recommendation changes are influenced by the shape of recent stock price paths—specifically, convex trajectories (decline followed by recovery) and

concave ones (rise followed by decline). Such patterns may influence expectations of future returns, with convexity potentially signaling continued gains and concavity suggesting reversals. We investigate whether analysts respond to convex price paths with optimistic recommendations, indicating extrapolative behavior similar to that of retail investors, or with pessimistic recommendations, suggesting a contrarian approach that anticipates mean reversion and corrects investor mispricing. We further explore how this relationship varies with analyst experience, firm-level information asymmetry, and broader market conditions such as uncertainty and investor sentiment. By analyzing these dynamics, the study aims to shed light on whether analysts behave as rational, stabilizing agents or exhibit behavioral biases that may reinforce extrapolation-driven inefficiencies in financial markets.

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Submission ID: 742

Track 04: Finance, Accounting, and Economics

### **The Clockwork of Democracy: Welfare, Strategy and Electoral Temporality.**

*Rahul Sinha*

**Abstract:** This paper develops a dynamic political game featuring strategic politicians, a continuum of voters, and a special interest group (SIG) of wealthy industrialists under both simultaneous and staggered elections, incorporating a novel electoral-reimbursement mechanism. Inspired by frameworks from Lambertini (2001, 2014) and Manjhi & Mehra (2018), the model examines how the evolution of electoral funds stimulates the trade-off between democratic promises and crony-capitalistic alignments. Voters prioritize public goods and democratic rights, while the SIG offers campaign funding in exchange for regulatory paybacks. Electoral reimbursements, financed through democratic taxation, influence the extent of democratic rights pledged. Remarkably, the closed-loop and open-loop equilibria coincide, implying that the electoral temporality (i.e. whether the elections are staggered or simultaneous) has no noteworthy influence on welfare and socio-political outcomes. The model harvests steady-state saddle point equilibria for the private optimum.

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Submission ID: 878

Track 04: Finance, Accounting, and Economics

### **Green Game Changer: Cognitive-Behavioural Factor Dynamics Affecting Resilience of AI-Gamified ESG Finance Platforms within Multi-Level Ecosystems**

*Shubhrakant Shadangi, Rachna Anand, Anu Bansal and Navmeet Kaur*

**Abstract:** The resilience of AI-gamified ESG finance platforms represents a critical challenge in sustainable finance, where complex technological interventions must effectively support investment decision-making across diverse stakeholder ecosystems. Exploring into the role of cognitive and

behavioral dynamics this research studies the factors influencing platform resilience functioning as barriers, enablers, or dual-natured constructs across market, platform, and user levels and the theoretical frameworks that emerge to explain these dynamics and enable their integration. To address the theoretical integration challenge, we developed Meta-Theoretical Topic Modeling (MTTM), a novel methodology that systematically analyzes literature through cross-theoretical lenses. Analysis of 547 peer-reviewed papers revealed cognitive dimensions aligning with Information Processing Theory (IPT) and behavioral dimensions corresponding to Behavioural Finance Theory (BFT). Through rigorous expert validation using the Delphi technique, we developed 16 Higher Order Constructs organized within a Multi-dimension Multi-level Framework. The framework reveals that platform resilience faces predominantly barrier constructs (9 barriers vs. 4 enablers), with platform-level factors (7 constructs) demonstrating greater influence than market-level (3 constructs) or user-level (6 constructs) factors. Key theoretical contributions include demonstrating the synergistic potential of meta-theoretical integration and extending both foundational theories through systematic combination. Managerially, the framework provides evidence-based guidance for optimizing both information processing capabilities and behavioral interventions in platform design. Policy implications suggest that regulatory frameworks should address multi-level information standardization while promoting platform transparency. The study establishes MTTM as a replicable methodology for theoretical integration while revealing substantial unrealized potential for AI and gamification applications in ESG finance platform optimization.

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Submission ID: 899

Track 04: Finance, Accounting, and Economics

## **An Extended Neoclassical Growth Model Incorporating Water Productivity: Analysis and Empirical Validation in Highly Water-Stressed Nations**

*Jyoti Sharma*

**Abstract:** This study develops an extended neoclassical growth model to examine the critical role of water resources in economic development, empirically validating the impact of water productivity and stress on GDP per capita growth in highly water-stressed nations. The model integrates "water productivity" as an endogenous variable, influencing household utility and production efficiency, with its evolution determined by Total Factor Productivity (TFP) growth and capital accumulation. This extension addresses limitations and empirical contradictions in previous frameworks. The study empirically validates the model using panel data from 16 highly water-stressed countries (2001-2020), employing various econometric tools including Feasible Generalized Least Squares (FGLS). Findings indicate that water stress and population density negatively impact GDP per capita growth, while total water productivity and total annual freshwater withdrawals positively influence it. The study offers crucial theoretical insights and informs policy for sustainable water management.

Submission ID: 900

Track 04: Finance, Accounting, and Economics

## SLUM REDEVELOPMENT AND PUBLIC ECONOMICS: FISCAL SUSTAINABILITY, WELFARE AND POLICY INNOVATION

*Awantika Sharma and Dr. Vikas Kumar Jaiswal*

**Abstract:** This study examines the fiscal sustainability, welfare outcomes, and policy innovations associated with the Dharavi Redevelopment Project (DRP), one of India's most ambitious slum redevelopment initiatives. Using a public economics framework, the paper evaluates how redevelopment programs can balance public investment efficiency with equitable service delivery. Relying on secondary data and simulated econometric models—specifically, a difference-in-differences (DiD) analysis and panel regression—the study compares pre- and post-redevelopment indicators in Dharavi against a control area. Results show significant improvements in sanitation, water access, and school enrollment, with moderate gains in employment and electrification. Fiscal outcomes reveal strong land value appreciation and increased municipal revenue. The findings underscore the importance of policy tools such as Transferable Development Rights (TDRs) and Public-Private Partnerships (PPPs) in enhancing redevelopment outcomes. The paper concludes that with transparent governance and inclusive planning, slum redevelopment can be both socially impactful and fiscally sustainable.

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Submission ID: 934

Track 04: Finance, Accounting, and Economics

## The Impact of History on Internationalization in the Global South: Non-Aligned Movement and Foreign Direct Investment

*Debarati Basu, Shabana Mitra and Sheetal Gupta*

**Abstract:** This paper examines historic non-economic alliances as enablers of economic cooperation between nations to explain internationalization decisions of emerging market multinationals (EMNEs). Non-economic alliances facilitate the exchange of information, knowledge and resources through repetitive interactions which form webs of interconnections and stabilized linkages between nations, increasing learning amongst the members and thus, enabling foreign direct investments (FDI). We empirically investigate the role of South-South country linkages (i.e., Non-Aligned Movement) in facilitating FDI between member nations, conceptualized and grounded within the Linkage-Leverage-Learning strategic framework to discover non-economic determinants of EMNE internationalization. Using panel data of over 100 countries through 2009–2019, we find a significant positive effect of Non-Aligned Movement (NAM) membership on FDI flows between member nations, even after controlling



for other trade agreements. We also analyze the nature of these flows and find that these flows are concentrated between dissimilarly endowed economies, indicating vertical investments by the multinationals.

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Submission ID: 936

Track 04: Finance, Accounting, and Economics

## PRAISE: Platform Resilience through AI Signaling and Efficiency in Derivatives Trading

*Shubhrakant Shadangi, Pawan Chaudhary and Harsh Kedia*

**Abstract:** This research fills the critical gap for enhanced signaling efficiency in derivatives trading platforms where platform resilience emerges through synergistic optimization of information signal quality and operational performance. The research probes how AI and gamification technologies build inherently efficient signaling mechanisms lowering information asymmetries and optimizing transaction costs in one step while overcoming traditional approaches that tackle these elements separately. With a meta-theoretical intermeshing strategy, the authors systematically integrate Signaling Theory and Transaction Cost Economics to understand signaling efficiency phenomena through holistic analysis of 4,000+ theory-specific research articles. Latent Dirichlet Allocation topic modeling was used to theory-specific sub-corpora, which revealed 11 topics from Signaling Theory-based articles and 3 topics from Transaction Cost Economics-based articles, both being centered on AI, gamification, and derivatives risk management. Through expert-guided analysis by the Delphi technique, we developed 62 hybrid labels by fitting contrasting theoretical viewpoints on topic keywords, creating new conceptual bridges between information signaling quality and operational efficiency optimization. These labels were systematically integrated into nine Higher-Order Constructs representing meta-theoretical signaling efficiency capabilities like AI-cognitive intelligence, derivatives risk management, platform asset optimization, trading governance, signal quality optimization, transaction efficiency, signal transmission, market performance, and platform credibility domains. The constructs form the foundation of the Meta RAISE Framework, which maps signaling efficiency capabilities onto five platform resilience processes—sensing, absorbing, recovering, adapting, and transforming—through cyclical AMMO logic with emergency paths for crisis management. The research generates fifteen propositions that span stage-based cyclical relationships, cross-stage moderation effects, and emergency pathway mechanisms enabling adaptive resilience responses. This research provides theoretical contributions in the shape of meta-theoretical signaling efficiency integration and operational suggestions to derivatives platforms seeking resilience development through synchronized gamification and AI projects that improve information quality and operational effectiveness in volatile financial markets.

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Submission ID: 1027

Track 04: Finance, Accounting, and Economics

## Venture capital, business group affiliation, and IPO underpricing: Evidence from India

*Bhuyashi Talukdar and Dr. Rudra Prakash Pradhan*

**Abstract:** This paper is an attempt to examine the validity of the certification and monitoring role of venture capital (VC) investors on firms going public in an emerging market like India. We primarily investigate the relationship between VC backing and IPO underpricing. Further, we investigate the impact of business group (BG) affiliation on this relationship. This study uses robust regression analysis to investigate these relationships using a sample of 510 non-financial firms listed on the Bombay Stock Exchange (BSE) issued during January 2003 and March 2023. The findings highlight that VC backing leads to higher IPO underpricing in India. This challenges the certification and monitoring role traditionally attributed to VC firms in developed markets. We also find that affiliation with business groups results in increased underpricing, which reinforces the tunnelling hypothesis. However, we find that in the case of VC-backed IPO firms affiliated with business groups, the underpricing is significantly lower. This indicates that business group affiliation moderates the relationship between VC backing and IPO underpricing. We also create a matched sample using the propensity score matching technique to ensure the robustness of the results. Our analysis offers significant perspectives for regulators and policymakers, as well as the stakeholders of the equity market in India.

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Submission ID: 1043

Track 04: Finance, Accounting, and Economics

## Dehydrated Minds & Drained Cognition: Visceral Disruptions in Rational Investing

*Shreya Kaushik and Hardeep Singh Mundi*

**Abstract:** This paper examines how physiological states influence individual investment decisions, with a particular focus on the visceral factors of mental fatigue and thirst. Grounded in the theory of visceral influences, the research employs an experimental design to induce mental fatigue through the Stroop task and thirst via a taste test. Study 1 provides empirical support for the hypothesis that mental fatigue adversely affects investment behavior, leading to lower returns on investment (ROI) and a reduced large-to-small bid ratio. Moreover, the moderating role of mindfulness is observed, wherein higher mindfulness mitigates the detrimental effects of mental fatigue on investment choices. Study 2 utilizes a difference-in-differences analytical framework and reveals that participants in the thirst-induced condition perform significantly worse than those in the control group. Notably, the thirst condition is associated with a decline in ROI and a greater tendency to engage in riskier bets. The moderating impact of mindfulness is insignificant.

Submission ID: 1181

Track 04: Finance, Accounting, and Economics

## CAUSATION OR EFFECTUATION: DOES DECISION-MAKING LOGIC MEDIATE THE IMPACT OF FOUNDER FINANCIAL LITERACY ON THEIR BUSINESS PERFORMANCE?

*Kavita Goel, Donald Winchester, Roshni Narendran, Rajesh Rajaguru and Danilo Lopomo Beteto*

**Abstract:** Using the resource-based view and upper echelons theory, this study investigates founder entrepreneurs' financial literacy in the performance of 301 surveyed SMEs in Australia. We empirically evaluate the role of causation and effectuation decision-making logic in mediating entrepreneurs' financial literacy's association with their business performance. The mediation mechanisms are an important step in theorising the role of financial literacy. The survey results show that financial literacy and its segmented competencies (financial knowledge, attitude and behaviour) significantly and positively impact business performance through the effectuation logic. However, under the causation logic, only aggregated financial literacy and one component, financial behaviour, were found to be significant and positive.

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Submission ID: 1201

Track 04: Finance, Accounting, and Economics

## Financial heterogeneity, NBFCs, and investment responses to monetary shocks in India

*Ankit Kumar*

**Abstract:** I examine the impact of financial friction, specifically borrowing from non-bank financial corporation (NBFCs), on firm-level investment responses to the Reserve Bank of India (RBI) monetary policy shocks. Through empirical investigation, I find robust evidence that the impact of RBI's monetary shock is less on the investment when firms have a higher proportionate of borrowing from the NBFCs. This result persists even with secured loans. I find that the response of the firm's investment is about 0.39 units less when firms do a unit larger borrowings from NBFCs. I then develop a quantitative New Keynesian dynamic stochastic general equilibrium model with investment, default risk, and bank and NBFC borrowing to understand the channel. In my model, the bank has leverage constraint arises because of an agency problem, while NBFC just collates the loan form bank and institutional investors to provide credit to the firm. Firms have the choice to borrow from banks or NBFCs. NBFCs demand a higher interest rate on the credit but facilitate a lower loan insurance cost. In equilibrium, firms that borrow from NBFCs respond less because they face a steeper marginal cost of the financing curve. I also explore the two reasons why there will be a higher cost of borrowing from NBFCs. First, until recently, RBI's stringent banking regulations did not apply to NBFCs. In addition, they do not have creditor rights under various regulations, including the SARFECI Act. In particular, lower recovery rights translate into expensive NBFC loans, which results in a higher marginal cost of external financing.

Second, since NBFCs act as a second layer of intermediary, they charge an extra premium on the loan. The estimated model suggests that while both factors influence the higher financing costs from NBFCs, the first factor is the more substantial contributor. In this light, my findings show that the recent decision of the RBI to increase NBFC regulation and the government's decision to extend creditors' rights to them are likely to increase the transmission of monetary policy to private investment by approximately 40 basis points.

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Submission ID: 1243

Track 04: Finance, Accounting, and Economics

## PRODUCT MARKET COMPETITION, FINANCIALIZATION, AND ITS VALUE IMPLICATIONS

*Archana Kumari and Serender Rao Komera*

**Abstract:** An increasing engagement of non-financial firms in financial asset holdings has raised significant concerns among scholars and policymakers. This study explores the firms' investment in financial assets in light of increased product market competition and its value implications in the contexts of G8+5 economies using a difference-in-difference approach. Using significant tariff reduction as an exogenous shock to the product market competition, we find that firms increase their investments in short-term financial assets in the light of increased product market competition. We also report that the firm's investment in short-term (long-term) financial assets in the light of increased business uncertainty is a value enhancing(destroying) strategy. Our findings withstand a series of robustness tests, including alternative model specifications and alternative proxies for product market competition and financialization. We attribute these findings to the "reservoir" effect and "survival" benefits of the short-term financialization. Further heterogeneity analysis reveals that the effect of product market competition on financialization is stronger in the case of smaller firms, which have low growth opportunities and operate in an emerging economy. The findings of this study offer new insights into how firms navigate competitive pressures by increasing their exposure to financial investments.

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Submission ID: 1262

Track 04: Finance, Accounting, and Economics

## Bridging the Policy Gap Between Finance and the Economy: Evidence from India's Green Finance Framework

*Nenavath Sreenu, Sadhana Kumari and Richa Dixit Bajpai*

**Abstract:** This article investigates India's green finance regulations' effects on corporate total factor productivity (TFP), showing the policy mismatch between financial goals and economic outcomes. Green financing policies in India have been linked to TFP decreases, according to firm-level panel data

and a multi-period difference-in-differences analysis. Tighter credit allocation procedures promote environmental goals but limit credit supply to productive enterprises. The analysis also shows that better financial regulation can mitigate these effects and promote more balanced loan allocation without compromising environmental concerns. These findings show that green finance programs in developing countries like India must be carefully designed and regulated to avoid undermining economic productivity while pursuing environmental goals.

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**Submission ID: 1278**

**Track 04: Finance, Accounting, and Economics**

### **Climate Risk: Insurance Firms, Municipal Bonds and the Wrong Way Risk**

*Sanjay Kumar Jain, Amit Garg and Sobhesh Kumar Agarwalla*

**Abstract:** How do P&C insurance firms, as major institutional investors, deal with correlated risk exposure on the underwriting side and municipal bond portfolio in light of the rising climate-related losses? Using coordinated risk management theory, I address this issue by studying the change in municipal bond holdings of states by P&C insurance firms exposed to property losses in the respective states. I find that P&C insurance firms tend to reduce their municipal bond holdings of states with higher property risk exposure, suggesting a preference towards assuming higher underwriting risk (core business risk) and reducing correlated risk in the municipal bond portfolio (non-core business risk). I also show that state-level factors, firm-level factors (internal capital market), and bond-level factors moderate this relationship.

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**Submission ID: 1308**

**Track 04: Finance, Accounting, and Economics**

### **Inter-linkages Between Green Bonds and Global Financial Markets: Evidence from Deep Learning based Copula-LSTM Model**

*Haseen Ahmed, Kavita Berwal and Arushi Mehta*

**Abstract:** This research utilizes a hybrid framework based on Long Short-Term Memory (LSTM) to investigate the dynamic, nonlinear, and regime-sensitive dependence structures between the S&P Green Bond Index (SPGB) and major financial and commodity markets from April 2013 to March 2025. By examining tail dependence and dynamic co-movements, the study reveals complex connections that are frequently hidden by conventional static or linear models. The findings indicate notable asymmetries and multimodal patterns in the interactions between green bonds and other assets like equities, commodities, currencies, crude oil and cryptocurrencies, particularly during times of market stress. The regime-specific behaviour of green bonds questions the traditional belief in their reliable diversification benefits, especially during periods of high volatility. Practically, these findings hold significant

implications for investors, policymakers, and researchers. For portfolio managers, the results highlight that diversification benefits from green bonds are conditional and vary across market regimes, necessitating dynamic allocation strategies. Identifying tail dependencies can be advantageous for risk managers as it enhances the evaluation of systemic risk and the effectiveness of stress testing. For policymakers, grasping these patterns of co-movement is essential for developing robust sustainable finance frameworks, especially considering the noted sensitivity of green bonds to macro-financial elements like the U.S. dollar and crude oil prices.

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Submission ID: 1311

Track 04: Finance, Accounting, and Economics

### Asymmetric Impact of Oil Price Shocks on India's Trade Balance: A Rare Event and Bayesian Logistic Approach

*Meenakshi Kumari and Adarsh Arun Hoskere*

**Abstract:** This study investigates the asymmetric effects of oil price fluctuations on India's trade balance using a combination of nonlinear autoregressive distributed lag (NARDL) models, rare event logistic regression, and Bayesian logistic modeling via PyMC. It incorporates Principal Component Analysis (PCA) to address multicollinearity in oil price lags and evaluates the performance of predictive models under class imbalance. Results confirm the long-run cointegration between oil price movements and trade balance, with positive oil shocks having significantly more adverse effects than negative shocks. The Bayesian approach further enhances predictive robustness and reliability in forecasting rare trade deficit spikes, offering critical policy insights for macroeconomic stability.

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Submission ID: 1329

Track 04: Finance, Accounting, and Economics

### De-risking Finance for India's MSMEs: Identifying and Overcoming Key Barriers

*Dr.Sunrita Chaudhuri, Dr.Karina Bhatia Kakkar and Dr. Parul Sinha*

**Abstract:** At the current crossroad India has to achieve its growth ambitions and meet its sustainability goals. MSMEs contribute about 30% of India's GDP. However access to affordable financing for the MSMEs remains a key barrier hindering their growth and adaptation of sustainability practices. This study, through a comprehensive review of literature, identifies barriers ranging from those specific to MSMEs, to institutional and macroeconomic barriers towards their access to financing. Expert inputs are obtained to determine core barriers out of the identified barriers. Thereafter a second round of survey is conducted to perform decision-making trial and evaluation laboratory (DEMATEL) method. The survey is administered to multiple agents involved in financing MSMEs to evaluate the relative importance of the core barriers and construct causal relationships among them. The results show that



the two primary barriers faced by the MSMEs, which are mostly fragmented, are lack of support and governance by local institutions and lack of standardised credit history information. They increase the perceived credit risk and the risk premium, lead to high transaction costs, create information asymmetry and make the investors less willing to lend. Thus strategic de-risking through blended, public and private financing, strengthening the local governance structure and creating platforms to generate real-time credit information can be the key policy actions to strengthen MSME's access to finance

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Submission ID: 1336

Track 04: Finance, Accounting, and Economics

## MEASURING FINANCIAL INCLUSION MULTIDimensionALLY: EVIDENCE FROM MARGINALIZED COMMUNITIES IN HARYANA

*Mohd Shahid Ali, Monika Mittal and Taufeeque Siddiqui*

**Abstract:** Purpose – This study investigates the multidimensional nature of financial inclusion by empirically assessing the effects of financial access, financial usage, and service quality on the perceived financial well-being of marginalized households in Haryana. The study integrates Financial Intermediation Theory and Diffusion of Innovation Theory to conceptualize and evaluate how institutional factors and individual capacities shape inclusive financial outcomes. Design/methodology/approach – Primary data were collected from 741 respondents residing in rural and semi-urban regions of Haryana through structured questionnaires. Constructs were operationalized via validated Likert-scale measures and analyzed using SmartPLS 4.0. The study proposes a structural equation model in which service quality mediates the relationship between access/usage and well-being, while financial capability moderates the strength of these relationships. Findings – Results reveal that both financial access and financial usage significantly contribute to perceived financial well-being, with service quality acting as a partial mediator. The moderating role of financial capability was statistically significant, particularly in enhancing the positive impact of financial usage. These findings underscore the importance of both supply-side infrastructure and demand-side capabilities in achieving effective financial inclusion. Research implications – The study expands the scope of financial inclusion research by integrating innovation adoption theory and institutional intermediation frameworks. It highlights the need for banks, policymakers, and NGOs to not only enhance service penetration but also build financial capability to maximize the impact of inclusion efforts. Originality/value – This is among the first empirical studies to adopt a dual-theoretical framework for evaluating financial inclusion in India, offering a holistic diagnostic of access, usage, and quality dimensions from both institutional and individual standpoints.

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Submission ID: 1423

Track 04: Finance, Accounting, and Economics

## Elderly rural women and workforce participation in India: Are there symptoms of distress?

*Dr. Smita Roy Trivedi*

**Abstract:** Abstract: Labor force participation among women in India has increased in recent years, with a notable rise in participation among elderly women. While this trend is a positive development, it also raises concerns, as evidence suggests that constrained supply-side choices may be driving this participation. This underscores the importance of understanding the underlying factors influencing labor force participation, especially among elderly women. To address this issue, the paper investigates the impact of household distress, defined using the twin criteria of marital status and head-of-household status, on their workforce participation. Exploiting multiple waves of the Periodic Labour Force Survey (PLFS) spanning 2017 to 2024, the analysis unveils a disquieting underlying trend. First, elderly married women with dependents are less likely to express willingness to work, although conditional upon being selected, they are more likely to be employed, suggesting that their participation may be more of a necessity rather than choice. In contrast, single elderly women, regardless of their dependency status, are generally more likely to express willingness to work and yet, conditional upon selection, their likelihood of actual employment is less compelling. Importantly, for the non-elderly single women the chances of taking up employment conditional upon selection are far more compelling, suggesting role of marital status in influencing choices. From a policy perspective, these findings highlight the critical need to design labor market interventions and social protection measures that consider household-level dynamics. Ensuring economic security for elderly women—especially those in vulnerable household positions—should be a priority in labor and welfare policy design.

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## Track 05: Behavioural Science in Management

Submission ID: 45

Track 05: Behavioural Science in Management

### Workplace Incivility and Its Consequences on Employee Performance: Assessing the Role of Workplace Stress and Emotional Exhaustion in the Private Sector

*Aditi Veda*

**Abstract:** Employee performance is the backbone of achieving competitiveness and sustainability. The goal of this study is to determine the effect of workplace incivility on employee performance. Additionally, job stress and emotional exhaustion play a role in buffering the association between workplace incivility and employee performance. The data were collected by distributing scale to the 300 private sector employees. The SPSS (21) and SPSS (AMOS 21.0) was used to analyse the data, and the model. The research endeavours to elucidate the impact of workplace incivility on employee performance. The findings yield empirical substantiation regarding the influence of job-related stress and emotional exhaustion on the performance of employees. Furthermore, the theoretical framework established in this study may offer valuable insights for forthcoming investigations into turnover intentions. This study contributes to the field of study in the current context, as the study is based on workplace stress and workplace incivility in a private sector. The conservation of resources (COR) theory and Maslow's hierarchy of needs theory provided the grounds for developing the framework. This study also has practical implications, which will respond to the scholarly calls in relation to enhancing the work stress, workplace incivility and consequences literature.

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Submission ID: 92

Track 05: Behavioural Science in Management

### Using Dynamic Financial Incentives to Foster Walking Habit

*Ashish Sachdeva, Jeeva Somasundaram and Lawrence Jin*

**Abstract:** One major challenge of using financial incentives as a behavioral nudge has been that, despite strong short-run effects, people tend to relapse (either partially or fully) when the incentives are removed. This paper investigates if more robust habit formation can be achieved by (a) offering incentives daily, coupled with real-time monitoring through a wearable device; (b) offering personalized goals; (c) introducing dynamic incentives to encourage behavioral momentum; and (d) extending the intervention period to 36 weeks (more than double previous field interventions on physical activity). Five hundred overweight adults were given wearable step-trackers and were incentivized to walk 2,500

more steps every day than they normally would. Participants were randomly assigned to a no-incentive control condition, or one of four treatment conditions that each offered up to SG\$14 (US\$10) per week if step goals were met every day. In “simple gain”, participants earned SG\$2 each day the goal was met. In “simple loss”, participants received an initial endowment of SG\$14, and lost SG\$2 each day the goal was not met. In “gain streak”, participants earned SG\$0.50 the first day the goal was met and earned an additional SG\$0.50 each consecutive day the goal was met. In “loss streak”, participants received an initial endowment of SG\$14, lost SG\$0.50 the first day the goal was not met and lost an additional SG\$0.50 each consecutive day the goal was not met. The incentives increased the frequency of goal attainment by 16-22 percentage points during the 36-week intervention period ( $p < 0.0001$ ). The effect sizes were similar across the four treatment conditions, but gain streak was significantly more cost effective than the rest because of the way the incentives were structured. Most importantly, we found almost perfect persistence of goal attainment rates during the 12-week post-intervention period, with just 1 percentage-point decline in the average goal attainment rate. There is compelling evidence of habit formation: the gain streak and loss streak conditions incentivized participants to exercise in unique path-dependent patterns during the intervention period, and these participants continued to exercise in the respective patterns after the incentives were removed.

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Submission ID: 114

Track 05: Behavioural Science in Management

## A study on Influence of social media on youth investment decisions

*Akash Tomar and Akash Singh*

**Abstract:** This research examines the extent to which social media influences financial content consumption and subsequent investment behaviours. Through hypothesis testing, the study investigates three primary aspects: the perceived utility of social media as a financial information source, the credibility of investment advice disseminated on such platforms, and the identifiable factors that drive investment decisions under the influence of social media. Using Bayesian modeling, ANOVA, and machine learning algorithms (decision trees and k-NN), the study demonstrates strong evidence that social media is not only a widely accepted medium for financial education but also a credible source whose influence significantly shapes investor behaviour. Principal Component Analysis confirms high explanatory power for variables related to trust and social proof, while machine learning models validate the predictive accuracy of influencer-related metrics. Findings imply a paradigm shift in financial literacy, where digital content and peer validation are central to decision-making. The research supports the call for digital financial education and content regulation.

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Submission ID: 201

Track 05: Behavioural Science in Management

## E-therapists and Endurance: Unpacking Career Commitment in the Online Counselling Space

*Vartika Varyani, Amitabh Deo Kodwani and Jatin Pandey*

**Abstract:** Objective: Organisational counsellors offering online mental health services have received little attention in the current research. Counsellor shortages have been reported after COVID-19 because of the dramatic increase in reports of mental health issues (WHO, 2020). To effectively manage the mental health situations of their clients, society needs a more significant number of counsellors dedicated to their profession (Ciccarelli & Meyer, 2006; Töre, 2020). Methods: The current study divides itself into two parts to understand the various pathways leading to online counsellor's career commitment. Both studies focus on relational psychological contract as the antecedent of career commitment; however two studies differ in their paths. The first study focuses on role overload as a mediator, while study 2 focuses on pay satisfaction and understanding the pathway between relational psychological contract and career commitment. Results: The results support our hypothesised model and reveal that both mediators are significantly related to the career commitment of online counsellors. Conclusion: The results of the current study are useful in the new working setup of organisational counsellors, where managers can focus on the variables discussed here to increase the career commitment of their employees.

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Submission ID: 233

Track 05: Behavioural Science in Management

## When Every Rating is a Five: Extracting Signals of Expert Service Quality from Real Estate Agent Reviews

*Sachin Sridhar and Rex Du*

**Abstract:** In real estate, nearly every agent has a five-star review. Yet not every agent delivers five-star outcomes. In credence services where quality is difficult to evaluate even post-consumption, consumers lean heavily on experiential cues in online reviews. But do these cues reliably reflect service effectiveness? Using a large novel dataset linking agent reviews to matched transaction records, we show that consumers frequently mention experiential and affective attributes, such as Responsiveness, Assurance, and Empathy, that are either uninformative about or negatively associated with superior transaction outcomes. In contrast, mentions of Technical Expertise and outcome-specific achievements (sale price and speed) are strongly associated with superior transaction outcomes. We complement this analysis with a field survey of homeowners using best-worst scaling (MaxDiff), which reveals that consumers prioritize outcome- and expertise-related cues over uninformative experiential attributes when evaluating textual content in reviews, though some misalignments exist. Together, these two

studies reveal a systematic disconnect between the textual attributes emphasized by consumers in reviews and those associated with favorable transaction outcomes and perceived agent quality in credence services, thereby offering actionable insights for platforms, consumers, and agents.

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Submission ID: 241

Track 05: Behavioural Science in Management

## Causal exploration of search behavior in drip pricing

*Ariit Sengupta and Himanshu Rathore*

**Abstract:** This paper investigates how dripping of mandatory and optional surcharges affects consumer search and purchase behavior for airlines. It employs a dual-method approach, combining regression analysis on airline pricing data coupled with a series of six controlled behavioral experiments. For the regression analysis, we use web-scraped fare data from Indian domestic carriers collected via the Amadeus Application Programming Interface. To unpack the underlying behavioral mechanisms, we conduct lab experiments testing the roles of search cost, benefit perception, uncertainty, price belief, and goal closure. Findings reveal that consumers search for alternatives under drip pricing scenarios challenging the Diamond paradox. The paper attempts to comprehensively understand how drip pricing influences consumer behavior and provides insights for firms and policymakers.

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Submission ID: 250

Track 05: Behavioural Science in Management

## Mapping the Influence of Psychological Capital on Innovation: An Integrated Mediation and Moderation Analysis

*Shikha Chahar Shikha and Dr Gunjan Tripathi*

**Abstract:** This study aims to examine how Academic Leadership, University Structure, and Psychological Capital influence Innovation among PhD scholars, with a specific focus on the mediating role of Psychological Capital and the moderating role of demographic factors. Despite growing emphasis on research innovation, limited empirical studies have explored how institutional and psychological factors interact to drive innovation in Indian higher education. Using a quantitative descriptive design, data were collected from 400 PhD scholars across Central, State, Deemed, and Private universities in Haryana through a stratified random sampling method; analysis was conducted using Partial Least Squares Structural Equation Modelling (PLS-SEM), including Common Method Bias (CMB) and Importance-Performance Map Analysis (IPMA). The findings reveal that both Academic Leadership and University Structure significantly impact Innovation directly and indirectly through Psychological Capital, which emerged as a strong mediator, while demographic variables showed a negligible moderating effect; the model explained 69.8% of the variance in Innovation and



44.7% in PsyCap. Future research may explore longitudinal designs, cross-regional comparisons, and incorporate additional variables such as digital competencies or institutional culture to further deepen the understanding of innovation ecosystems in academia.

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Submission ID: 266

Track 05: Behavioural Science in Management

### The effects of acute and chronic workload: Is unobserved ability truly fixed?

*Vipra Jain, Vipra Jain and Vipra Jain*

**Abstract:** This study investigates the impact of acute and chronic workload on player performance in One Day International (ODI) cricket from 1971 to 2000. Using a player-match level panel dataset, we estimate the relationship between lagged workload and performance within a fixed-effects framework. The results reveal a systematic time trend in the estimated coefficients, challenging the standard assumption that unobserved player ability is constant over time. The observed temporal variation in the coefficients suggests that latent player-specific factors may evolve over time, potentially biasing causal inference. Our findings highlight the limitations of assuming static unobserved heterogeneity in long-span sports data and propose directions for more flexible approaches that accommodate dynamic effects. These insights extend beyond sports analytics, offering methodological implications for panel data applications in labour, education, and health economics, where evolving individual characteristics are often overlooked. This study contributes to a more nuanced understanding of workload-performance dynamics and encourages more robust modelling strategies in longitudinal performance research.

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Submission ID: 276

Track 05: Behavioural Science in Management

### When Faces Guide Choices: A Behavioural and Neurophysiological Investigation of Product Priming with Familiar and Unfamiliar Faces and Its Influence on Consumer Decision-Making

*Rabia Abhay and Sibin Mathew Nesin*

**Abstract:** The human mind is constantly being influenced by a vast number of external stimuli, that are perceived consciously as well as unconsciously. Unconscious thoughts more than often are seen to precede conscious contemplations of the surroundings. In this era of consumerism, there is a paradigm shift that sees consumers not as rational but as irrational and largely impulse-driven players basing their decisions on motivations which are more often unconscious than conscious. This makes the realm of unconsciousness a field yet to be explored to its full potential and could give valuable insights on how to increase consumer engagement. The Present chapter attempts to explore how subliminal priming of known and unknown human faces could impact product selection and decision-making time of

consumers. The logic behind the exploration stems from the overflow hypothesis that states that any stimulus which is rich in details or is subjectively salient has the potential to ‘overflow’ from the Unconscious to the conscious realm and vice versa. Thus, known human faces even when shown below conscious levels, due to their emotional relevance to the individual have the potential to overflow into their conscious decision-making process, positively affecting their perception towards the primed product in comparison to unknown human faces. 2 (Known face X Unknown face) X 2 (Product selection X Decision-making time) within-subject design was used for the study. A pilot study was conducted to estimate the subliminal threshold of the population. It was found to be 16ms. A stimulus-priming experiment designed in E-Prime software was used to subliminally expose the participants to both known and unknown human faces They were then asked to select a product that they were willing to buy from an option of four products, of which one of the products was primed along with Human face (Known Vs Unknown). The product selection rates as well as the time taken to select the product were recorded. A total of 100 Participants falling in the age category of young adults (18-39) took part in the study. Results show significant difference in response times taken by the participant to select products (Known Vs Unknown face primed conditions), and a trend was seen in the product selection rates too (Known Vs Unknown face primed conditions) under primed and unprimed condition. A neurophysiological study looking into the underlying neural correlates within the brain related to unconscious decision making is planned as the second phase for the study.

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Submission ID: 339

Track 05: Behavioural Science in Management

### **Waste Hierarchical Beliefs and Solid Waste Management Behaviour among Indian Youths: An Empirical Study by Integrating Behavioural Science and Management Domains**

*Dr Sumana Vishnu*

**Abstract:** This study explored the antecedents of solid waste management behavior based on the psychological framework of Ajzen’s theory of planned behavior. Data collected from 840 students of Udupi district; India was analyzed using structural equation modelling. The results indicated that waste reuse, waste recycle, and general disposal behavioural beliefs had a significant impact on attitude, while waste reduction beliefs were not supportive. Also, subjective norms had a significant impact on intention. The study also revealed that perceived behavioral control was also the predictor of intention. This research enhances the understanding of the significance of the role played by determinants of solid waste management behavior, and it opens up a scope for academicians as well as practitioners to design a sustainable environment through further research. Implications drawn through the results of this study may be useful to government bodies in improving the pro-environmental behaviors in the context of solid waste management. The study highlights that behavioural science in management is quintessential to solve real-life problems such as the present case.

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Submission ID: 431

Track 05: Behavioural Science in Management

## FROM TRUST TO TRIGGERS: BEHAVIORAL DRIVERS OF SHAPING FINANCIAL DECISION-MAKING IN SEARCH ENGINE MARKETING

*Dharani D*

**Abstract:** The rise of digital financial services has transformed consumer financial decision-making, with Search Engine Marketing (SEMR) playing a crucial role in influencing choices. This study explores how social proof factors Customer Ratings & Reviews (CRR) and Influencer Endorsements (IE) shape consumer behavior in SEMR-driven environments, questioning whether Perceived Trust & Credibility (PTC) still mediates decision-making. Grounded in Social Proof Theory and behavioural economics, the research examines whether heuristic cues now dominate over traditional trust-based evaluations in financial decision-making. A quantitative, cross-sectional research design was employed, surveying 263 participants actively engaged in financial SEMR. Machine learning techniques (Gradient Boosting, Random Forest) and Structural Equation Modeling were employed to examine the connections between social proof factors, trust, and consumer behavior. Results indicate that CRR and IE significantly predict financial consumer behavior, while PTC does not play a mediating role, suggesting a shift from trust-based assessments to direct heuristic influences. SHAP analysis confirms that CRR holds the highest predictive power, reinforcing the dominance of user-generated content in shaping financial decisions. These findings challenge traditional consumer behavior models, emphasizing the need for stronger governance to counter misleading endorsements and manipulated choices. This study offers policy recommendations to enhance transparency, ethical advertising, and regulatory oversight in financial SEMR. The insights benefit financial institutions, digital marketers, and policymakers, promoting responsible SEMR practices aligned with consumer protection in the digital economy.

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Submission ID: 470

Track 05: Behavioural Science in Management

## Self-control depletion, e-impulse buying tendency and dual process dynamics of FOMO, materialism and hedonism during e-commerce fashion sales

*Ashish Uikey, Devvandya Mishra and Zericho Marak*

**Abstract:** Anchored in Self-Regulation Theory and Dual-Process Theory, the present work contends that fear of missing out, materialism, and hedonism weaken individuals' capacity for self-control, which in turn accelerates their propensity to make impulsive online purchases. It further argues that the depth of price discounts magnifies or mitigates these relationships. Data were gathered from 388 shoppers during a major sales event and examined with Partial Least Squares Structural Equation Modelling together with Necessary Condition Analysis. The model accounts for 65.80 percent of the variance in self-control and 46.70 percent of the variance in electronic impulse buying. Fear of missing out and

hedonism exert direct positive effects on impulsive buying, whereas materialism operates indirectly by first diminishing self-control. Although self-control consistently restrains impulsive purchases, it is not an obligatory hurdle; instead, minimum thresholds of fear of missing out, materialism, and hedonism are indispensable preconditions for elevated impulsive tendencies. Moderation analysis reveals that substantial discounts exacerbate the detrimental influence of fear of missing out and materialism on self-control, yet unexpectedly weaken the erosive impact of hedonism.

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**Submission ID: 533**

**Track 05: Behavioural Science in Management**

### **Effect of Work-Family Conflict on Voice and Employee Engagement: Role of Work-Life Balance and Gender Role Ideology**

*Nidhi Bansal and Upasna A Agarwal*

**Abstract:** Purpose: This study aims to examine the relationship of voice and employee engagement with three forms of work-family conflict (i.e. time-based, strain-based and behavior based) through the lens of gender role ideology's (GRI) mediating effect of work-life balance. Design/methodology/approach- data for the study were collected through a questionnaire survey from 426 dual working employees in India, working in various sectors through snow-ball sampling technique. Findings- The results show that all forms of conflict have an indirect effect on voice and employee engagement through work-life balance (WLB), whereby gender role ideology (GRI) moderates the relationship between two forms of conflict (i.e. times-based and strain-based) and work-life balance relationship. Research limitations/implications- Using self-reported questionnaire data and a cross-sectional research design are the limitations of this study. Originality/value- This study contributes to the work-family literature in several ways: it is one of the few studies, which looks to examine the effect of conflict on voice and employee engagement, mediating the role of work-life balance between work-family conflict and outcomes. However, this study is the first attempt to examine the dimension wise analysis of work-family conflict on voice and employee engagement, mediating role of work-life balance between the work-family conflict dimensions-outcomes relationships. This is also first in examining the role of gender role ideology on conflict dimensions and work-life balance relationship.

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**Submission ID: 562**

**Track 05: Behavioural Science in Management**

### **Role of Workplace Spirituality and Public Service Motivation on public service employee Ethical Behaviour: A multilevel investigation**

*Bhawana Tamrakar and Arjun Shrestha*

**Abstract:** Unethical behavior among public service employees is engraved in the experience of every Nepali citizen and its elimination is an unmet desire of every Nepali citizen. Drawing upon the social cognitive theory and theory of public service motivation, this study investigated the interplay between workplace spirituality, public service motivation and moral disengagement in shaping ethical behavior of public service employees. The study investigates the indirect relationship of workplace spirituality with ethical behaviour through public service motivation. The study also examined the moderating role of moral disengagement in the mediated relationship. Data was collected from 635 public service employees from 107 public service units spread across federal and provincial governments. Mediated moderation analysis using PROCESS in SPSS demonstrated that workplace spirituality positively influences ethical behaviour. The study also found a partial mediating effect of public service motivation in the relationship. Moderating effect of moral disengagement in the indirect relationship between workplace spirituality and ethical behaviour through public service motivation was also found significant. However, the influence of collective workplace spirituality on individual public service motivation was not significant in the nested data structure. Contribution of this study lies in demonstrating the indirect relationship of workplace spirituality with ethical behaviour through public service motivation. Implications of the findings are discussed and limitations of the study are highlighted.

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**Submission ID: 582**

**Track 05: Behavioural Science in Management**

## **Trust in Algorithmic Learning Systems: Insights from ABI and FEAS Among MBA Students in India**

*Murale Venugopalan, Preetha R. and Denna Jose*

**Abstract:** Abstract Orientation Artificial Intelligence (AI) is revolutionizing business education by enabling adaptive, personalized, and simulation-based learning. These technologies provide immersive educational experiences, but student trust remains a crucial factor for their long-term success. Research Purpose This study aims to explore how the cognitive, affective, and behavioral dimensions of Trust interact with the ethical and design elements of AI systems. By investigating these interactions, we seek to understand how they influence student engagement and adoption within MBA programs. Motivation for the Study Despite the increasing integration of AI in education, Trust in AI-based learning environments remains under-theorized, particularly about how students interpret transparency, fairness, and system reliability. This study addresses this gap by providing a deeper understanding of the psychological and ethical mechanisms that shape Trust in AI, especially in high-stakes educational contexts such as MBA programs. Research Approach/Design and Procedure To achieve this, the study employs a mixed-methods design. Structured vignettes and qualitative surveys were administered to 242 MBA students from two top-tier business schools. The ABI model and the FEAS framework were integrated to analyze the data. Main Findings The study revealed that transparency and Explainability significantly influence cognitive Trust, while ethical concerns related to data security shape affective

trust. Additionally, behavioral Trust evolves through immersive engagement with AI tools. Practical/Managerial Implications The findings offer valuable insights for educators and administrators in developing AI-enabled learning environments that promote Trust, mitigate resistance, and enhance learning engagement. Contribution/Value-Add By linking psychological trust theory with AI design ethics, the study offers a dual-framework approach that informs both system development and pedagogical strategy for AI-based education. This contributes to a more comprehensive understanding of the factors that influence student trust in AI-driven learning environments.

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Submission ID: 661

Track 05: Behavioural Science in Management

## The Cognitive Architecture of Cognitive Social Capital: From Execution to Empathy

*Savya N and Shruti Tewari*

**Abstract:** This paper studies the cognitive bases of cognitive social capital; which is the underlying cognitive process that facilitates individuals to develop trust, share norms and communicate with others within a social network. The concept of cognitive social capital has been productively explored in studies of how shared values, trust, and mutual understanding foster co-operative relations and beneficial experience in the community. However, the cognitive architecture of the mental processes that support these social perceptions remains under-theorised. By bringing in multidisciplinary perspectives from organizational theories, cognitive psychology, and neuroscience, this study investigates how the cognitive processes, particularly executive function (e.g., attention, inhibitory control, cognitive flexibility) and empathy (both affective and cognitive aspects), primarily shape the way individuals interpret social cues and internalise norms, thereby developing shared values and trust-based relationships. Using meta-analysis, the paper proposes a conceptual framework that explores cognitive architecture of cognitive social capital. The paper discusses social cognitive processes (social encoding, affective responses, perspective taking and decision making) that primarily allow people to manage complex social information and help in operating in the environment. The paper claims that the cognitive social capital is not merely a product of cultural or structural forces but is also rooted in individual cognitive processes. Through studying the importance of developing cognitive skills as a means of enhancing social capital and community resilience, this framework has implications for both education and community development. This need becomes especially urgent in today's BANI world (Brittle systems, Anxious individuals, Nonlinear change, and Incomprehensible signals) where emotional overload, fragile institutions, and disrupted meaning-making processes increasingly challenge coordinated social action. In these situations, the cognitive processes that allow empathy, flexibility, become necessary and imperative for social aggregation to sustain.

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## Investigating the herding behaviour in various cryptocurrency industries

*Vasanthi Mamidala*

**Abstract:** Cryptocurrencies, a form of electronic money on the blockchain, have become a notable alternative investment due to digitalisation, offering portfolio diversification and promising returns. Despite growing interest, research gaps persist in understanding investor behavioural biases in this market. This study examines unconditional and conditional herding behaviours in six major cryptocurrency industries (Asset Management, Marketplace, Enterprise Solutions, Payments, Web 3.0, and Medium of Exchange) using the Chang et al. (2000) model. Findings reveal that herding behaviour is present in the Asset Management, Marketplace, and Medium of Exchange industries, while anti-herding behaviour is observed in the Payments and Web 3.0 industries. It also explores the relationship between herding behaviour coefficients and the crypto Fear and Greed Index (FGI) through wavelet coherence analysis. The results of the wavelet analysis show that herding behaviour influences market fear and greed, with variations across industries. Further, Findings demonstrated that there is significant coherence between the herding coefficients and FGI at various points in time, and at different levels. The findings also show a lead-lag relationship between the herding coefficients and FGI at different frequency levels. This study has both theoretical and practical implications. Theoretically, this study enriches the existing literature on behavioural finance and cryptocurrencies. It also uniquely adds the industrial herding behaviour in the cryptocurrency literature. Moreover, it adds to the literature on the interconnectivity between herding and the crypto fear and greed index. Practically, this study suggests that investors can make informed investment decisions by diversifying their portfolio further by incorporating cryptocurrencies that portray herding and anti-herding behaviour. Moreover, it also suggests that policymakers initiate industry-specific policies to overcome the herding behaviour in the market.

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## Price Anchors and Market Dynamics: A Quasi-Experimental Study of Investor Behavior

*Riya Arora and Madhumathi Rajendran*

**Abstract:** In an increasingly unpredictable market environment, gaining insight into the cognitive processes that influence investor behavior has become essential. Although anchoring behavior is widely acknowledged, its interaction with changing market conditions—such as volatility and price trajectory—remains underexplored. This study addresses that gap using a quasi-experimental approach

to evaluate how market volatility and price trajectory influence decision behavior. A total of 186 participants with investment experience took part in a simulated trading experiment featuring four distinct market scenarios derived from combinations of volatility (stable vs. volatile) and market trajectory (up-down vs. down-up). Participants viewed monthly price charts and made buy, sell, or hold decisions. Anchoring behavior was assessed using both a regression model and a ratio-based Anchoring Index (AI). The results demonstrate that such biases are significantly more pronounced in volatile and down-up trending markets, where participants were more likely to sell as current prices approached prior highs. These anchor-driven decisions often led to reduced return on investment, highlighting the practical cost of cognitive shortcuts. The findings provide strong support for the Adaptive Market Hypothesis, showing that heuristic use is sensitive to environmental triggers. This study contributes to behavioral finance literature by offering empirical evidence on the conditional nature of anchoring and suggests actionable insights for investor education, behavioral tools, and policy frameworks aimed at improving decision quality in dynamic trading environments.

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Submission ID: 993

Track 05: Behavioural Science in Management

## Trust as a Dynamic Psychological Contract in Platform-Mediated Services: A Dual-Process Behavioural Framework

*Manabhanjan Sahu*

**Abstract:** Purpose This paper proposes and empirically demonstrates the concept of Trust-as-a-Service (TaaS)—a co-constructed, market-driven construct that describes the process of trust formation and emergence in platform-mediated service partnerships. This study investigates and explains the way in which relational cues and functional cues affect trust, as well as the moderating role of customer relationship duration. Design/Methodology/Approach A cross-sectional, quantitative survey was carried out on a sample of 677 respondents who had used platform-based providers of services in India. Eight trusts were measured: Similarity, Empathy, Politeness, Competence, Customization, Reliability, Promptness and Length of Relationship. Main effects and moderation hypotheses testing were done by modeling the variables in a hierarchical regression with an interaction structure. Findings Findings show that relational cues (Similarity, Empathy, Politeness) play a significant role in determining trust during the early relationships but fade away with time. By contrast, functional cues (Competence, Customization, Reliability, Promptness) are predictive of long-term relationships. Length of relationship was not directly related to trust nor moderated the impact of any of them, although overall relationships were significant and confirmed the presence of a time pattern in the mechanisms of trust formation. Originality/Value The paper will help develop a more experience-based model of interpreting trust in digital service platforms. It connects to an affective and cognitive view of trust and points out

that trust is a co-produced and dynamic rather than a fixed act of believing. The TaaS model offers theoretical and empirical lessons for building trust in digitally mediated service spaces.

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Submission ID: 1049

Track 05: Behavioural Science in Management

## Understanding Business School Strategies for FT Global *MBA* Rankings: A Behavioural Theory Perspective

*Neelagriva Sodinapalli , Aditya Christopher Moses , Lakshmi Goyal*

**Abstract:** MBA rankings have become key indicators of performance, influencing public opinion on institutional excellence and strategic positioning of business schools worldwide. Among the various rankings, Financial Times (FT) Global MBA Rankings carry a significant weight, shaping students' enrolment decisions, faculty hiring, and institutional partnerships, thus playing a key role in how business schools compete in global market. Consequently, institutions worldwide invest heavily to achieve and maintain favourable rankings, with strategically responding to ranking changes. Understanding these strategic responses is important, as they inform the strategic formulation and decision-making of the institutes.

Although the rankings are popular and significant, less attention is paid to the specific strategic behaviours of business schools in response to ranking fluctuations. Addressing this gap, this study, using the Behavioural Theory of the Firm (BTF) and Performance Feedback theory, aims to explore how business schools strategically respond to fluctuations in the FT Global MBA rankings. Specifically, the study examines how positive and negative performance feedback influence the strategic decision-making of these institutions, thereby providing insights into the different types of decisions that business schools make under ranking pressure.

Understanding these institutional responses to rankings requires examining existing research on how rankings have shaped business school behaviour and strategic decision-making. Research on business school rankings offers significant insights into their impact on institutional strategies and stakeholder perceptions. Devinney, Dowling, and Perm Ajchariyawong (2008) examined the Financial Times MBA rankings, noting that while they influence institutional reputation, they do not necessarily reflect educational or teaching quality. Espeland and Sauder (2007) provided a sociological understanding of how rankings shape institutional behaviour through mechanisms of commensuration and reactivity, highly relevant to administrative decision making in higher education. Gioia and Corley (2002) examined the tension between image-driven strategies and substantive educational success, observing that business schools face increasing pressures to prioritize their visible performance metrics, often driven by business school rankings. Snelson-Powell, Grosvold and Millington (2016) discussed institutional decoupling, analysing how business schools symbolically adopt sustainable practices to maintain legitimacy without real change in their core operations.

Collet and Vives (2013) offered a broader view of the ongoing global shift of business education dominance from the West to Asia, a transition influenced by global ranking systems that reward specific configurations and behaviours. Collectively, the literature highlights the multiple, complex ways rankings and preferences can influence strategic decision-making, particularly within business schools and higher education in general. Understanding how business schools strategically navigate under ranking pressures, using theoretical frameworks like the Behavioural Theory of the Firm (BTF) and Performance Feedback theory, offers valuable insights into broader organizational dynamics and decision-making processes.

To understand how strategic responses develop, this study draws on two complementary theories: the Behavioural Theory of the Firm (BTF) (Cyert & March, 1963) and Performance Feedback theory (Greve, 2003). The BTF proposes that firms do not aim to optimize profits, rather they seek satisfactory solutions that are ‘good enough,’ due to bounded rationality. Similarly, organizations, including business schools, set aspirational performance targets rather than optimising. When they fail to meet the targets, such as falling behind in FT MBA rankings, they perceive this as a problem. This triggers a problemistic search for solutions to the gap (Argote & Greve, 2007).

Building on this, Performance Feedback Theory examines the organizational behaviours and decision-making are driven by the performance shortfalls relative to aspirational targets (Greve, 2003). This theory differentiates between responses to positive and negative feedback. Positive feedback encourages organizations to maintain their current performance level by adopting conservative strategies. Conversely, negative feedback motivates organizations to engage in more aggressive, risk-taking strategies to reach their aspirational targets (Sobrepere i Profitos, Keil, & Kuusela, 2022).

Integrating these theories provides a framework for understanding strategic responses to rankings. Business schools adjust their strategic decisions based on ranking fluctuations, depending on whether they are above or below their aspirational targets. This perspective offers a lens through which business school behaviours, triggered by ranking changes, can be systematically analysed. This explains why specific strategic decisions are made under varying performance feedback conditions.

Drawing on the BTF and Performance Feedback theory, this study suggests that the nature of performance feedback, positive or negative, influences the risk orientation and strategic actions of business schools. Business schools experiencing positive feedback (exceeding the target) are more likely to engage in conservative strategies to consolidate their position. Conversely, when they experience negative feedback, they are more likely to engage in high-risk taking strategies to restore prior performance levels. Accordingly,

H1: The intensity of negative performance feedback is positively associated with aggressive risk-taking. H2: The intensity of positive performance feedback is positively associated with conservative risk-taking.

To examine the hypotheses, the study draws on archival data from the FT Global MBA Rankings for 2011-2025. The rankings data were created by extracting indicator-level data available in FT’s Business Education website, while definitions and descriptions of the indicators were taken from archived pages. The key indicators have been matched across years, and organized into a panel format, enabling the tracking of school performance over time. For this study, only indicators which have consistent definitions and data availability were used to ensure methodological consistency across years.

The study will explore how business schools respond to the changes in their rankings by examining patterns in specific FT indicators over time, revealing potential strategic behaviour. The analysis aims to identify general trends in how institutions respond to both upward and downward shifts in their rankings. Specific analytical techniques will be chosen based on the structure of the data and nature of emerging patterns. Ultimately, the study seeks to better understand the types of decisions schools tend to make when faced with ranking pressures.

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Submission ID: 1095

Track 05: Behavioural Science in Management

## Sacred Marketing: Consumer Perceptions of Brand Participation in Spiritual Events – A Study of Maha Kumbh 2025

*Sidhharrth S Kumaar*

**Abstract:** This study looks at how spirituality and brand strategy are changing by looking at how people felt about brand involvement during the Maha Kumbh Mela 2025, which is one of the biggest religious events in the world. This study looks into whether corporate involvement in spiritual events makes the venue more or less holy in the eyes of devotees as these events become more popular. Using a mixed-methods design, the study surveyed 10,000 people who attended and did 100 in-depth interviews with pilgrims, saints, marketers, and people who lived in the area. The results show that people can tell the difference between brands that help the spiritual environment by providing meaningful service (sewa) and those that are only there to be seen or promoted. Ayurveda, hygiene, and water utility were very popular, but luxury, entertainment, and unrelated fintech brands were seen as disruptive unless they showed that they fit in with the culture and were useful. Emotional resonance, language sensitivity, and symbolic harmony were found to be important factors in determining trust and brand choice after an event. These opinions were influenced by demographic aspects like gender, age, city tier, and religiosity. This shows that brands need to have tactics that are layered and culturally sensitive. The study adds to the growing field of sacred marketing by giving brands a strategic and moral framework for how to act respectfully in spiritual settings, where presence must be purposeful, messaging must be respectful, and trust must be earned through humility, contribution, and cultural resonance.

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Submission ID: 1125

Track 05: Behavioural Science in Management

## Linking Job Autonomy and Gig Workers' Performance: The Serial Mediating Roles of Work-Life Balance and Job Engagement

*Gaurav Deep Rai*

**Abstract:** This study investigates the impact of job autonomy on gig workers' performance, examining both its direct effects and its indirect effects through the sequential mediation of work-life balance and job engagement. A survey was conducted among location-based gig workers in India, yielding 459 valid responses for analysis. Using the PROCESS macro (Model 6), the findings reveal that job autonomy significantly enhances gig workers' performance, both directly and indirectly by fostering better work-life balance, which subsequently promotes higher job engagement. These results underscore the critical



role of job autonomy in gig platforms to improve engagement and work-life integration, thereby enhancing performance outcomes for gig workers. By empirically validating a serial mediation model within the gig economy, this study extends the job demands-resources and self-determination frameworks to a rapidly expanding yet under-explored segment of the global workforce.

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Submission ID: 1169

Track 05: Behavioural Science in Management

## MANIFESTATION OF GENDER MICROAGGRESSIONS AND ITS EFFECT ON CAREER GROWTH OF WOMEN EMPLOYEES; AN EMPIRICAL STUDY

*Priya P and Sreejith Ss*

**Abstract:** Gender microaggressions are subtle forms of sexist slight that women confront on a daily basis that are intended to create and maintain a normative and permissible environment where women are assigned a secondary status. This work aims to explore through quantitative analysis the effect of manifestation of gender microaggressions at workplaces on women's career growth. Multiple regression analysis was carried on a randomly selected sample of 421 women employed in the Indian banking and finance sector. The manifest constituents of gender microaggressions were seen to negatively affect the career growth of women. This is the first study to address and provide empirical evidence to, how the second generation subtle bias prevalent at workplaces can have a detrimental effect on the professional lives of women. Practical implications of the study are further discussed.

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Submission ID: 1258

Track 05: Behavioural Science in Management

## "From Order to Opinion: A Comprehensive Sentiment Analysis of Bistro's Fast Food Delivery Service and Customer Perception in the Competitive Food-Tech Ecosystem"

*Nisha Francis, Reshma K J and Nitu Ghosh*

**Abstract:** Bistro, a fast-food delivery platform in India, is owned by Blinkit, an entity that is also a subsidiary of Zomato. It is a standalone platform, not integrated with Zomato, and it operates with its independent team. Bistro is your go-to destination for quick and delicious food delivered instantly, and it guarantees a prompt delivery of your preferred cuisine, whether it be your morning chai or expertly cooked momos. Bistro's objective is to revolutionise convenience through rapid delivery, enabling

people across India to conserve time while relishing smooth, high-quality experiences that fulfil their cravings without sacrificing quality or hygiene. This study aims to investigate customer perceptions and satisfaction levels regarding bistro services. A sentiment analysis is carried out on 1000 web-scraped customer reviews of Bistro to comprehend customer perceptions regarding their products and services using Python in Google Colab. SBERT-based embeddings and K-means clustering are used to cluster the reviews into five key topics—service quality, app quality, overall satisfaction, order delivery, and food quality. Further, the sentiment of each cluster is estimated with positive, neutral, and negative sentiment polarities. Results indicate that customers have highly favourable judgements regarding food quality, service quality, and app quality; however, order delivery received the most unfavourable sentiment, highlighting it as an area for improvement. A decrease in rating patterns throughout June is again a concerning issue. The results of this study will aid Bistro leadership in understanding the competitive food-tech industry. In addition, the study facilitates an analysis of customer views regarding online fast-food deliveries.

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Submission ID: 1343

Track 05: Behavioural Science in Management

## Internal Marketing and Job Performance: Analyzing the Mediating Effects of Employee Competencies.

*Dr. Nirajana Das and Dr. Anindita Das*

**Abstract:** 1. Introduction In today's service-dominant business environment, organizations recognize that internal stakeholders—employees—play a pivotal role in delivering competitive advantage. Internal Marketing (IM), first conceptualized by Berry (1981), emphasizes treating employees as internal customers and aligning organizational strategies to improve employee motivation, satisfaction, and performance. In sectors like banking, where customer interaction, compliance, and adaptability are critical, leveraging internal marketing becomes a strategic necessity. However, while many studies have examined the link between internal marketing and outcomes like job satisfaction or commitment, the mechanisms through which internal marketing improves employee performance—particularly through employee competencies—remain underexplored, especially in developing economies like India. This study investigates the mediating role of employee competencies in the relationship between internal marketing and job performance in the Indian banking sector using Structural Equation Modeling (SEM). 2. Literature Review Existing literature supports the argument that internal marketing improves employee-related outcomes. Ahmed and Rafiq (2003) emphasize that internal marketing initiatives—training, communication, and rewards—are essential in building a productive and motivated workforce. Research by Frye et al. (2019) and Huang & Rundle-Thiele (2014) links IM practices to improved employee engagement and satisfaction, which subsequently influence performance. However, recent scholarship points to a

deeper mediating role of employee competencies, which act as enablers for performance outcomes (Spencer & Spencer, 1993). Competencies such as analytical thinking, leadership, and customer orientation translate organizational initiatives into individual and team-level performance. Verma and Raj (2020) argue that in technology-driven workplaces, internal marketing must focus on competency development—especially in digital skills and adaptability. While Bal and Davoudi (2020) highlight the mediating role of job satisfaction in IM–performance linkages, few studies have empirically validated competencies as mediators. Most of this research has been concentrated in hospitality and health services, with limited focus on Indian banking—a highly regulated and transformation-driven sector. This study fills this gap by empirically validating competencies as the mediating mechanism between internal marketing and job performance in Indian banks.

3. Objectives This research aims to: • To assess the direct influence of internal marketing on employee competencies. • To examine the impact of employee competencies on job performance. • To investigate the mediating role of employee competencies between internal marketing and job performance. • To generate actionable insights for enhancing internal marketing strategies in the Indian banking sector. 4. Methodology This is a quantitative, cross-sectional study conducted with 500 employees from public, private, and cooperative banks across Rajasthan, India, selected through stratified random sampling to ensure representativeness across clerical, officer, and managerial levels. The study utilizes validated constructs: • Internal Marketing (IM): Internal communication & leadership, training & rewards, and empowerment & incentives (Ahmed & Rafiq, 2003). • Employee Competencies (EC): Achievement orientation, analytical thinking, managerial courage, and customer service orientation (Spencer & Spencer, 1993). • Job Performance (JP): Core, extra-role, adaptive, and proactive behaviors (Campbell, 1990; Griffin et al., 2007). Instrument reliability was established through Cronbach's alpha ( $> 0.78$ ), while EFA and CFA confirmed construct validity. Structural Equation Modeling (SEM) was used to test direct and mediating effects. Model fit was evaluated using standard indices (CFI, TLI, RMSEA, SRMR). 5. Results The measurement model showed strong validity and reliability (Composite Reliability  $> 0.80$ ; AVE  $> 0.62$ ). The SEM results indicated: • A significant positive effect of internal marketing on employee competencies ( $\beta = 0.68$ ,  $p < 0.001$ ). • A strong positive relationship between employee competencies and job performance ( $\beta = 0.71$ ,  $p < 0.001$ ). • A significant but weaker direct effect of internal marketing on job performance ( $\beta = 0.45$ ,  $p < 0.05$ ). The mediation analysis revealed that the indirect effect of IM on JP via EC ( $\beta = 0.48$ ,  $p < 0.001$ ) exceeded the direct effect, confirming partial mediation. The total effect was significant ( $\beta = 0.71$ ,  $p < 0.001$ ), highlighting competencies as the key conduit through which internal marketing improves performance.

6. Discussion This study validates the proposition that internal marketing is most effective when it develops core employee competencies, which in turn drive superior job performance. These findings advance internal marketing theory by positioning competencies as an under-explored but essential mediating mechanism in the IM–performance relationship. From a practical perspective, HR and business leaders in banking must view internal marketing not as isolated communication or training initiatives, but as a strategic tool for talent development. Given the increasing demand for digital, analytical, and customer-focused capabilities in banking, the competency framework provides a pathway for targeted development and performance enhancement. This study is especially relevant in India, where banks are rapidly digitalizing, and where employee preparedness plays a vital role in organizational agility and service delivery. 7. Conclusion The findings affirm that employee competencies significantly mediate the effect of internal marketing on job performance in the Indian banking context. Internal marketing strategies when aligned with competency development—yield stronger performance outcomes than direct interventions alone. This study offers a novel contribution

by integrating internal marketing, competency theory, and job performance models in a single empirical framework. Future research should explore this model in other service sectors and consider longitudinal designs to assess how internal marketing initiatives sustain competency development over time. Nevertheless, the current results offer both theoretical innovation and practical value for HR and marketing strategists aiming to build high-performing organizations from the inside out.

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Submission ID: 1362

Track 05: Behavioural Science in Management

## ANALYZING THE MOBILE APPLICATION-BASED TRADING IN STOCK MARKET: PERCEIVED EASE OF USAGE LEADING TO INVESTOR SATISFACTION

*Asif Hasan and Swati Gupta*

**Abstract:** Financial Industry is transforming in providing services to the stake holders. Many steps have been taken by the regulatory authority to conduct transparent operation in equity market. One of the recent development occurred in the trading is usage of mobile based trading application that has contributed significantly in the happening of financial transactions. Investors are using hugely mobile based trading application and this platform is in development face. This study investigated the determinants that influenced the satisfaction of investors who are using the mobile based trading applications. Investors feedback has been taken to explore the factors which are influencing the investor satisfaction. Structure equation modelling has been used to analyse the collected data from the investors. Result revealed that ease of usage which has been represented by three factors technology comfort, interface clarity, user friendly are influencing perceived platform security and investor satisfaction positively. Perceived platform security is mediating between the technology comfort, interface clarity, user friendly and investor satisfaction. Future study can be conducted to investigate the moderator between the same independent and dependent variables.

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Submission ID: 1399

Track 05: Behavioural Science in Management

## The Precognitive Consumer: Neuroeconomic and Parapsychological Insights Into Dream-Influenced Decision Making

*Akshita Parmar*

**Abstract:** This paper investigates the phenomenon of precognitive dreams - dreams that seemingly predict future events and their underexplored influence on consumer behavior. Drawing on insights from

neuroscience, psychology, parapsychology and behavioral economics, I develop a multidisciplinary model of dream-influenced economic decision-making. Through a mixed-methods study involving 300 survey participants and 25 in-depth interviews, I identify behavioral patterns driven by subconscious beliefs in precognition. Results suggest a significant correlation between precognitive dream beliefs and heightened intuition-driven economic behavior. These findings challenge traditional rational-choice models, calling for a neuro-parapsychological rethinking of behavioral decision-making. Practical implications include ethical, belief-sensitive consumer engagement strategies in modern management and organizational behavior.

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Submission ID: 1400

Track 05: Behavioural Science in Management

### “Let’s shop!” – An Eye-Tracking Study

*Benaifer Paula Fernandes, Dr. Keerthana Kapiley and Ramesh Mishra*

**Abstract:** The interlocutor effect, which refers to how a person’s opinions, thoughts, and personality influence others, significantly impacts online shopping decisions. This influence is manifested through product reviews, social media interactions, and direct communication. This study aimed to investigate the influence of interlocutors’ impulsive buying behavior on participants’ purchase decisions in an online shopping context. Thirty adult female participants took part in the study. They were first shown videos of two interlocutors buying behavior (one with high impulsive purchase tendencies and other with less impulsive), followed by participation in an eye-tracking task while viewing kurta set product pages. Each trial was conducted in the presence of an interlocutor (high or low impulsive). The results suggest that in the presence of the highly impulsive interlocutor, participants allocated greater attention to the price variable. Conversely, in the presence of the low impulsive interlocutor, participants fixated more on the product description, indicating greater interest in product quality-related information. These results highlight a direct relationship between the interlocutor’s buying behavior and participants’ attention to key product cues price, product reviews, and product description (dependent variables), and the order in which these cues are visually processed during online shopping.

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## Track 06: Transportation and Logistics

Submission ID: 14

Track 06: Transportation and Logistics

### SMART LOGISTICS ADOPTION AND FIRM PERFORMANCE: UNRAVELING THE MEDIATING AND MODERATING ROLES OF SUPPLY CHAIN INTEGRATION AND DIGITAL MATURITY

*Abhishek Shrivastav and Dr. Ankita Srivastava*

**Abstract:** 1. Introduction Smart logistics platforms are revolutionizing supply chain management by using cutting edge technologies into logistics operations. As global markets become increasingly complex and competitive, firms are compelled to adopt innovative logistics solutions to ensure responsiveness, agility, and efficiency. This study examines the impact of smart logistics platform (SLP) adoption on firm performance (FP), taking into account the mediating effect of supply chain integration (SCI) and the moderating influence of organizational digital maturity (ODM). Although various studies highlight the importance of technology in logistics, there remains a gap in understanding how these technologies translate into measurable firm performance outcomes, particularly when accounting for integration capabilities and organizational readiness. The research addresses a critical question: How does the adoption of smart logistics platforms influence firm performance, and what roles do supply chain integration and digital maturity play in this relationship? This inquiry is especially relevant for firms navigating digital transformation in the context of globalized, data-driven supply chains. 2. Literature Review Smart logistics adoption encompasses the use of technologies like AI-driven analytics, real-time tracking, and cloud platforms to enhance logistics decision-making and coordination (Wang et al., 2019; Yoon & Lee, 2022). These technologies are known to improve delivery speed, transparency, and cost efficiency. Supply chain integration (SCI) refers to the extent of collaboration and coordination across internal departments and external partners. Flynn et al. (2010) and Frohlich & Westbrook (2001) emphasized that SCI enables the seamless flow of information and materials, which is critical for leveraging logistics technologies effectively. Organizational digital maturity (ODM), defined as the strategic and operational readiness of an organization to deploy digital technologies (Westerman et al., 2014), plays a crucial role in technology adoption outcomes. Firms with high digital maturity can better align technological tools with strategic goals and employee capabilities. While past studies individually explore SLP, SCI, ODM, and FP, few have investigated the interaction among all these constructs. This study addresses this gap by modeling SCI as a mediator and ODM as a moderator between SLP and FP. 3. Objectives I. To assess the direct impact of smart logistics platform adoption on firm performance. II. To examine the mediating role of supply chain integration in the relationship between smart logistics adoption and firm performance. III. To explore the moderating effect of organizational digital maturity on the relationship between smart logistics adoption and firm performance. These objectives aim to contribute a more nuanced understanding of how digital transformation in logistics functions within broader organizational and supply chain contexts. 4.



**Methodology** The study employs a quantitative and cross sectional research design. A structured questionnaire based on validated scales was distributed to firms actively engaged in supply chain and logistics activities. The key constructs—SLP, SCI, ODM, and FP—were measured using 21 items rated on a Likert scale. Respondents included logistics managers, operations heads, and IT executives from medium to large organizations. The sampling strategy ensured representation across industries such as manufacturing, retail, and logistics services. Exploratory and confirmatory factor analyses (EFA & CFA) were used to validate the measurement model. Structural Equation Modeling was applied to test hypotheses and examine relationships between constructs. Moderation and mediation were analyzed using interaction terms and indirect effect modeling. SEM was appropriate due to its ability to assess complex relationships between latent variables. Validity and reliability were ensured through Cronbach's alpha, Composite Reliability (CR), and Average Variance Extracted (AVE), all of which met or exceeded standard thresholds ( $\alpha > 0.70$ ;  $AVE > 0.50$ ;  $CR > 0.70$ ).

**5. Results**

**Reliability:** All factors show high internal consistency ( $\alpha \geq 0.876$ ) and strong composite reliability ( $CR \geq 0.880$ ).

**Convergent Validity:** All AVEs exceed 0.5 confirming items strongly represent their constructs.

**Discriminant Validity:** All MSVs are lower than AVEs proving constructs are distinct. The measurement model is reliable and valid.

**Hypothesis 1 (Direct Effect):** Supported. H1: The adoption level of smart logistics platforms has a positive and significant effect on firm performance.

**Hypothesis 2 (Mediating Role):** Supported. H2: Supply chain integration mediates the relationship between smart logistics adoption and firm performance. The IV does not have a significant direct effect on the DV when the mediator is included. This suggests full mediation (the mediator fully explains the IV-DV relationship). Indirect Effect ( $\beta = 0.111$ ,  $p = 0.001$ ) The mediator significantly carries the effect of the IV to the DV. The effect size (0.111) is smaller than in Analysis 1 but still meaningful. Total Effect ( $\beta = 0.177$ ,  $p = 0.001$ ) The overall effect of the IV on the DV is significant, but this is entirely due to the mediator. Full Mediation – The IV's effect on the DV operates only through the mediator (no direct effect remains).

**Hypothesis 3 (Moderating Role):** Supported H3: Organizational digital maturity positively moderates the relationship between smart logistics adoption and firm performance, such that the relationship is stronger for firms with higher digital maturity. For every one-unit increase in the moderator, the relationship between the IV (implied) and DV (Zf4) decreases by 0.374 units. The negative sign indicates a buffering effect (the moderator weakens the IV-DV relationship). Standard Error (0.028): Small S.E. relative to the estimate suggests high precision in the coefficient. Critical Ratio (C.R. = -13.218): The large absolute value ( $|t| > 2.58$ ) signals high statistical significance ( $p < 0.001$ ). The moderator has a large effect size (Cohen's rule:  $|\beta| > 0.5 = \text{large}$ ). A 1-SD increase in the moderator reduces the IV-DV relationship by 0.557 SDs. Moderator Effect is Significant: The interaction term (Moderator  $\times$  IV) is statistically significant ( $p < 0.001$ ), confirming moderation. Direction of Moderation: Negative estimate (-0.374 unstandardized; -0.557 standardized)  $\rightarrow$  The moderator weakens the IV-DV link. Effect Strength: Standardized  $\beta = -0.557 \rightarrow$  Practically meaningful (large effect). The slope of IV  $\rightarrow$  DV changes based on the moderator's value. Higher moderator values flatten the slope by reducing IV's effect. Strong and significant moderation effect. The moderator substantially reduces the IV-DV relationship with a large effect size.

**6. Key Findings:** Direct Effect: Smart logistics adoption positively influenced firm performance ( $\beta = 0.305$ ,  $p < 0.001$ ), supporting H1. Mediating Effect: Supply

chain integration fully mediated the relationship between SLP and FP (indirect effect  $\beta = 0.208$ ,  $p < 0.001$ ). When SCI was included, the direct effect of SLP on FP became non-significant, indicating full mediation. Moderating Effect: Organizational digital maturity had a significant negative moderating effect ( $\beta = -0.557$ ,  $p < 0.001$ ), suggesting a buffering role. Higher ODM levels reduced the strength of the SLP-FP relationship. Model Fit Indices: RMSEA = 0.028, CFI = 0.992, TLI = 0.991, GFI = 0.898, CMIN/DF = 1.136. All indicators point to an excellent model fit.

**7. Discussion** The findings confirm that smart logistics platforms contribute positively to firm performance, but this impact is significantly channeled through supply chain integration. This supports prior literature emphasizing the importance of coordinated processes in leveraging digital tools (Flynn et al., 2010). The moderating role of ODM presents a surprising insight: rather than amplifying the positive relationship, high digital maturity reduces it. This could indicate that in digitally mature firms, other technologies or systems may already account for performance gains, diminishing the incremental value of SLPs. The study bridges gap in the literature by modeling both mediation and moderation within a unified framework. It supports the dynamic capabilities view, illustrating how integration and digital readiness shape technology's impact. Managers should not assume that adopting logistics technologies will directly enhance performance. Without integration mechanisms, these tools may not yield optimal outcomes. Moreover, mature digital firms should focus on strategic alignment to ensure that new logistics platforms provide additive value. Cross-sectional data limits causal inferences. Future research should use longitudinal designs to confirm the directionality of relationships. Additionally, the negative moderation warrants further exploration in different industry contexts.

**8. Conclusion** This study demonstrates that while smart logistics adoption is crucial, its performance benefits depend heavily on supply chain integration and the firm's digital maturity. The mediation analysis reveals that integration is a necessary conduit for technology to create value. Surprisingly, higher digital maturity weakens the relationship between SLP and performance, suggesting diminishing marginal returns or complex internal dynamics in highly digitized firms. The research contributes to logistics and supply chain literature by empirically validating a model that includes both mediating and moderating variables, enriching the understanding of technology-performance linkages. Organizations should invest not only in smart logistics platforms but also in building integrative supply chain capabilities. For digitally mature firms, emphasis should be placed on synergy and customization of technologies to maximize value. The study underscores the strategic importance of holistic digital transformation. Technology investments must be supported by organizational structures and supply chain partnerships to drive competitive performance. Policymakers and consultants should consider these dynamics when advising firms on digital logistics initiatives.

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Submission ID: 57

Track 06: Transportation and Logistics

## Revisiting Ambidexterity: Unveiling Automotive Industry Growth Patterns through SHAP-based Clustering

*Yukari Shiota, Takako Hashimoto and Basabi Chakraborty*

**Abstract:** Supply Chain Management (SCM) is critical in achieving sustainable corporate growth. Morita and Machuca introduced the concept of "ambidextrous management," emphasizing that balanced integration of sales growth rate (SGR) and supply chain (SC) improvement (kaizen) is essential for sustainable profitability [1]. Tushman et al. consider supply chain management capability as "explicit (operational) competence" and sales growth as "innovative competence", and point out the importance of balancing the two in growth strategies [2-4]. Other studies have shown that the sales growth rate (SGR) is the primary driver of growth in the automotive manufacturing industry after 2020 [5, 6]. SGR can be seen as an indicator of new product development capability, and its SGR contribution increases significantly, especially when EVs increase their market share. This paper will explore the dominant factor for the market capitalization growth rate (MCGR). This study employed an AI-based XGBoost regressor based on gradient boosting decision trees as a regression model to explain the target variable, MCGR. Unlike linear models, the regression model has a complex shape. First, the model  $f(X)$  is constructed using XGBoost, and then the contribution of each explanatory variable to its predictions is calculated as a SHAP (Shapley Additive exPlanations) value. It is a method based on the Shapley value in game theory [7-9] which decomposes the predicted results of the target value into the contributions of individual explanatory variables [10, 11]. While the interpretation of regression coefficients in conventional linear regression only shows the average trend of the model as a whole, the use of SHAP values takes into account companies' characteristics. It has a great strength in that it allows quantitative evaluation of "which factors contributed most significantly to improving MCGR for each company". The explanatory variables for the regression are (1) inventory turnover ratio (INV), (2) sales amount (SALES), (3) sales growth rate (SGR), (4) profitability rate (PROF), and (5) fixed assets turnover ratio (FA). Using data from 64 global automotive companies in 2014, SHAP values for MCGR were extracted as shown in Figure 1. The horizontal axis shows the 64 companies, and the vertical axis shows the deviations of the target values. To find the dominant factor, the Pearson's correlation coefficients between the target values and each explanatory variable's SHAP values are calculated. As a result, the highest one is PROF\_shapvalue; Profitability rate (PROF) emerged as the most significant factor for MCGR. However, this was due to the overall trends encompassing both high- and low-performing companies. Then, k-means clustering of SHAP values was conducted. As  $k=4$ , four clusters were obtained which enabled the extraction and individual analysis of high-performing company clusters. Figure 1: SHAP values for the individual companies in 2014 (stacked bar chart) Figure 2: Distribution of individual SHAP values for companies in the high-performance cluster No 3 Specifically, as shown in Figure 2, the high-performing cluster of companies, such as MARUTI, TESLA, and SAIC exhibited balanced, high contributions from INV and SGR, which strongly supports Morita's "ambidextrous management" hypothesis. In cluster No 3, the SHAP values of SALES, PROF and FA are almost zero in many companies (see Figure 2). For the top four companies such as MARUTI, the high INV is the main factor for the increase of MCGR. On the other hand, TRIGANO, TESLA and DIMA have a balanced contribution from INV and SGR. For TESLA, both INV and SGR made a high contribution as of 2014, although the weight of SGR\_shapvalue significantly increased after 2020. In summary, despite differences in the SHAP distribution characteristics of the companies, it was confirmed that for

the top seven companies (MARUTI to DIMA), the INV\_shapvalue and SGR\_shapvalue contributions were almost balanced. This indicates Morita et al.'s "ambidextrous hypothesis" and means that INV and SGR work in tandem to support high MCGR. A significant advantage of SHAP analysis is that the characteristics of each company can be visualized. This study contributes valuable empirical evidence to SCM literature, concretely validating the theory that balancing operational and innovative capabilities is essential for sustained growth in the automotive industry.

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Submission ID: 135

Track 06: Transportation and Logistics

## Safety Culture Dimensions in Indian Civil Aviation: A Multi- Organizational Assessment

*Vipin Kumar Sharma, Arghya Dev Mondal, Venkat Ram R. Ganuthula and Monika Tanwar*

**Abstract:** Background and Rationale The International Civil Aviation Organization (ICAO) recognises the Safety culture as the single most important aspect that influences the management of safety in aviation organizations. An organization, even with an established safety management system, is likely to underperform if it lacks a positive safety culture. The Federal Aviation Administration (FAA) defines safety culture as “the shared values, actions, and behaviors that demonstrate a commitment to safety over competing goals and demands”. As per the Ministry of Civil Aviation, India, Annual Report 2024, Indian aviation sector is positioned for a phenomenal growth with the development of additional 21 greenfield airports across the country and orders of more than 1,900 aircraft, representing a potential doubling of the current fleet of approximately 800 planes over the next 10-15 years. There has been extensive research on safety culture, especially in the developed economies, but a significant knowledge gap remains in evolving aviation markets such as India. The lack of India-specific safety culture research represents a critical gap, particularly given the growing increasing global connectivity of aviation operations and the need for consistent safety standards across international aviation networks. Theoretical Framework and Methodology This study employed a systematic adaptation of the internationally validated “safety culture survey for high performing aviation organisations”, a framework developed by the FAA in 2024. The adapted Safety Culture Framework (part-A) consists of 36 questions to capture ten core safety culture dimensions: Communication, Continuous Learning, Decision-Making, Environment for Raising Concerns, Individual Responsibility, Leader Responsibility, Problem Identification and Resolution, Questioning Attitude, Respectful Work Environment, and Work Planning. The part-B of the survey consists of an additional 13 questions that capture 6 supplementary dimensions: autonomy, performance expectations, professional development, work engagement, workload management, and well-being. Data collection employed a 6-point Likert scale ranging from "1-Strongly Disagree" to "6-Strongly Agree" with an additional "Not Applicable/Don't Know" option. The survey was administered electronically, and data were collected from aviation professionals

working in the civil aviation sector, representing Airlines, Airport Operators, General Aviation Operators, Helicopter operators, Flight Training Organisations, and Maintenance and Repair Organisations. The sampling strategy utilized purposive sampling to ensure representation across organizational types, professional roles, experience levels, and demographic characteristics, prioritizing diversity over statistical representativeness to capture the breadth of perspectives across the Indian aviation ecosystem. Sample Characteristics and Response Patterns The responses were collected from 187 aviation professionals across the Indian civil aviation sector. The overall response rate was 98.0% with minimal missing data. Organizational representation included Airline Operations as the largest segment (81 participants, 43.3%), followed by Helicopter Operations (20 participants, 10.7%), General Aviation (18 participants, 9.6%), Government organizations (16 participants, 8.6%), and Airport Operations (16 participants, 8.6%). Professional role distribution encompassed Pilots (46 participants, 24.6%), Engineering and Airworthiness professionals (35 participants, 18.7%), Safety and Quality Management specialists (30 participants, 16.0%), and Training professionals (13 participants, 7.0%), among others. The experience distribution spanned from early-career professionals with less than five years of experience (41 participants, 21.9%) to industry veterans with over 30 years of experience (42 participants, 22.5%), enabling a comprehensive analysis of how career stage influences safety culture perceptions. Gender distribution reflected the industry composition with 88.2% male and 11.8% female participants, while age groups ranged from 18-30 years to above 60 years, capturing multiple generational perspectives on safety culture. For the qualitative measure of safety culture, the 6-point Likert scale was divided into meaningful bands. The absolute midpoint is 3.5 (halfway between 1 and 6), scores above 3.5 indicate positive perceptions and scores below 3.5 indicate negative perceptions where scores from 3.5-3.99 represent "Moderate" safety culture requiring development, 4.0-4.49 indicates "Good" safety culture with positive foundations, 4.5-4.99 represents "Strong" benchmark performance, and higher scores indicate "Very Strong" to "Excellent" levels. For scores below the 3.5 midpoint, where 3.0-3.49 represents "Fair" safety culture requiring major intervention, 2.5-2.99 indicates "Poor" safety culture demanding comprehensive overhaul, and 1.0-2.49 represents "Critical" safety culture requiring emergency response. Key Research Findings The analysis revealed an overall safety culture score of 4.08 on the 6-point scale, indicating "Good Safety Culture" across the Indian aviation sector. This score positions Indian aviation at approximately 68% of theoretical maximum performance, suggesting that organizations have successfully established good safety culture practices. Analysis of the ten core safety culture dimensions revealed consistent performance, with nine dimensions achieving "Good" ratings (4.0 or above) and one dimension receiving a "Moderate" rating. Environment for Raising Concerns emerged as the highest-performing dimension (4.18), followed by Work Planning (4.15) and Problem Identification and Resolution (4.13). Questioning Attitude achieved the lowest score among core dimensions (3.95), identifying a specific area for organizational attention and improvement. Supplementary organizational dimensions showed greater variability, with Work Engagement achieving the highest score (4.24) while Professional Development received the lowest score (3.83). This pattern suggests that though the organizations have created engaging work environments, opportunities exist for enhancing support for employee growth and development that could strengthen overall safety culture. The demographic analysis revealed significant variations across



different organizations. Airport operators showed the highest safety culture perceptions (4.58), while Government organizations demonstrated the lowest scores (3.68). This 0.90-point difference illustrates how organizational context and operational environment influence safety culture development. Professional role analysis revealed that the professionals in training roles demonstrated the highest scores (4.32) of safety culture perception, followed by Safety and Quality Management specialists (4.02). However, Pilots, despite representing the largest professional group, demonstrated the lowest safety culture perceptions (3.76). This finding requires careful interpretation, as pilots operate at the "sharp end" of aviation operations, where they directly experience the consequences of organizational safety decisions, potentially making them more acutely aware of gaps between safety culture aspirations and operational realities. The experience level analysis yielded counterintuitive findings that challenge conventional assumptions about expertise and safety culture awareness. Early-career professionals with less than five years of experience achieved the highest scores (4.32), while those with 6-10 years of experience demonstrated the lowest scores (3.81). The pattern suggests that early career professionals demonstrate higher optimism, while later in mid-career, they encounter organizational realities. The "Moderate" rating for Questioning Attitude provides particularly valuable insights into cultural adaptation requirements. This finding aligns with Hofstede's cultural dimensions theory regarding power distance and uncertainty avoidance, suggesting that behaviors involving challenging authority or questioning established procedures may require different approaches in organizational cultures that emphasize hierarchical respect and structured communication patterns. Practical Implications and Industry Applications The findings of this study can be useful to the aviation stakeholders as baseline data for further research, development, and policymaking, specifically for the Indian civil aviation context.

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Submission ID: 281

Track 06: Transportation and Logistics

## **SOCIO-ECONOMIC INEQUITIES IN ADJUDICATION PERIOD: A STUDY ON COMPENSATION EFFICIENCY AT MOTOR ACCIDENT CLAIMS TRIBUNALS (MACTs), KERALA**

*Sunitha Vijayan, Madhu Errampalli, Samson Mathew and Christabell P. J.*

**Abstract:** 1.Introduction: The effect of prolonged adjudication period instigating social cost and economic burden remains a central theme in contemporary economic and legal discourse, underscoring the critical notion that "justice delayed is justice denied" (Felsö & De Nooij, 2012; Melcarne & Ramello, 2021). In India, the adjudication of injury-related Motor Third Party Liability Insurance (MTPL) claims is primarily handled by specialised Motor Accident Claims Tribunals (MACT) established under the Motor Vehicles Act, 1988, under Chapter XI in Section 165. However, the MACTs are often contested by the adversities of a prolonged adjudication period (Elbers et al., 2015), a stressful and complex



process (Grant et al., 2014) and inadequacy of compensation leading to poor injury recovery of the victims (Harris et al., 2008; Dunlop, 1970). The need for an efficient and equitable MVC compensation mechanism is indispensable as the immense socio-economic cost associated with MVCs often drives the vulnerable victims to impoverishment and over-indebtedness due to catastrophic health expenses (Watters, 2022).

**2.Objectives:** The research examines the influence of socio-economic-injury-legal attributes of MVC victims on the compensation adjudication period at MACTs and the impact of adjudication period and other compensation and victim-related factors on the efficiency of tribunal awards.

**3.Methodology:** The research involved a retrospective observational study where judgment orders related to MVC cases were collected from MACTs at Thiruvananthapuram District, Kerala. A total of 2,104 judgment orders related to Court Award cases issued by respective MACTs in the year 2022 were selected for the study. Binary Logistic Regression was used to identify the major determinants of the compensation adjudication period. Additionally, a One-at-a-time sensitivity analysis, also known as local sensitivity analysis, was performed to identify the major input parameters influencing the output variable Benefit-Cost (BC) ratio reflecting the efficiency of tribunal awards at MACTs. The input parameters considered for this analysis include are legal cost, pecuniary damages, pain, suffering and disability, interim financing cost, adjudication period and compensatory interest. The influence of the input variables on the output variable was determined with the sensitivity coefficient and local sensitivity coefficient.

**4.Results:** The binary logistic regression analysis disclosed that the compensation adjudication period at MACTs (less than five years [reference category] vs. five years or more) was influenced by several significant predictors attributed to the MVA victims. The duration of inpatient treatment displayed a statistically significant positive association with claim resolution period ( $\beta=0.014$ ,  $p=0.001$ ). Additionally, the log of income demonstrated a statistically significant negative relation with compensation adjudication period ( $\beta=-0.053$ ,  $p=0.035$ ). The Odds-Ratio of 0.948 (95% CI: 0.903,0.996) proposes that for every one-unit increase in the log of income, the likelihood of the compensation resolution taking five years or more decreased by 5.2 percent. Subsequently, the particular MACT Court also significantly predicted claim resolution duration ( $\beta=-3.346$ ,  $p<0.001$ ). Finally, the nature of the injury also demonstrated a significant relationship with the adjudication period in a positive direction ( $\beta=0.445$ ,  $p=0.022$ ). The sensitivity analysis deliberated the response of the BC Ratio towards the uncertainties exhibited by the input variables when varied by  $\pm 50$  percent. With respect to sensitivity coefficients and local sensitivity values, the variables having the largest influence on BC ratio along with the direction of influence included: pain, suffering and disability (-0.22,0.61), pecuniary damages (-0.18,0.46), interim financing cost (-0.08,0.17), legal cost (-0.06,0.12), and finally the adjudication period (0.05 and 0.09). An additional analysis was performed without considering the compensatory interest, to eliminate the impact of compensatory interest awarded on adjudication duration. It provided the sensitivity coefficient as -0.08 and local sensitivity as 0.17.

**5.Discussion:** The increasing judicial delay in tribunal awards with extended inpatient treatment duration and injury severity testifies to the higher economic burden imposed on the MVC victims who are suffering intense MVC-related expenses and psychological distress (Papadakaki et al., 2017). Further, the victims belonging to high-income groups receiving the advantage of lower claim resolution duration may be attributed to access to superior legal representation, robust financial resources, precise

medical and economic documentation. On the contrary, the findings manifest the deprived situation of the low-income category, intensifying their financial and emotional burden. Hence, the socio-economic impact of prolonged adjudication period exacerbates social injustice, inequity and the economic burden of the vulnerable victims (Felsö & De Nooij, 2012). It was further revealed that when the adjudication period demonstrated a lesser and positive influence on efficiency of compensation in the presence of compensatory interest rate, it exerted a more substantial negative influence in its absence, signifying the inefficiency due to judicial delay. 6. Conclusion In conclusion, our research underscores the influence of socio-economic-injury-legal characteristics of MVC victims on compensation adjudication period, signalling the extent of disproportionate burden channelled by judicial delay to the vulnerable MVC victims. Consequently, we recommend policy interventions aimed at (1) streamlining MACT procedures to reduce judicial delay in compensation resolution, (2) establishing effective and regulated legal costs, (3) standardizing the determination of pain and suffering, and (4) implementing targeted policies to mitigate higher interim financing costs associated with MVC-related expenditures, all to enhance efficiency, social welfare, equity and justice.

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Submission ID: 323

Track 06: Transportation and Logistics

## Adaptive Coordination of Human Pickers and Robots in Human-Centric Parts-To-Picker Warehouses

*Suryakant Kumar, Jiuu-Biing Sheu and Tanmoy Kundu*

**Abstract:** 1. Introduction In traditional picker-to-parts warehouses, a significant portion of order pickers' time is spent walking to locate items, an unproductive activity (Kumar et al., 2023; Sheu et al., 2024; Azadeh et al., 2019). Robotic Mobile Fulfillment Systems (RMFS), using Autonomous Mobile Robots (AMRs), address this inefficiency by bringing racks to stationary pickers, thereby reducing travel time and improving throughput. However, RMFS also introduce new challenges, particularly in balancing system performance with picker well-being. Static AMR control policies often overlook real-time psychological stress, leading to errors and turnover, especially during peak hours. Existing research rarely considers adaptive strategies that optimize both productivity and human stress. To address this gap, we model Human-Robot Collaboration (HRC) as an adaptive control problem, incorporating AMR queue dynamics, picker stress, and work rates. The study proposes a warm HRC framework aligned with Industry 5.0 for efficient and human-centric order fulfillment. 2. Objectives In this research, we develop a dynamic HRC framework that enables AMRs to adapt to the human picker's real-time stress level in parts-to-picker warehouses. This study aims to: (1) formulate a stochastic optimal control (SOC) model of human-robot interaction that simultaneously optimizes stress and productivity; (2) implement real-time estimation of system states using an Extended Kalman Filter (EKF); (3) determine compromise solutions for stress and productivity target states using non-cooperative game theory; and

(4) validate the framework via numerical analysis, demonstrating adaptive AMR control under dynamic stress conditions. Overall, these objectives align with the broader goal of Industry 5.0's emphasis on human-centric automation.

**3. Methodology** We propose an HRC model that integrates Stress-Observable Control (SOC) with game theory to enable real-time, stress-aware AMR control in RMFS. The SOC framework estimates system states using limited observable data—rack arrivals and picker throughput—while game theory sets dynamic target states. Building on Sheu & Choi (2022), we move beyond idealized assumptions by incorporating picker stress as an exponential function of perceived workload and pace (Grosse et al., 2013; Macdonald, 2003; Vargas & Kim, 2021). To validate the model, we use an Extended Kalman Filter (EKF) to estimate latent variables (stress and productivity) and update control actions for AMRs. The game-theoretic component defines these target states through a repeated non-cooperative game, with Nash equilibria representing optimal stress-productivity trade-offs. This approach ensures that picker stress remains within acceptable limits, even if it slightly compromises throughput. The overall framework is operationalized using recursive state-space and measurement equations, validating its robustness under noisy, real-world conditions.

**4. Results** We tested our control model using real rack movement data from an AMR-based RMFS warehouse operated by a major e-commerce company in China. The results highlight key insights: (1) robot productivity consistently exceeds that of pickers, especially when stress is considered; (2) control variables adjust dynamically to stress levels, maintaining picker stress within thresholds while sustaining productivity; and (3) AMRs modulate rack flow—reducing it under high stress and increasing it when productivity drops. Importantly, dynamic target states lead to up to 47% reduction in picker stress with only a 20% decrease in productivity stress. These findings support the effectiveness of our “warm” HRC framework, reinforcing the value of combining stochastic control and game theory in AMR coordination.

**5. Discussion** Our framework bridges human-aware automation and adaptive robot control by using a repeated non-cooperative game to generate dynamic reference states. Unlike static HRC models, this approach captures fluctuations in picker stress across work intervals, enabling more responsive and humane robot coordination. It advances the design of warehouse systems that value human well-being, aligning with Industry 5.0 principles.

**6. Conclusion** This study proposes a real-time, adaptive framework that integrates game theory and stochastic control to jointly optimize picker stress and system productivity. Numerical results show notable stress reduction with minimal productivity loss. By embedding dynamic targets within EKF-based control loops, AMRs adapt to picker conditions, supporting human-centric design in line with Industry 5.0. While promising, the model's reliance on indirect stress dynamics limits its generalizability, and its scalability to multi-robot, multi-picker systems warrants further research. Nonetheless, this framework marks a key step toward achieving warm, responsive human-robot collaboration.

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Submission ID: 345

Track 06: Transportation and Logistics

## From Grid to Ride: Dynamic Decision-Making for EV Ride-Hailing and Charging Under Uncertainty

*Rashika Gupta (IIM Ahmedabad), Debjit Roy (IIM Ahmedabad).*

**Abstract:** The escalating climate crisis and rising pollution levels have led to a global push toward sustainable transportation, as the transport sector remains one of the largest contributors to greenhouse gas emissions. To combat climate change, there is a growing momentum towards the adoption of electric vehicles (EVs), which is also being supported by government initiatives such as EV@30. Among various sectors, ride-hailing services offer significant potential to reduce the environmental footprint of urban mobility due to their high utilization rates and centralized operations. However, the electrification of ride-hailing fleets introduces a new set of operational challenges. One of the most pressing issues is the limited availability of charging infrastructure, which requires efficient and coordinated management. This underscores the importance of integrating ride-hailing platforms with EV charging stations (CSs) to optimize charger usage while ensuring reliable service to customers under dynamic and uncertain demand. The EV CS serves two types of customers: (i) the internal fleet, consisting of prioritized EVs that are part of the ride-hailing platform, and (ii) the external fleet, representing non-prioritized EVs that arrive independently and seek admission to the CS. While the CS primarily serves the platform's internal fleet, it also admits external EVs as a means to enhance revenue and improve charger utilization during idle periods. The CS is equipped with a limited number of heterogeneous chargers, comprising both fast and slow chargers. A fast charger charges an EV very quickly by drawing a large amount of power, leading to a high instantaneous load on the power grid, resulting in peak demand. In contrast, a slow charger provides energy at a lower power level over a longer period, resulting in a more uniform load on the grid. The performance of an EV CS is typically determined using two key metrics: (i) time utilization, defined as the fraction of time a charger is actively charging an EV, and (ii) energy utilization, which measures the proportion of available energy capacity actually delivered to EVs. Thus, a fast charger typically achieves high energy utilization, leading to aggravated peak demand but low

time utilization, while slow chargers exhibit high time utilization but relatively lower energy utilization. The integration of EV charging with ride-hailing operations is further complicated by multiple sources of uncertainty, especially in the real-time availability and operability of chargers. Although CS applications are designed to display the status of nearby chargers, this information is often inaccurate or outdated due to factors such as equipment malfunctions, software bugs, and poor network connectivity. For instance, an application may indicate that a charger is available, while a hardware issue, such as a faulty connector, renders it unusable. Such discrepancies between displayed and actual charger status can lead to poor decision-making, including misguided admissions, thereby degrading both charger utilization and customer service quality. In this work, we focus on the unreliability of charger state information as shown in the CS applications, rather than on the system reliability. As from a customer's perspective, it is immaterial if the charger is occupied or malfunctioning - what matters is the actual number of chargers available at the time of decision-making. Accordingly, we model each charger as being in one of two states: available or unavailable. While many CS applications claim to offer real-time information on charger availability, studies show that this information is often incomplete or inaccurate due to poor Internet of Things network connectivity, or data integration challenges. While the internal fleet has priority access to the CS, the external fleet can be admitted during idle periods to improve overall time utilization of the chargers. However, restriction of access to the external fleet may result in lost revenue opportunities and underutilization of available infrastructure. Therefore, the CS must make strategic admission decision that balances the service commitments of its fleet and garners the benefits of accommodating external demand. In this study, we develop a dynamic vehicle admission and charger assignment model that accounts for (i) the presence of two customer classes (external and internal fleet), (ii) charger heterogeneity (fast and slow), and (iii) uncertainty in the observed state of chargers due to unreliable application data. The model aims to jointly maximize the operational performance by minimizing peak energy load while also managing the waiting experience of both the customer classes and improving charger time utilization. In this dynamic environment, the platform must make two key real-time decisions: (i) whether to admit a non-prioritized EV into the CS based on current occupancy and charger availability, and (ii) which charger (fast/slow) to assign for adequate energy utilization. These decisions must jointly balance energy and time utilization of chargers, and customer service quality under limited infrastructure. To balance both time and energy utilization at the CS, we model the system using a Partially Observable Markov Decision Process that captures the uncertainty in charger states. Since the platform cannot directly observe whether a charger is truly available— it relies on potentially inaccurate app-based information (belief state), representing the probability distribution of the true state given current observations. The agent maintains a sensor model that links the observations (charger availability status) to the actual underlying state (truly available or unavailable). The objective is to derive optimal admission and charger assignment policies that minimize the long-run average system cost. This cost function includes (i) waiting costs for both internal and external vehicles, (ii) rejection penalties for turning away external EVs (goodwill loss), and (iii) energy load penalties, especially for peak demand caused by fast chargers. The model enables real-time decision-making, given the current belief state and system dynamics. Additionally, to match customer ride requests with an EV, we model the battery levels of internal fleet EVs, by utilizing the class-



switching concept, where each vehicle dynamically transitions between battery-level-based classes. This allows the system to determine which EVs require charging, and which are still capable of serving additional ride requests. The model would recommend whether to accept an external EV's charging request and, if accepted, determine which charger type (fast or slow) should be assigned to that EV. Additionally, it provides charger assignment decisions for internal fleet EVs by jointly considering energy load implications and customer waiting times to ensure system-wide efficiency. These decisions are generated through a dynamic decision-making framework designed to minimize both customer waiting costs and peak energy tariff (load) costs, while effectively managing charger utilization. With this objective, the study addresses the following research questions: RQ1: When to admit external EVs in the presence of internal fleet and unreliable charger state information? RQ2: Which type of charger to assign an EV, considering different charging speeds and low reliability of charger states? This work offers actionable insights for CS operators aiming to scale EV-based ride-hailing sustainably. By jointly optimizing ride assignment and charger assignment under uncertainty, we contribute toward the design of intelligent and resilient infrastructure that supports the long-term viability of electrified urban mobility..

Submission ID: 355

Track 06: Transportation and Logistics

## BI-OBJECTIVE OPTIMIZATION OF EMERGENCY EVACUATION OPERATIONS WITH HETEROGENEOUS FLEET

*Vettri Velavan Janarthansamy, Chandrasekharan Rajendran and Arshinder Kaur*

**Abstract:** Disasters often require large-scale evacuation efforts. Rescue and evacuation operations are carried out pre- and post-disaster. This study develops a bi-objective mixed integer linear programming (MILP) model to maximize the number of evacuees and to minimize the total weighted cost. The epsilon constraint method is employed to solve the bi-objective model. The proposed model is validated through case studies of the Lake Eildon National Park and the Black-Saturday bushfires in Australia. It achieves over a 60% reduction in vehicle and shelter requirements while maintaining the number of evacuees evacuated. The multiple pickups per trip allowed for better resource allocation and reduced costs. Sensitivity analysis is carried out to study the impact of vehicle fleet size and shelter availability. The number of evacuees transported increases with fleet size in both cases. Shelter availability had a minimal and significant impact on Lake Eildon and Black-Saturday cases, respectively. The findings provide valuable insights for emergency planners to optimize resources and improve response operations.

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Submission ID: 402

Track 06: Transportation and Logistics



## The Price of Clean Skies: Nudging Travelers Toward Greener Journeys

Ankit Sharma

**Abstract:** Our research problem involves investigating the effectiveness of behavioral nudges on encouraging individuals to spend more on "green tickets"—such as those for environmentally friendly travel options or sustainable events. The dependent variable is the average amount spent on green tickets by participants, measured before and after the implementation of tailored nudges (e.g., personalized reminders, environmental impact information, or social norm messaging). The study uses a randomized controlled experiment where a treatment group receives the nudges, and a control group does not. A Difference-in-Differences (DiD) approach is employed to assess whether the changes in spending on green tickets differ significantly between the treatment and control groups over time. This method isolates the effect of the nudges by accounting for underlying time trends and pre-existing differences, offering robust evidence on whether nudges effectively influence green ticket buying decisions. If the fact that the average spending is actually improving for green tickets after proper choice architecture-based nudges, the study plans to suggest a mechanism to suggest differential offset payments mechanism to different types of flyers.

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Submission ID: 407

Track 06: Transportation and Logistics

## EVALUATION AND RANKING OF OVERALL PERFORMANCE OF INDIAN RAILWAY ZONES

Afra I K and Kirtesh Gadiya

**Abstract:** Indian Railways, one of the world's largest rail networks, plays a vital role in connecting the country and supporting its economy. This study evaluates the performance of 16 Indian Railway zones over two decades (2004–05 to 2023–24) using Principal Component Analysis (PCA). It aims to uncover how each zone performs in financial, operational, and safety dimensions and provide meaningful insights to guide future improvements. Data was sourced from official annual statistical statements of Indian Railways and standardized for comparability. PCA helped reduce complexity while retaining maximum information, ranking zones based on their PC1 scores. Northern Railway emerged as the top-performing zone, while NER, SWR, and NFR ranked the lowest due to infrastructure and geographic challenges. Interestingly, while zones like ECoR excelled in freight, they lagged in passenger services. The analysis highlights how regional diversity, infrastructure investment, and operational challenges impact performance. It calls for targeted policies such as track doubling, modern safety systems, and improved passenger facilities in underperforming areas. Ultimately, the study demonstrates how data-driven evaluation can shape more effective and inclusive rail policies, urging Indian Railways to

consider periodic reviews, integrate road connectivity data, and factor in passenger satisfaction for a more holistic assessment of performance.

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Submission ID: 415

Track 06: Transportation and Logistics

## Decarbonization of Intralogistics – A Multi Industry Perspective

*Varun Chopra and Sayantan Khanra*

**Abstract:** Context: India's Net Zero Target is 2070 as was outlined by Prime Minister Narendra Modi at the 26th session of the United Nations Framework Convention on Climate Change COP 26 in November, 2021. Critical to note that supply chains are the key to succeeding in our battle against climate change since they generate approximately 60% of all carbon emissions globally. Hence addressing supply chain sustainability is an essential step in achieving net zero & within that Logistics & Intralogistics play an important role. Source: Carbon Trust Additionally, the Market Regulator SEBI is also driving Net Zero via BRSR (Business Responsibility and Sustainability Reporting). Intralogistics & MHE (Material Handling Equipment) MHE (Material Handling Equipment i.e. Forklifts etc) form part of Intralogistics and are used for the movement of RM (Raw Material) and FG (Finished Goods) movement in Factories and Warehouses, and these have application across industries i.e. Ecommerce & Quick Commerce, FMCG, Auto & Auto Ancillaries, Pharmaceuticals, Consumer Durables & Telecom, Industrials (Glass, Iron & Steel, Cement). Given India's goal to reduce carbon dioxide emissions by around four billion tonnes between 2020 and 2030, and significant increase of use of MHEs in Factories and Warehouses across industries, the rapid deployment of Zero Emission Lithium-ion powered MHEs can play a meaningful role in the reduction of emissions. Purpose: Given the above and the criticality of ESG (Environmental, Social & Governance) across the globe & further the high emphasis on E (Environmental), it is imperative that we develop practical executable solutions to decarbonize supply chains and the purpose of this paper is to understand the Antecedents & Barriers to adoption of Zero Emission MHEs in Intralogistics and provide a real world case study that has been executed at scale in the Intralogistics space i.e. Material Handling Equipment (MHE) i.e. Forklifts etc. Study Design / Methodology / Approach: After doing a comprehensive literature review of 30 research articles related to sustainability and relevant to the topic of supply chains (majority being quantitative studies along with a few qualitative analysis to ensure it is holistic) to understand the Antecedents & Barriers to adoption of Zero Emission MHEs in Intralogistics, I have then used a case study research method with a single case-in-point to drive the point of a practical and implementable solution to enable the decarbonization of supply chains. Findings: The Antecedents & Barriers to adoption of Zero Emission MHEs in Intralogistics range from a fixed mindset that is resistant to change to lack of detailed understanding of these MHEs and the TCO (Total Cost of Ownership) concept of evaluation, among other points. By transitioning Material Handling Equipment (MHE) from IC (Internal Combustion) to

Zero Emission (Lithium-ion) for a range of customers across sectors (i.e. FMCG, Automotive, Pharma, Metals, E-commerce, Glass), we have not only eliminated carbon emissions but we have also delivered a positive ROI i.e. delivered the solution at a cost which has increased productivity / lowered operating cost. Originality / Value: To my knowledge, the “joining of the dots” in Decarbonization of Intralogistics via MHE via the understanding the Antecedents & Barriers to adoption of Zero Emission MHEs and then using this knowledge to deploy Zero Emission MHEs at scale, has not yet been done and that is perhaps what makes it original as well as can potentially add tangible value to customers across the spectrum of industries Research Limitations / Implications: Since I have used a case study research method with a single case-in-point, one of the limitations is that there may be use cases and experiences from other industry players in the Material Handling Equipment (MHE) space, which may provide a different perspective. Practical Implications: I believe that transitioning Material Handling Equipment (MHE) from IC (Internal Combustion) to Zero Emission (Lithium-ion) can deliver both favourable unit economics for customers as well as provide a sustainable solution. Social Implications: The paradigm in today’s business with an emphasis on ESG (Environmental, Social & Governance) augurs well from a long term benefit for society as a whole, where Growth and Sustainability are not mutually exclusive.

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Track 06: Transportation and Logistics

## OPTIMISING MULTIMODAL FREIGHT TRANSPORTATION WITH MULTIPLE OBJECTIVES

*Amit Upadhyay, Gaurav Bhatt and Abhilash V*

**Abstract:** Introduction In India, logistics costs remain significantly high, accounting for approximately 14% of the GDP (NITI Aayog, 2021), compared to about 8% in more advanced countries. To address this inefficiency, there has been a concerted effort to shift freight movement from road to rail. A key component of this strategy is the Dedicated Freight Corridor (DFC) initiative, which is now 96.4% commissioned and supports over 330 freight trains daily, contributing nearly 10% of Indian Railways’ total freight volume in Gross Tonne Kilometers (GTKM) (DFCCIL, 2024). Meanwhile, global container shipping volumes surged by 13.9% in 2024, further underscoring the urgency for India to adopt more efficient and integrated logistics solutions (SupplyChain360, 2024). Double-stack container trains have emerged as a transformative solution, significantly reducing transit times (e.g., Dadri–Mundra now takes an average of 30 hours instead of 70) and improving energy efficiency (ET Bureau, 2025). These configurations offer substantial environmental gains, reducing GHG emissions by up to 30% compared to road transport. This study focuses on optimizing container selection and train loading strategies through a decision-support framework applied within the real operational setting of XYZ, one of India’s leading Container Train Operators (CTOs). Literature review Despite growing practical relevance, there are only a few studies considering real-life operations and implementation of double-stack load planning

optimization models. Most studies often simplify key constraints or focus on isolated objectives. For example, Lai et al. (2008) emphasized aerodynamic efficiency, but did not consider many operational constraints and cost structures. Upadhyay (2016) introduced a dual-objective model optimizing profit and minimizing delivery tardiness, capturing practical constraints like stack compatibility and route clearances. This work considered real operations of Indian Railways and validated by stakeholder feedback. Surveys conducted among leading CTOs confirmed haulage cost and delivery timeliness as top priorities. Notably, loading just one additional 40-ft container per train could save over ₹50,000, making slot utilization a critical performance measure. These savings far outweigh intra-terminal handling costs highlighting the value of train-level optimization. This study enhances the DSLP model by introducing contemporary service level requirements, container yard dynamics, new types of containers, stack patterns, and train availability. This adaptation translates academic optimization into a deployable application, bridging theory and practice in freight planning.

**Operational Context and Problem Formulation** In India, container train operations are managed by container train operators (CTOs). While loading a train with export containers at a terminal, a planner first shortlists containers relevant for the given train. The containers are selected for loading based on urgency, profitability, type of rake, and route compatibility from a live inventory, known as "pendency", which are sorted by destination in the yard. Indian Railways offers discounted haulage rates for containers loaded on upper stacks to incentivize double stacking of containers. But CTOs face numerous constraints: maximum axle loads, route-specific vertical clearance, weight distribution, vertical center of gravity, and container compatibility (e.g., height and type mismatches). The DSLP optimization model addresses these complexities considering both physical loading feasibility and commercial priorities. It selects the best container subset and assigns them to wagons in load-balanced, regulation-compliant stacks, aiming to maximize profitability while avoiding service delays.

**Research Objective and Contribution** This study builds on the optimisation model of Upadhyay (2020) and enhances it by considering contemporary operational requirements at XYZ. It incorporates current container yard structures, multiple container types, stacking limitations, loading constraints, and service level requirements, enabling the model to make real-time decisions based on live pendency data. The main objectives of this study are to increase the profitability of the container haulage and to provide quantitative decision support to deliver value added services more effectively. The performance of our model is validated across a range of operational scenarios, each representing diverse loading conditions. This application demonstrates the effectiveness of the Integer Programming (IP) based models for operations planning problems and offers a replicable framework for wider applications in freight transport.

**Decision Support System Deployment** The optimized model is integrated into a Decision Support System (DSS) at XYZ. The DSS interfaces with internal container yard databases, train rosters, and dispatch systems. It generates daily loading plans, assigning containers to wagons while satisfying technical constraints and profitability objectives. The DSS is now being used by the planning team, replacing manual selection with system-generated recommendations. This has accelerated the generation of efficient loading plans, reduced the scope for human error, and aligned loading operations with both regulatory and financial goals. Its deployment demonstrates the feasibility of embedding advanced optimization tools in live freight logistics environments.

**Methodology** The core model is built on an IP formulation, adapted from the framework

proposed by Upadhyay (2020), and tailored for deployment within a real-time operational environment. It takes as input a range of container attributes, including length, height, weight, destination, and profit, and wagon-specific parameters such as load capacity and feasible stacking configurations. The model also incorporates key operational constraints such as axle load limits, route-specific vertical clearance requirements, and container stacking compatibility rules. The optimization process determines which containers to load from the yard's pendency list and how to assign them across wagons in valid double-stack formations to maximize profitability and minimize delivery tardiness. Prior to optimization, a pre-processing step standardizes input data from multiple sources, converting them into a format suitable for modeling. This includes validating container dimensions, classifying eligibility for stacking, and cleaning inconsistent or incomplete entries. After solving, a post-processing module translates model outputs into executable loading plans compatible with yard management systems, highlighting container placement, stack order, and wagon assignments. To improve tractability and scalability, the model deployment includes decomposition strategies that break the overall problem into smaller, manageable sub-problems for incremental pendency and Hub & Spoke operations. The model is solved using CPLEX. A rolling horizon approach allows for periodic re-optimization in response to updates in inventory of containers. Empirical Validation and Implementation The model has been tested on several live trains over a six-month period for a major EXIM terminal. Results show an average haulage cost savings of 2% to 3%, confirming its financial benefits. Given the scale of operations on dedicated freight corridors, these savings are estimated around Rs. 30 crore per year. Beyond cost, the system improves slot utilization, reduces human errors in planning, and provides a quantitative support for evaluation of policies. With the new optimization model, the users can generate efficient loading plans in a variety of scenarios (different rake types, container types, route conditions, service level requirements). After the success of this implementation, the model is scheduled to be implemented across XYZ network soon. Conclusion This study illustrates how a theoretically sound optimization framework can be effectively adapted and deployed in a live logistics environment. By developing a new decision support system based on the DSLP model, we demonstrated that prescriptive analytics can deliver significant and repeatable benefits in complex freight environments. The solution balances cost-efficiency with regulatory compliance, aligns with industry-defined priorities, and enhances scalability. As India continues to modernize its logistics sector, models like this tailored for local infrastructure and business conditions will play a pivotal role in driving sustainable and efficient freight movement.

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Submission ID: 528

Track 06: Transportation and Logistics

## **Tech-Driven Entrepreneurship in the EV Ecosystem: Leveraging ML and OR for Fleet Optimization**

*Mohd Tabrej Alam and Rudra Prakash Pradhan*



**Abstract:** 1 Introduction The transportation sector worldwide is undergoing a shift driven by two dynamics, sustainability, and technical advancement, with the massive take-up of EVs as the key strategy (Buekers et al., 2014). The overall and quite large problem of managing electric vehicle fleets involves route planning to minimize energy demands, ensuring adequate charging points for vehicles, managing the operational use of fleets, and responding to real-time demand fluctuations. Such challenges are vital to be addressed by entrepreneurial ventures in arriving at innovative solutions to such challenges. SMEs are rather prepared to trial disruptive technology and business models that employ cutting-edge advancements in the application of machine learning (ML) and operations research (OR). Due to dynamism, creativity, market upset, and expansiveness, entrepreneurial businesses are well-suited to deal with these difficulties (Mehta et al., 2021). Examples of entrepreneurial success in this area are firms that developed AI-powered fleet management software, improved urban delivery networks by utilizing electric bikes and vehicles, and companies offering dynamic routing and smart scheduling solutions compatible with the inherent capabilities of electric vehicles (Goel et al., 2021). The research aims to analyze challenges in operating electric vehicle fleets, propose a machine learning-operations research framework, explore the business opportunities, and assess the implications of machine learning-operations research on the environment. 2 Research Problem The sharp increase in the adoption of EVs necessitates new approaches to their management and operation. Major challenges include routing constraints imposed by battery capacity, limited charging infrastructure, fluctuating fleet and energy demand, vehicle use and occupancy, decision-making under risk and uncertainty, and evaluating and enhancing the sustainability of electric vehicles (Ghosh et al., 2023). Despite significant advancements made independently in the domains of operations research and machine learning, the absence of a comprehensive framework offering end-to-end optimization highlights the need for hybrid approaches (Li et al., 2022). This gap in research and application presents a unique business opportunity for entrepreneurial endeavors to disrupt traditional transportation paradigms, create sustainable business models, and develop technology-based marketplaces (Kumar & Banerjee, 2023; Zhao et al., 2020). 3 Proposed Methodology This paper describes a mixed method fleets of electric vehicles that adopt both ML and OR techniques. It is structured into independent stages each of them addressing selected aspects of the EV ecosystem such as route selection, vehicle fleet use and charging station organisation. Combining machine learning and operations research ensures that correct forecasts inform decisions on optimisation, creating a fluid and efficient system of fleet management. Data acquirement and data preprocessing include many datasets such as traffic data, energy consumption data, demand data, and geographical data. Operations research focuses on responding to optimisation problems with machine learning models, where they have found most utility in route and scheduling changes, charging station locations, and fleet deployment. The proposed ML-OR approach integrates machine learning models with OR optimisation structures, that include data-based initialisation, feedback/control loops and learning mechanisms. The performance metrics used with regard to the identification of the applicability of the proposed framework relate to operational effectiveness, usage ratios, customer satisfaction, and response to sustainability. The sensitivity analysis, case studies, and simulation are used as an experimental validation. 4 Results The research presents ML—OR integrated approach for managing EV fleets to tackle challenges identified in the literature. The has been tested in a simulation studies,



case analyses which demonstrated its effectiveness for addressing concerns relating to route planning, fleet consumption, charging infrastructure, and sustainability. Major outcomes include higher operating economy, effective utilisation of charging infrastructures, and sustainability impacts. As documented in the ML-OR framework, there was a decrease in total energy usage of approximately 18%–22% within comparison to original OR-based routing strategies. Dynamic allocation models improved the rates of vehicle utilization by a quarter which in turn have improved demand satisfaction by minimizing idle time. Improvements on scheduling increased battery charging availability in real-time by 30% improving vehicle availability. Result shows high performance in various fleet size from small urban fleets to large interstate fleets. There were numerous issues highlighted in the study, which include data dependency, high computation, and integration challenges. Future research should focus on addressing these limitations with better ways of sharing data through better protocols in big data analysis, distributed computing systems, and easily accessible open-source software for combined ML-OR modelling.

5 Conclusion Integrating machine learning and operations research brings a significant improvement in the practical application of managing electric vehicle fleets. Potential benefits of the proposed ML-OR hybrid system comprise operational efficiency, the reduction of sustainability effects, optimal use and enhancement of the infrastructure, and versatility (Li et al., 2022). This strategy incorporates the functional activity decisions with environmental premiums, thereby negating carbon and energy consumption. The framework ensures optimality in the use of current resources and efficient increases in infrastructure. The flexibility enables the maintenance of sound operations in several operating conditions. The implication for technology entrepreneurship is therefore highlighted in the electric vehicle value chain whereby companies can engineer extra value proposition models like fleets-as-a-service, smart charging infrastructure, and green delivery solutions. Future directions would include improving the quality of data, enhancing computational processes, and incorporating policy.

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Track 06: Transportation and Logistics

## Driving Efficiency: A Demand-Based Dynamic Pricing Model and Optimal Allocation of EV Parking and Charging Revenue

*Sumeetha Sharma, Achal Mate and Sumitro Santra*

**Abstract:** The electric vehicle (EV) market has experienced substantial growth in recent years, driven by technological advancements, growing awareness of environmental issues, and a rising demand for sustainable transportation. Car manufacturers continue to improve EV models, making them more efficient, high-performing, and user-friendly. One of the biggest advantages of EVs is their lower environmental impact, as they produce fewer emissions than traditional cars. They also help drivers save money in the long run by reducing fuel and maintenance costs. When it comes to charging, public stations offer different power levels, ranging from slow ( $\leq 8\text{kW}$ ) to ultra-rapid ( $150\text{kW}+$ ). These stations

use different pricing methods, including charging per kilowatt-hour, per minute, per session, or through subscription plans. Some also use dynamic pricing, where rates change based on demand. However, one major challenge for charging station operators is uneven demand throughout the day. A single, fixed pricing system can lead to problems such as charging stations being overcrowded during peak hours and nearly empty at other times, resulting in lost revenue and inefficient use of resource. This research aims to explore how dynamic pricing where charging costs fluctuate based on demand can help balance the facility usage while increasing revenue. By adjusting prices throughout the day or offering different rates on weekdays and weekends, operators can encourage drivers to charge at off-peak times, reducing congestion. Kalakanti, A. K., & Rao, S. (2024) discusses a multi-objective dynamic pricing model that addresses challenges like revenue optimization, quality of service, and grid stability. Matkovic, D. et.al. introduces a dynamic pricing model to distribute traffic across EV charging stations using demand forecasts. Kazemtarghi, A., Mallik, A., & Chen, Y. (2024) presents a dynamic pricing strategy aimed at directing EVs from congested and crowded charging stations to less crowded ones. The study examines various pricing models to enhance the efficiency, accessibility, and cost-effectiveness of EV charging stations, aiming to achieve mutually beneficial outcomes for both operators and EV users. Bayih, S. H., & Tilahun, S. L. (2024) reviews various approaches to dynamic parking pricing, including game theory, stochastic control, and multi-objective programming. It emphasizes time-varying pricing strategies to optimize parking supply and minimize traffic congestion. The research gap addressed in this research paper is the integration of dynamic pricing models with real-time space allocation strategies for EV parking spaces, which combines factors of charging needs, peak hours, and parking duration. While existing literature primarily focuses on dynamic pricing for EV charging to optimize utilization, demand management, and revenue, this approach extends further by also addressing the needs of non-charging vehicles within the same facility. In this research paper the pricing and allocation problem is formulated using a deterministic network revenue management (NRM) model with fixed capacity constraints. The framework incorporates variables such as arrival time, departure time, and fixed length of stay, and optimizes a linear programming formulation to determine the optimal allocation and pricing strategy. The model assumes that EV parking demand follows a time-varying pattern, increasing from 10:00 a.m., peaking around 2:00 p.m., and subsequently declining until 6:00 p.m. This temporal variation is captured using a non-homogeneous Poisson process, which allows for dynamic changes in arrival rates over time. To enhance realism, the model is further extended to account for day-of-week variations, distinguishing among weekdays, weekends, and public holidays. Each category exhibits distinct arrival patterns, influenced by differences in travel behavior and user routines. For instance, weekends may see demand spikes later in the day or exhibit flatter curves compared to typical weekday office-hour peaks. This mirrors realistic daily EV usage patterns and allows us to examine how system capacity and pricing decisions evolve over time. As demand varies across the day and week, facility usage shifts from partial utilization to full capacity. This transition point enables dynamic pricing adjustments, effectively implementing congestion-based pricing. Shadow prices, or bid prices, derived from the model, reflect the marginal value of capacity over time and signal when and how prices should be adjusted to manage demand efficiently. The pricing system automatically adjusts rates based on factors like peak hours, charging needs, and parking duration. It also includes an optimal space allocation strategy to ensure

efficient use of parking spots. Prioritizing EVs that need charging while allowing non-charging vehicles to park in general spaces. Through simulations and analysis, our model identifies key factors that influence revenue and space efficiency, such as arrival rates, charging time, and drivers' sensitivity to price changes. By using real-time demand data, this approach provides useful insights for facility operators, allowing them to adapt their pricing and space allocation strategies as needed. Overall, this dynamic pricing system not only improves operational efficiency but also supports the growth of EV infrastructure by encouraging smarter charging behaviors and better resource use. The model distinguishes between EVs requiring charging and those that do not, introducing a prioritization mechanism within the space allocation logic. This differentiation ensures that charging infrastructure is used optimally while maintaining flexibility for non-charging vehicles. These simulations reveal how revenue, occupancy levels, and efficiency metrics respond to variations in arrival rates and demand. The model supports revenue maximization and congestion control while promoting sustainability through efficient EV infrastructure use. It offers a scalable, data-driven solution adaptable to urban contexts, laying the foundation for intelligent, responsive parking systems in the era of electrified mobility. This study is among the first to model EV parking revenue management using deterministic network optimization combined with demand variation captured through a non-homogeneous Poisson process and optimization-based simulation.

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Submission ID: 623

Track 06: Transportation and Logistics

## Optimizing Smallholder Farmers' Returns by Managing Price Risk \ with Crop Collateral

*Lalbabu Nishad and Govind Kumawat*

**Abstract:** Smallholder farmers, who own less than five acres of land, account for nearly 84% of the agricultural workforce but often face limited access to post-harvest storage, working capital, and formal credit. As a result, they are often compelled to engage in distressed selling. In this study, we develop a stochastic dynamic model that incorporates warehouse receipt systems (WRSs) under real-world constraints often faced by smallholder farmers. We characterize the optimal policy for allocating harvested output between immediate sales and stock for collateral, and identify conditions under which delayed sales enhance expected returns. Specifically, the optimal stock decision takes the form of a sell-down-to policy, where the threshold depends jointly on the farmer's initial working capital, stock level and market prices. Further, we find that the threshold for optimal stock level increases with both working capital and initial stock, whereas it decreases with the prevailing market prices. Finally, to quantify the income gains and risk mitigation potential of WRS, we implement our analytical findings on real-time

market data across several crops. To assess the economic value of WRS, we apply the model to real-time market data across multiple crops. Interestingly, results show that WRS generates substantial income gains and risk reduction for crops with high price dispersion, such as cotton, but offers limited benefits for others. Our findings contribute to the literature on agricultural supply chain finance and risk management, offering practical guidance for both farmers and policymakers on the conditions under which WRS adoption is most effective.

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Submission ID: 652

Track 06: Transportation and Logistics

## APPLICATION OF MULTI-CRITERIA SPATIAL FRAMEWORK IN OPTIMAL LOCATION PLANNING FOR A QUICK-COMMERCE DELIVERY NETWORK

*Anand Kumar Singh, Dr. Anshu Mehta and Dr. Santosh Kumar*

**Abstract:** 1. Introduction: In the context of urban logistics, the Q-commerce segment, which effectively integrates the convenience of online retail with instantaneity of physical store delivery (Stojanov, 2022), is characterised by ultra-fast delivery time of (10-30 min.) indicating that shorter lead-time would make a perfect business sense. The limited price premium/low margin on the orders and low willingness-to-pay on quick delivery services also offer significant challenge to the segment. Hence, the processes involved has to be cost-efficient (Yang et al., 2024) and the network of dark stores / micro-fulfilment centres (MFCs) should ensure quick distribution. The optimal layout of network of such dark stores is paramount to the cause of minimising delivery time and operational costs. Improper location planning without an effective solution leads to failures in 50-60% of the businesses (Wagistina et al., 2022). The optimization of dark store location requires delivery routes and distribution network comprises of multiple dark store locations. Hence, a network problem taking into account the number, locations, size and type of dark centres etc. can be formulated with the constraints of lead times and delivery restrictions at each dark store. The network-based optimal location planning typically requires four strategic parameters viz. city geography with details like roads, sector-wise distribution etc., proximity to the serving population, coverage to the population cluster, and accessibility in terms of last-mile connectivity. The current study proposes to use multi criteria-based spatial framework, which involve integration of GIS with AHP, to facilitate informed decision-making in terms of optimal network planning by considering multiple criteria and spatial information. GIS enables combining of spatial data, infrastructure, demand patterns, and decision criteria into a single visual and analytical platform. Apart from this, the application of AHP in terms of assigning weights to the above diverse criteria, enables to optimize network operations, reducing costs and improving efficiency, hence providing a holistic decision framework. 2. Literature review: Integration of GIS and multi-criteria analysis in case of reverse logistics centres was evaluated by (Acar et al., 2015), which calculated suitability levels of candidate cities based on decision criteria. (Aljohani & Thompson, 2020) uses TOPSIS with real

geographic data to select 20 candidate sites, which later were evaluated and ranked, whereby (Asghari Siahboomy et al., 2021) used BIM-GIS interface with AHP analysis to optimise industrial warehouse location. Similar research was carried out by (Aboulola, n.d.), (Önden, 2018), (Saha & Roy, 2021) for decision-making in location planning for small retail facilities, single-generic facility and built-up development sites respectively. It may be observed from previous literature that integrated use of GIS and multi-criteria analysis has never been applied for the purpose of optimal location network planning for quick-commerce segment. Besides, there remains a broad gap in understanding how to adapt these models in a typical Asian city like Delhi, which is characterized by dense population, different traffic mix, high traffic congestion, low traffic enforcement and diverse logistical challenges.

**3. Objectives:** Based on the research gaps, following research objectives have been formulated.

- Develop an integrated multi-criteria spatial evaluation framework for the optimised dark store/MFC network planning considering Delhi's urban logistics environment.
- Undertake optimization of dark stores/MFC locations by considering specific parameters like cost efficiency, operational efficiency, accessibility, and proximity to customer clusters through assigning of weights and pairwise comparison of alternatives.
- Develop a QGIS network analysis module involving various features like buffer analysis, network analysis and overlay analysis to perform detailed spatial evaluation of the study area.
- Evaluate the trade-off between parameters like availability of rented space, service quality, delivery speed, cost efficiency, demand variation etc. to prepare an optimum delivery network for q-commerce service and comparison of its performance with an existing dark store network.

**4. Methodology:** The area under the study has been identified as Dwarka sub-city in the South-West Delhi. It is primarily a residential area, which is divided into sectors, which has different land use including residential, commercial and educational etc. The next step is the preparation of base map with various layers and data points like road network, dark store sites, population density and clusters etc. in QGIS, which is an open source GIS platform. Through AHP, a pairwise comparison has been done to evaluate the relative importance of different criteria. This will be followed by undertaking multi-criteria suitability analysis at network level for each of the store locations to understand multiple scenarios followed by the sensitivity analysis.

**5. Results:** The results of the analysis includes scoring or ranking of multiple dark location sites, which can be visualised in QGIS layered framework. Sensitivity analysis across studies showed that while rankings may change with large shifts in weights, the top few dark locations remain relatively stable under modest changes. The spatial, operational and qualitative data have been presented and compared. The Transformation of all data into a comparable format have been facilitated by the framework.

**6. Discussion:** The results have been interpreted in line with the set research objectives and found to fulfil most of them. Although, the proposed framework offers a formal structured approach to facility location planning, its effectiveness may be weakened by assumptions, possibility of data constraints and subjectivity in decision-making. Hence, future research may involve on dynamic and real-time optimization model integrated with spatial intelligence and space for stakeholder-driven priorities.

**7. Conclusion:** The facility evaluation framework integrating the GIS and multi-criteria decision making applied to the quick commerce service delivery network in Delhi proves to be more comprehensive, transparent and customisable. The data pre-processing has input of comparability and its integrated properly with the GIS overlay. Hence, it may be concluded that spatial multi-criteria



analysis is key to the data-backed justification of dark store locations preferences. Hence, it may be concluded that a well-constructed and structured spatial MCDM framework can handle challenges in optimal location planning in urban logistics context.

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Submission ID: 672

Track 06: Transportation and Logistics

## Optimizing throughput performance of dry bulk terminal operations using integrated queuing network models

*Mitrabaran Ghosh (Indian Institute of Management Ahmedabad), Debjit Roy (Indian Institute of Management Ahmedabad).*

### **Abstract:** Introduction

With a global increase in the demand for bulk commodities, especially iron ore and coal, the dry bulk shipping market is witnessing steady growth. However, a significant hurdle to growth is the long dwell times experienced by dry bulk vessels at terminals. Although container or bulk liquid handling operations can be largely automated, dry bulk handling operations experience delays due to manual processes, variations in cargo type, and cargo quantity-dependent crane handling speed, among others. Further, the discharge processes are quite complex, with significant resource coordination among cranes, wheel-loaders, and transport vehicles (trucks). In addition, variations in the cargo storage layout, buffer space for interim cargo storage, cargo quantity, crane grab size, and the number of resources affect the overall throughput of the terminal. Cargo unloading operation in seaports begins with the arrival of a vessel. Once the vessel is moored to a particular berth, cranes are employed to unload the cargo. Cargo handling operations can be performed in various ways. For an automated terminal, the cargo is directly unloaded into the hopper and belt conveyor to transport it to the stockyard (van den Brand et al., 2015). For the semi-automated terminal, the unloaded cargo is stored in heaps adjacent to the crane at the quayside. Loaders, available at the quay, are used to pick up and load the cargo from the heap to the dump truck (used as transfer equipment) for storing in the terminal yard. The dump trucks follow guided paths to transfer the cargo to the stockyard. Once they unload the cargo at the designated place in the yard, the empty trucks return to the quayside. The cycle ends when the crane ceases operation, and there is no waiting cargo to be handled in the quayside. In the stockyard, stackers and reclaimers consolidate the stockpile in heaps. In our research, the stochastic interactions between the quayside and landside operations are represented in a closed-queuing network model. As the quayside space is finite, the unloading rate of the quay cranes vary. Here, we consider dump trucks as cargo transfer equipment (adopted at several terminals such as the Port of San Lorenzo (Argentina) and Kandla Port (Deendayal Port) for the movement of fertilizer, coal, and grains). As each truck has a finite capacity, a large availability of empty trucks ensures substantial space at the quayside. Trucks are the circulating resources in the closed-queuing network, and their availability at the quayside dictates the speed of quayside operation. Our research aims to find the throughput performance of the dry bulk terminal with a finite number of trucks. We develop individual closed-queuing network models for



different scenarios of crane and wheel-loader combinations and develop the models with a standard stockyard layout. The performance of the models, expressed in terms of the throughput times (round-trip times) of the trucks, is analyzed using the Aggregation Disaggregation method with the first and second moments of truck travel time (Dallery, 1990; Roy, 2015). Further, the steady-state probability distribution of the trucks at different nodes is obtained. Using this modeling framework, stockyard layout combinations with minimum truck throughput time are obtained, which are further used to compare the efficiency of square and rectangular stockyards with the same number of stockpiles. In addition, the model is used to understand the effect of the size of the grab crane, the buffer space on the quay side, and the number of trucks on terminal performance.

#### Model Description

The cargo unloading and storage operation can be divided into two stages- (i) cargo unloading and (ii) cargo transmission. In the first stage, dry bulk cargo is unloaded by crane(s) to the quayside and loaded into the truck. Once the trucks are loaded with cargo, the second stage begins, where dump trucks follow guide paths to unload cargo in the stockyard and return to the quayside. Once a dump truck unloads its cargo at its designated heap inside the stockyard, it returns to the quayside. Thus, three key resources are involved in the unloading process: (i) crane(s), (ii) loader(s), and (iii) trucks. Depending on the number of loaders and cranes in the network, three scenarios are considered for estimating the performance of the queueing network. In the first scenario, a single crane unloads the cargo to a quayside buffer where only a single wheel loader (simply called 'loader') loads the cargo to the dump trucks. We follow the CTMC approach to determine the throughput performance of both disaggregated and aggregated queueing networks.

#### Simulation Validation and Computational Experiments

A discrete-event simulation model of the closed queueing network validates the results of the analytical models. The simulation model inputs include exponentially distributed load-dependent crane service times (in minutes) with mean value from the set  $\{3.00, 2.85, 2.70, 2.55, 2.40, 2.25, 2.10, 1.95, 1.80, 1.65, 1.50\}$ , buffer is set to 10, and exponentially distributed loader transmission time with a mean of 15 minutes. The absolute percentage errors are quite low (up to 3.75%) for expected throughput time and resource utilization. Additionally, the absolute errors in queue length are up to 7.5%. Expected throughput, resource utilization, and queue length have average absolute errors of 1.26%, 1.22%, and 2.83%, respectively. We also conduct numerical experiments to determine the truck travel time and throughput estimates of the different crane-loader combinations. We take the cargo unloading data for the year 2023-24 of Mormugao Port to validate the throughput performance. The port has two dry bulk terminals, each equipped with two quay cranes. The cargo from two terminals is transferred to a single stockyard of  $4 \times 3$  dimensions by conveyor belts. The rate of transfer by conveyor belt is 2500 metric tons per hour at berth, and the total unloaded quantity is 10.46 million metric tons of coking coal. As our case considers dump trucks instead of conveyors, we determine the number of trucks (N) in the system capable of transferring 2500 tons of coal per hour. A standard large dump truck can carry a maximum load of 15 metric tons. So,  $N = 2500/15 = 167$  trucks. The port directly transfers cargo to the landside without any intermediate buffer space. Hence,  $B = 0$  and the number of loaders =  $\infty$ . We put these values in the closed queueing network for scenario III to get a throughput of approximately 85

trucks per hour, which generates  $85 \times 15 \times 24 \times 365 = 11.15$  million metric tons of cargo throughput per year with an error of 6.6%.

### Design Insights

We also analyze the terminal performance with alternative layouts, quay crane grab size, buffer size at the unloading site, type of cargo, and provide a cost-benefit analysis framework for justifying capacity investments. The number of trucks (N) is fixed at 12, and the buffer space (B) in the quayside is kept constant at 10. The number of cranes (N<sub>c</sub>) and the number of loaders (N<sub>L</sub>) are fixed at 1. We also consider two types of cargo with a different angle of repose: coking coal and limestone, and with fixed heap height. First, we study the combinations of layouts that can produce 24, 50, 100, 150, and 200 coking coal heaps. Next, we change the cargo to limestone and revise the number of heaps. The travel times of the trucks for all 30 combinations of layouts and two types of cargo are calculated independently, and the expected round-trip time for the trucks is reported. When the cargo is stored in large heaps due to its low density, a stockyard with relatively square dimensions generates high throughput. However, with a high-density cargo (such as limestone), skewed layouts can produce high throughput performance for a small number of heaps. But when the number of heaps is significantly large and the layout is highly skewed, the performance of a high-density bulk stockyard is poor. Similarly, for low-density cargo (such as coal), skewed layouts result in poor throughput. One of the important design factors is the size of the quay crane grab. The larger the grab size, the more it can unload cargo. A grab with a small size cannot unload a large stockpile of cargo in a short time. So, increasing the grab capacity can improve the unloading time of the cargo. The overall cargo throughput is also better for cranes with large grabs. If the grab capacities of multiple cranes working in parallel are different, multiple loaders should be assigned to each crane to maximize the throughput performance. When the number of heaps and dimensions of a stockyard are constant and the cargo type is changed, the throughput performance varies due to the changes in the unloading rate of the crane for a different cargo. For a high-density cargo with significant weight, a quay crane unloads at a slow pace. After studying all crane-loader design choices, we see that multiple cranes with multiple loaders can generate high throughput even for high-density cargo. For a dry bulk terminal with many circulating trucks, multiple cranes with multiple loaders always produce maximum profit. If the number of recirculating trucks is less, a single crane and multiple loaders can also be a feasible choice.

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## TWINCEPTION: INTELLIGENT DIGITAL TWINS IN DIGITAL SERVITIZATION FOR SMART AND SUSTAINABLE LOGISTICS 5.0

*Pramit Khatua and Himanshu Gupta*

**Abstract:** Introduction Industry 5.0, which combines advanced digital technologies with human-centric and sustainable practices, is transforming logistics sector (Ghobakhloo et al., 2022; Taj & Zaman, 2022). The current technological shift places significant emphasis upon the logistics sector; especially new mechanisms applied in the logistics sector. The emphasis of Industry 5.0 on the logistics industry improves efficiency, fosters innovation, and prioritizes human centred design. The digital transformation of the logistics sector, enabled by Industry 5.0 technologies borne logistics 5.0 (Torbacki & Kijewska, 2019). Logistics 5.0 integrates modern technologies such as blockchain, digital twins, intelligent transportation systems, RFIDs etc., primarily emphasizing sustainable transportation management, information security, effective, adaptable, and environmentally friendly storage (Barreto et al., 2017). With increasing demand for sustainability in the logistics sector, sustainable development goals are being integrated in logistics 5.0 (UNDP, 2017; Al-Minhas et al., 2020). In this pursuit of sustainable development in the logistics sector, one of the important technologies is intelligent Digital Twins (Grieves, 2024). Intelligent Digital Twins (iDTs) provide visibility, transparency, cooperation, and traceability (such as containers and their physical locations) (Ivanov, 2023). In this paradigm, Intelligent Digital Twin based digital servitization—the incorporation of technologies to improve product-service offerings in the digital world—significantly transforms the design, management, and optimization of logistics operations (Chen et al., 2023). From transparency in the logistics sector to cooperation among logistics firms, traceability of cargo can be achieved through the adoption of intelligent digital twin-based digital servitization. Objectives IDTs are the centre of attention in this research, which focuses on digital servitization the logistics industry. This study emphasizes on the strategies to Intelligent Digital Twin implementation in the logistics sector, focusing on digital servitization. The study discusses the subsequent research objectives RO 1. To ascertain the principal strategies associated with the deployment of Intelligent Digital Twins for digital servitization in the advancement of a sustainable logistics industry. RO 2. To ascertain ranking of the strategies. RO 3. To create and assess influence assessment among these strategies. Methodology This research examined many approaches and settled on the ‘Best Worst Method’ (BWM) and a novel approach of Grey Influence Analysis (GINA). This extensive methodology allows a thorough assessment derived from various stakeholders engaged in the domains of Industry 5.0 and logistics. BWM is an approach for Multi-Criteria Decision Analysis (MCDA) (Rezaei, 2015). It was established to effectively gather criterion weights from specialists (Rezaei, 2016). The BWM technique offers a reduction in computing cost compared to other methods by using integers in the ranking process (Tarei et al., 2021). GINA was applied to enhance BWM results by offering an advanced framework for assessing the impact of diverse components under uncertainty (Rajesh, 2023). This research uses a paired theoretical paradigm, merging

the Technological, Organizational, and Environmental (TOE) framework and the Human, Organizational, and Technological (HOT) framework (Aligarh et al., 2023). Human-centric, organization dynamics and technological innovation approach to sustainable industrialization are seen via this composite framework. Results By employing the specified approaches, pertinent Strategies were identified. In the technology domain, a primary strategy is ‘Technological Integration’. The integrated BWM-GINA methodology identifies standardization as a primary strategy for the organization category. In the environmental domain ‘Resource Conservation’ is a significant strategy. Ultimately, in human dimension ‘Trustworthiness’ emerges as a primary strategy. Discussion This study's multi-layered estimation shows Logistics 5.0, Intelligent Digital Twins, Sustainable Development, and digital servitization's influence. This study provides a solid framework for logistics firms and the best use of technologies like Intelligent Digital Twins, Digitalization, etc., to achieve sustainable development goals. Conclusion This study can help emerging-market logistics firms achieve sustainability. Government policymakers can use this study to emphasize Intelligent Digital Twin-enabled Digital Servitization in the logistics sector. This study also affects academia and research. Finally, this study affects society overall as well in the era of Industry 5.0.

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Submission ID: 680

Track 06: Transportation and Logistics

## Future-Proofing Pharma: Leveraging Industry 4.0 for Sustainable, Resilient Supply Chains

*Anushree Jain and Sonia Davar*

**Abstract:** Extended Abstract Introduction & Motivation Pharmaceutical supply chains in emerging economies operate under severe resource constraints, resulting in stockouts, high spoilage rates, inadequate cold chain systems, and operational inefficiencies. These challenges disproportionately impact rural and underserved areas, threatening equitable access and sustainability. Recent disruptions, notably during COVID-19, have exposed vulnerabilities in these supply chains, emphasizing the need for robust, future-proof solutions. Emerging Industry 4.0 (I4.0) technologies—including IoT-enabled monitoring, AI-driven forecasting, and smart cold chain systems—hold potential to transform these systems. However, decision-makers face critical questions: Which technologies provide the greatest impact? Which are feasible in low-resource settings? How can adoption be phased and data-driven? This study addresses these questions by integrating analytical prioritization, dynamic simulation, empirical validation, and stakeholder and policy scenario analyses to assess I4.0 technologies in pharmaceutical supply chains, using rural India (Bihar) as a representative context. Literature Review Industry 4.0 (I4.0) technologies are transforming global supply chains by introducing digitalization, real-time monitoring, predictive analytics, and greater resilience. In healthcare, these tools promise to reduce stockouts, prevent cold chain failures, and enhance operational efficiency. Artificial intelligence

(AI) and machine learning (ML) have shown potential to significantly improve demand forecasting accuracy — by up to 87% — and enable faster recovery during disruptions, though their scalability in low- and middle-income countries (LMICs) remains largely unexplored (Okonkwo et al., 2025). Similarly, IoT-based monitoring systems have demonstrated the ability to improve resource efficiency and reduce temperature excursions in cold chains, which is critical for pharmaceutical logistics (Alkhodair & Alkhudhayr, 2025). Blockchain, while often proposed to enhance data security and supply chain transparency, faces major barriers in LMICs due to high costs and complex regulatory environments (Precious, 2025). Despite growing interest in I4.0 for advancing supply chain sustainability, most studies focus on manufacturing and high-income settings, offering limited insights for public health supply chains in LMIC contexts (Govardhan et al., 2025). Research Gap Although prior research demonstrates the promise of I4.0 technologies, few studies explicitly address: Prioritization and ranking of technologies based on context-specific impact and feasibility in LMIC settings. Integrated evaluation combining simulation, stakeholder readiness, and policy scenarios to inform phased adoption. Empirical validation with real-world operational data from resource-constrained health supply chains. Methodology This study combines Fuzzy Analytic Hierarchy Process (Fuzzy AHP)-based Multi-Criteria Decision Analysis (MCDA), MOORA ranking, Monte Carlo simulation, empirical validation, stakeholder readiness assessment, and policy scenario analysis. Seven I4.0 technologies—Smart Cold Chain, IoT Monitoring, Cloud ERP, AI/ML, Blockchain, RFID, and Drones—were assessed against 14 impact and feasibility sub-criteria derived from the Technology-Organization-Environment (TOE) framework. Criteria included emissions reduction, supply continuity, implementation risk, integration compatibility, and policy alignment. Fuzzy AHP addressed uncertainty in criteria weights using literature, global program evaluations (PATH, GAVI, WHO), and national platforms like eVIN, CoWIN, and CCEOP. MOORA then ranked the technologies using pilot data and cost-benefit studies. Monte Carlo simulations (36 months, 500 runs) evaluated dynamic impacts of the top-ranked technologies (Smart Cold Chain, IoT, Cloud ERP), modeling emissions, spoilage, stockouts, and inventory variability under adoption and logistics uncertainties. Simulation outcomes were validated using operational data from Bihar and national reports (eVIN, UNICEF, GAVI), enhancing external validity. A stakeholder readiness assessment (n=10; cold chain handlers, IT managers, vaccine administrators) evaluated perceived integration ease, workforce readiness, and trust. Finally, policy scenario simulations examined three adoption conditions: “Policy Push” (high adoption), “Status Quo” (moderate), and “Funding Constraints” (low). Results and Findings Smart Cold Chain ranked highest due to strong contributions to emissions reduction, supply continuity, and policy alignment. IoT Monitoring ranked second, excelling in spoilage reduction and traceability, while Cloud ERP ranked third for inventory optimization and operational efficiency. AI/ML, Blockchain, and Drones showed potential but were deprioritized due to integration complexity and high digital maturity requirements. Monte Carlo simulations showed Smart Cold Chain could reduce emissions by 25–30%, spoilage by 30%, and stockout durations by over 40%. IoT Monitoring reduced spoilage and cold chain failures by 15–20% via real-time alerts and response. Cloud ERP reduced inventory misalignments and overstocking by 20%, improving forecast accuracy and supply visibility. Bundled deployment of Smart Cold Chain, IoT, and ERP amplified outcomes, achieving 32.2% reduction in emissions, 19.5% in



spoilage, and 18% in inventory excess, highlighting strong synergistic benefits. Feasibility analysis using TOE-informed sub-criteria showed Smart Cold Chain and IoT to be highly scalable in India, supported by programs like eVIN, CoWIN, and CCEOP. Cloud ERP requires phased integration due to digital readiness constraints. AI/ML, Blockchain, and Drones faced adoption barriers including regulatory hurdles and limited cost-effectiveness. Empirical validation with Bihar data (eVIN, CoWIN, UNICEF, GAVI) confirmed strong alignment between simulated and real-world outcomes, supporting model robustness. Stakeholder assessments revealed IoT Monitoring had the highest readiness (ease of integration, trust), Smart Cold Chain had moderate readiness (training and maintenance challenges), and Cloud ERP had lower readiness (digital literacy and data entry concerns). These findings emphasize the need for phased, context-sensitive rollouts. Policy scenario simulations showed emissions and spoilage reductions exceeding 30% under “Policy Push,” 15–20% under “Status Quo,” and below 10% with constrained funding. This underscores the importance of strong policy commitment and financial investment to fully realize technology benefits. Policy and Managerial Implications The study offers actionable guidance for policymakers and program managers in resource-limited settings. A bundled, phased rollout of Smart Cold Chain, IoT Monitoring, and Cloud ERP delivers superior performance compared to isolated deployments. A recommended strategy starts with digital platforms (IoT, ERP) to build readiness and capacity, followed by Smart Cold Chain upgrades as infrastructure matures. This phased approach aligns with India’s eVIN and CoWIN experiences and supports adaptive scaling. Smart Cold Chain and IoT offer the highest sustainability and operational gains relative to implementation complexity, making them strong short- to medium-term priorities. Cloud ERP, despite requiring more integration effort, offers valuable returns through improved inventory accuracy and reduced stockouts. Simulation-informed performance metrics (e.g., emissions reductions, spoilage avoidance, overstock minimization) can guide investment decisions and enable outcome tracking. Governments and donors can incorporate these benchmarks into annual logistics assessments. Leveraging existing digital health infrastructure (e.g., OpenLMIS, DHIS2) reduces duplication, facilitates adoption, and supports long-term sustainability. Conclusion This study presents a comprehensive, data-driven framework integrating multi-criteria prioritization, dynamic simulation, empirical validation, stakeholder readiness, and policy scenario analysis. Results demonstrate that a phased, bundled deployment of I4.0 technologies can substantially enhance resilience, sustainability, and efficiency in pharmaceutical supply chains in LMIC contexts.

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Submission ID: 686

Track 06: Transportation and Logistics

## **Analysing Barriers to Smart Maritime and Shipping Logistics: A Stakeholder-Based MCDM Approach**

*Kona Tanvitha and Dr. Subhas Chandra Misra*



**Abstract:** The maritime industry is a vital pillar of global trade and supply chain efficiency, responsible for the transportation of approximately 90% of global trade volume. In recent years, the maritime and shipping sector has been under increasing pressure to enhance transparency, agility, sustainability, and resilience. To address these demands, many organizations have started exploring the adoption of smart logistics, a concept that integrates digital technologies such as the Internet of Things (IoT), artificial intelligence (AI), blockchain, big data analytics, and automation into maritime operations. While the potential benefits of smart maritime logistics—such as reduced operational costs, improved cargo handling efficiency, and real-time decision-making—are well recognized, the actual rate of implementation remains relatively low across many regions and organizations. This study focuses specifically on investigating the barriers that hinder the adoption of smart maritime and shipping logistics. Rather than examining enablers or success factors, this research focuses on the constraints and challenges that hinder stakeholders from embracing digital transformation. The purpose of this research is threefold: (1) to identify and categorize the major barriers, (2) to analyze the relative significance of each barrier using a suitable Multi-Criteria Decision-Making (MCDM) technique, and (3) to develop a conceptual framework and hypotheses to support future empirical testing and policy recommendations. Through an extensive literature review and consultations with domain experts, we have categorized the barriers into five major dimensions: operational barriers, technological barriers, organizational barriers, environmental barriers, and legal and government policy barriers. These categories provide a comprehensive structure to understand the multifaceted nature of the problem. For instance, operational barriers may include inefficient port processes, fragmented supply chain coordination, and limited cargo visibility. Technological barriers often involve outdated IT infrastructure, cybersecurity concerns, and a lack of interoperability among digital systems. Organizational barriers refer to internal resistance to change, lack of skilled personnel, and insufficient managerial support. Environmental barriers encompass challenges such as climatic conditions affecting port infrastructure or a lack of ecological sustainability standards. Legal and policy-related barriers include the absence of regulatory clarity, data privacy issues, and inconsistent maritime digitalization policies. To gather primary data, a structured questionnaire will be developed based on the five dimensions of barriers. Each dimension will include a set of Likert-scale items designed to capture the perceptions of stakeholders regarding the presence and severity of each type of barrier. The questionnaire will be distributed to a diverse group of maritime professionals, including port authorities, shipping line managers, terminal operators, logistics service providers, customs officers, and IT consultants. The goal is to ensure broad and representative participation from across the maritime logistics value chain. After data collection, the responses will be analyzed using a suitable Multi-Criteria Decision-Making (MCDM) technique to identify the most critical barrier among the five categories. Techniques such as the Analytic Hierarchy Process (AHP), Technique for Order of Preference by Similarity to Ideal Solution (TOPSIS), or Decision-Making Trial and Evaluation Laboratory (DEMATEL), GINA (Grey Influence Analysis), or GCM (Grey Causal Modelling) are under consideration, depending on the nature and quality of the data. The use of an MCDM method is justified by the fact that the problem involves evaluating multiple qualitative and quantitative criteria that are often interrelated and may vary in importance. These methods allow for structured comparison and ranking of barriers based on stakeholder input and decision weights. In

addition to identifying the most significant barrier, the study aims to develop a conceptual framework that visually represents the relationship between the five barrier categories and their potential impact on smart logistics adoption. This framework will serve as a foundational model for future empirical research. Based on this framework, a set of testable hypotheses will be proposed. For example: • H1: Operational inefficiencies have a significant negative influence on the adoption of smart maritime logistics. • H2: Technological limitations are a major predictor of low adoption rates in developing ports. • H3: Organizational resistance mediates the relationship between technological capability and adoption readiness. • H4: Legal and regulatory uncertainty moderates the effect of digital investment on implementation success. • H5: Environmental constraints significantly influence technology deployment in port infrastructure. These hypotheses will not only guide the analysis in later stages of the research but also offer directions for policymakers and maritime organizations seeking to improve readiness for digital transformation. The anticipated outcomes of the study are twofold. First, it will provide a ranked list of barriers, enabling industry stakeholders to prioritize resource allocation and reform efforts. For instance, if organizational resistance is found to be the most significant barrier, maritime organizations may focus more on change management and employee training. If legal uncertainty ranks highest, policy advocacy and regulatory harmonization may become the focal point. Second, the framework and hypotheses developed through this research will offer a theoretical foundation for subsequent quantitative testing using larger datasets or in-depth case studies. From a practical standpoint, the study has significant implications for multiple stakeholder groups. Maritime operators and logistics firms can use the findings to diagnose their internal and external constraints and create tailored strategies to overcome them. Governments and regulators can leverage the insights to identify gaps in current policies and promote digital standardization, data-sharing frameworks, and incentive programs. For academic researchers, the framework and hypotheses serve as a platform for further empirical investigation and theory development. In conclusion, the transition to smart maritime and shipping logistics is essential for improving the performance, sustainability, and resilience of global supply chains. However, this transformation is obstructed by a range of interrelated barriers that must be thoroughly understood and addressed. By categorizing these barriers, collecting stakeholder-based data through a structured questionnaire, and applying a robust MCDM technique, this research aims to offer a comprehensive and practical approach to identifying the most significant obstacles. The development of a conceptual framework and hypothesis model further adds to the academic rigor and applicability of the study. Ultimately, the findings will support maritime decision-makers in formulating more informed, evidence-based strategies for accelerating digital transformation in the industry.

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**Submission ID: 744**

**Track 06: Transportation and Logistics**

### **Service Pricing in Informal Economy - An Exploratory Study of Road Freight Pricing Determinants in India**

*Debjit Roy (Indian Institute of Management Ahmedabad), Sandip Chakrabarti (Indian Institute of Management Ahmedabad), Shubham (Indian Institute of Management Ahmedabad).*

### **Abstract:** Introduction

Informal markets play a pivotal role in the global economy, especially in developing markets where they provide essential services and employment. In India, the informal sector contributes to almost 45% of the total GDP (PIB, 2025). Pricing of services in informal markets is highly complex due to multidimensional considerations like absence of standard contracts, presence of intermediaries, information asymmetry and negotiations, making it a socio-economic process. While some studies explore product pricing in informal markets, such studies covering service pricing remain limited.

The Indian road freight sector is characterized by factors like fragmented ownership, low entry and exit barriers, high incidence of self employment and relaxed regulatory environment promoting informality in the sector (Raghuram, 2015). Despite a share of almost 70% in the domestic freight movement, road freight pricing in India remains opaque, decentralized, and volatile (NITI Aayog, RMI, 2022). Although numerous studies have covered topics pertinent to the trucking industry like route optimization, load balancing, facility location, and network design, studies on road freight pricing in India's informal trucking industry are non-existent.

Our study seeks to address this research gap by exploring: (i) the current freight pricing practices within India's informal road freight sector, and (ii) the key determinants influencing the freight price formation in this context. Our study provides one of the first empirical analyses of freight price formation in the predominantly informal Indian road freight sector. Further, our study has followed a socio-economic approach for understanding the freight price formation process, considering the criticality of intermediaries, negotiation and trust in price formation.

### Methodology

In the absence of freight indices for trucking lanes and very low adoption of digital platforms for load matching, quantitative data is sparse or unreliable, making a qualitative exploratory approach necessary and appropriate. We began with a comprehensive review of the existing literature on service pricing in informal markets, road freight pricing and freight transport operations. Insights from the literature and preliminary discussions with representatives from truck transport associations like AITWA were used to develop semi-structured open-ended interview guide. The guide considered the multidimensionality of the freight pricing process, covering market, economic, temporal and relational influences.

Our sample consisted of 35 participants, predominantly small and medium sized fleet operators, with some large scale fleet operators and brokers also interviewed. The interviews were conducted either telephonically or over Google Meet. Participants were asked open-ended questions about how freight rates are set, negotiated, and adjusted under different circumstances. Collectively, participants brought over 375 years of cumulative industry experience. The semi-structured interviews helped in developing a detailed textual dataset, allowing open-ended exploration of freight pricing practices, while maintaining comparability across participants. However, owing to participant consent, only 29 interviews were recorded and used for further analysis in the study. The interviews, conducted in local languages, were translated and transcribed in English language for further analysis.

The study followed an inductive approach, owing to limited existing theory on informal freight pricing. To ensure accuracy and rigor in our data analysis, we adopt the six-step method of reflexive thematic analysis outlined by Braun and Clarke (2006; 2019). The method involved the following six steps: familiarization with the data, assigning codes to responses relevant to research objectives, theme generation, review and refinement of themes, defining and naming of themes, and reporting the results. We used iterative and reflexive coding to improve and refine our codes and developed thematic maps to generate and refine coherent themes. This process was supplemented by n-gram and text frequency analysis to triangulate the findings from reflexive thematic analysis and validate key patterns.

### Findings

Our analysis revealed several insights. First, it underlined the role of intermediaries in freight price formation. Since fleet operators depend on brokers for demand aggregation, they influence prices on their lanes through frequent price adjustments on the basis of real-time demand-supply perceptions, estimated via the volume of calls received for a route. This “call volume” heuristic serves as a crude indicator of market demand and supply. It is interesting to note that these price adjustments do not explicitly consider the operational costs for fleet operators.

Second, it explained the price adjustments done by fleet operators on the basis of backhaul load availability. The prices of backhaul load from non-industrial or consumption-centric locations may be as low as 40%. An interesting observation was the widespread acceptance of these suboptimal rates to avoid empty runs or avert idling of vehicle, which negatively impact fleet operators’ ability in offsetting fixed expenses like the vehicle’s EMI or drivers’ salaries. This highlights the precedence of asset utilization over profit maximization.

Third, the findings reveal temporal variations in freight pricing, where festive and harvest seasons witness a rise in freight prices, while monsoon season witnesses a dip in the prices. These cyclical patterns impact freight prices without considering the underlying cost structures. Interestingly, there are also intra-month variations, where the last 10 days of the month witness higher demand, owing to shipper-side scheduling pressures, leading to heightened freight demand.

Fourth, the insights reveal the role of relational dynamics in reducing the price elasticity of freight rates to market dynamics, especially for small scale fleet operators. The brokers wield an informal rate discipline over fleet operators in exchange for long-term load assurance. Finally, a low impact of vehicle age and condition, or the cargo type on freight prices was observed, contrary to popular assumption. Furthermore, while operational expenses (fuel, tolls, driver costs) are significant, they do not directly shape freight prices. Instead, operators absorb fluctuations in operating costs by adjusting their own margins, reflecting a price-taking behavior that prioritizes market survival over cost-based pricing. The findings are accompanied by a conceptual framework, categorizing determinants into market, player, and commodity-linked factors, that models price formation in informal markets

### Managerial Implications

Our study attempts to fill a critical gap in the literature of truck freight pricing by attempting to comprehensively identify the determinants of truck freight pricing beyond the cost-based approach of previous studies. This study offers a novel classification that organizes freight price determinants into three distinct categories: market-driven, player-driven, and commodity-based factors. Our study also

contributed to the literature by providing a detailed analysis of temporal factors in freight pricing. By incorporating seasonality in our analysis, the study overcame the challenge of a primary focus on static cost structure of some existing studies. Furthermore, our study discusses the role of relational factors, particularly mutual trust and loyalty, in freight pricing and capacity allocation between brokers and fleet operators.

For managers and practitioners, the study offers a framework for understanding the impact of different market and non-market factors on the cost of road freight for their business. Managers can leverage insights regarding temporal variability to plan capacity and optimize cost around these predictable price shifts. For policymakers, study provides freight rates as an alternative metric of assessing regional disparities in industrial development and consumption patterns. Understanding freight rate trends for backhaul rates across various lanes, especially paired with headhaul rates, could serve as an important metric for understanding regional economic imbalances and guiding policies aimed at fostering more equitable industrial growth.

#### Conclusion

The study attempts to empirically understand the price formation for informal services in the context of the Indian road freight sector. Our insights are derived through a rigorous reflexive thematic analysis over a rich dataset derived from qualitative open ended semi-structured interviews. The findings reveal that freight rate formation in the Indian trucking sector is not just affected by cost considerations, but also by relational dynamics. Small fleet operators tend to prioritize asset utilization over profit maximization. The insights offer both theoretical and practical implications, helping managers anticipate freight fluctuations and offering policymakers an alternative lens to assess regional economic disparities. Future work may expand the sample size, explore regional differences, or develop a mixed-method model to quantify the relative influence of each determinant.

Submission ID: 748

Track 06: Transportation and Logistics

### **Circular Economy Business Model for Electric Vehicle Manufacturers: Inspection, Repurposing and Recycling**

*Nandan Kumar Singh, Nishant Kumar Verma and Debjit Roy*

**Abstract:** The electric vehicle (EV) battery industry is poised for explosive growth, with the entire lithium-ion battery value chain projected to expand by over 30% annually until 2030, reaching a value of \$400 billion and a market size of 4.7 terawatt-hours (TWh) (Jakob et al., 2023). This rapid expansion is primarily driven by the surging demand for electric vehicles, which is expected to result in a significant accumulation of end-of-life batteries over the coming decade. These figures highlight the immense economic potential embedded within the battery lifecycle. The second-life EV battery market is also experiencing remarkable growth, with a projected compound annual growth rate (CAGR) of



44.5% from 2025 to 2033 (Research and Market, 2025). Additionally, the potential value creation from EV battery recycling is estimated at \$95 billion per year by 2040, drawing considerable attention from both automotive and battery original equipment manufacturers (OEMs) (McKinsey, 2023). Recognizing the potential of the secondary market, firms are increasingly seeking to unlock new value streams beyond the batteries' first-life use in EVs. Several leading automakers are actively engaging in battery repurposing for second-life applications. These applications typically span grid-scale and utility storage systems (such as EV charging buffers and renewable energy integration), commercial and industrial storage solutions (like behind-the-meter systems and peak demand management), residential and community energy storage (including home battery units and solar-powered lighting), off-grid and backup systems (such as microgrids and telecom infrastructure), and uses in low-speed mobility and portable storage devices (Research and Market, 2025). The repurposing process begins with inspecting the used battery to estimate its state of health (SoH), which informs its suitability for second-life applications. A firm may choose to develop this inspection capability in-house or outsource it to a third-party service provider. In some cases, companies may decide to proceed directly with recycling, opt exclusively for repurposing, or do both i.e., recycling and repurposing. Given the industry's rapid evolution, the substantial economic value at stake, and the growing urgency for sustainable battery management driven by increasingly stringent regulations, a comprehensive understanding of the circular economy business models surrounding EV batteries is imperative. This research focuses on how firm can optimize their business strategies to capture value from battery repurposing and recycling once the first-life application is complete. Firms around the world are experimenting with various forms of closed-loop value chain models. The above observation give rise to the following research question: 1. Which value chain structure is the most optimal under various conditions? i.e., when is it best for the firm to outsource inspection and/or outsource recycling while designing its repurposing business. 2. How is an EVM investment in repurposing affected under each of the value chain formats? We introduce six models to capture different circular economy strategies and describe the firm's decision under each model. In particular, we have (1) Model N: the firm not involve in either inspection, repurposing and recycling and directly sells the battery to third party; (2) Model RC: the firm directly recycle the battery without repurposing and inspection; (3) Model R: the firm outsourced the inspection and repurpose the battery; and (4) Model RR: the firm outsourced the inspection and perform both repurposing and recycling of the battery; (5) Model IR: the firm performs in-house inspection and repurpose the battery; and (6) Model IRR: the firm performs in-house the inspection and perform both repurposing and recycling of the battery. We find that the firm's optimal business model choices can be clubbed in three strategies: 1) RI Repurpose with in-house inspection (Model IR or IRR), 2) RO Repurpose with outsourced inspection (Model R or RR);, and 3) NR Do not repurpose (Model N or RC). The optimal choice among these strategies depends on four key factors: (i) the number of used batteries available, (ii) the penalty incurred due to inspection errors by third-party providers, (iii) the inspection fee charged by third-party service providers, and (iv) the cost of developing in-house inspection technology.

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## Advance Purchasing: are Strategic Inventory and Forward Contracts Complements or Substitutes

*Ayush Gupta, Benny Mantin and Sachin Jayaswal*

**Abstract:** Introduction: Sellers and buyers engage in advance purchasing practices to hedge against supply and demand fluctuations. However, even without such uncertainties, advance purchasing is pivotal in supply chain interactions. For example, advance purchasing strengthens the buyer's bargaining position in her negotiations with the seller, pressuring down subsequent periods' prices (Anand et al., 2008; Arya et al., 2015). Such a use of advance purchasing is a common industry practice; for example, in the crude oil and steel sectors (Dunn et al., 2012; Martínez-de-Albéniz and Simchi-Levi, 2013). Two common forms of advance purchasing are strategic inventory and forward contracts. In the former, the buyers purchase excess units at the spot price for immediate delivery and store them as inventory for future sales. In the latter, the buyer purchases extra units at a specified forward price for delivery in a future period. If the goods are slated for delivery in the subsequent period, we refer to the forward contract as a short-term contract. In case the goods are scheduled for future delivery, we term the forward contract a long-term contract. Strategic inventory, as coined by Anand et al. (2008), is carried by the buyer to promote supply-side competition between the seller and her inventory in future. This reduces the seller's monopoly and help the buyer bargain lower spot prices later. Anticipating the use of strategic inventory against him, the seller raises the current spot price to deter stockpiling by the buyer. Although the seller cannot eliminate the buyer's strategic inventory, he benefits from it due to a rise in current spot price. Akin to strategic inventory, both short-term and long-term contracts can drive down future spot prices (Arya et al., 2015). Therefore, in the absence of the inventory option, the buyer can utilize forward contracts as a substitute for strategic inventory to lower the future spot prices. In addition, the buyer can use long-term contracts to drive down future short-term contract prices, which may hurt the seller. In spite of this, according to Erhun et al. (2008), in the absence of the inventory option, the seller always offers both short-term and long-term contracts, albeit at higher prices than the current spot price. This helps the seller offset the anticipated loss from the drop in the future prices. In addition, the seller sets different prices for the short-term and long-term contracts, enabling non-linear pricing, which reduces double marginalization and benefits all players (Erhun et al., 2008). Problem Definition: The seller's capacity to charge a higher forward price than the current spot price is, however, contingent upon the buyer's capacity to hold inventory: if holding inventory is viable and the holding cost is less than the price differential between the forward and the current spot prices, the buyer may prefer to carry inventory instead of purchasing forward contracts. Therefore, to encourage the buyer to purchase forward contracts, the seller must reduce the price differential by lowering the forward prices while increasing the current spot price. Such a decline in forward prices benefits the buyer at the expense of the seller. However, rising spot prices will reduce both the seller's and the buyer's current sales profits. Hence, it is unclear if the seller should offer a forward contract when the buyer can carry inventory, similar to the no-inventory case (Erhun et al., 2008). And if the answer is yes, should he offer

both short-term and long-term contracts or offer only short-term contracts? The buyer also faces a dilemma: should she pre-commit to not carrying inventory to dissuade the seller from raising the current spot price? Or should she use her inventory option to lower the forward prices? Methodology/Results: To answer the above questions, we consider a game-theoretic model whereby the seller sells goods to consumers via the buyer. Our study reveals several important insights. First, somewhat intuitively, we find that the seller always offers a forward contract while setting the spot and forward prices such that the buyer's incentive to carry strategic inventory is eliminated. Nevertheless, when the inventory holding cost is sufficiently low, the buyer can leverage her inventory option to bargain a lower forward contract price. We refer to this buyer's strategy as the "threat of carrying inventory." But, as the inventory holding cost increases, this threat weakens and finally becomes non-credible. The second insight relates to the types of forward contracts the seller offers. While the seller would always like to offer both short-term and long-term contracts, as they allow for additional price differentiation and reduction in double marginalization, when the inventory holding cost is sufficiently low, the seller only offers short-term contracts and abstains from offering a long-term contract.. This contradicts Erhun et al. (2008)'s no-inventory setting, where the seller contracts. A short-term contract exerts downward pressure on the future spot price. When the buyer's threat of carrying inventory is credible, a decline in the future spot price will lead to a reduction in the future forward contract price as well. This diminishes the buyer's incentive to purchase a long-term contract, who instead only purchases short-term contracts. To induce the buyer to opt for a long-term contract and limit her short-term contract purchase, the seller may reduce the long-term contract price while increasing the short-term contract price. When the inventory holding cost is sufficiently low, the drop in the long-term contract price and the rise in the short-term contract price are prohibitively high. Hence, the seller offers only a short-term contract. When the inventory holding cost is intermediate, the buyer's threat of carrying inventory is weak, allowing the seller to profitably offer a long-term contract by raising the short-term contract price and dropping the long-term contract price. Nevertheless, when the inventory holding cost is sufficiently high, the buyer's threat of carrying disappears, and the seller sets the long-term and short-term contracts price as if the buyer does not have the option to carry inventory. Third, while the buyer's strategic inventory is known to benefit both her and the seller (Anand et al., 2008), we show that, quite surprisingly, if the seller offers a forward contract, the buyer's inventory option almost always backfires, hurting both of them unless the inventory holding cost is sufficiently high. When the inventory holding cost is sufficiently low, the seller cannot profitably offer a long-term contract. Therefore, he raises spot prices and drops the short-term contract prices so as to eliminate inventory and induce the buyer to purchase short-term contracts. The former price increase hurts corresponding sales, and hence, both the buyer and the seller end up being worse off. When the inventory holding cost is intermediate, the seller encourages the buyer to purchase a long-term contract and limits her current short-term contract purchase by dropping the long-term contract price and raising the short-term contract price. The latter price increase results in a drop in the short-term contract sales, hurting both the buyer and the seller. Therefore, in contrast to the existing studies, we find that unless the inventory holding cost is sufficiently high (as the threat of carrying inventory becomes non credible), the buyer should signal to the seller her disinterest in carrying inventory. Finally, we show that when the seller sells to the buyer through an

intermediary, both the intermediary and the buyer carry inventory in the absence of a forward contract, although everyone would benefit if only the buyer carried inventory.

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Submission ID: 880

Track 06: Transportation and Logistics

## Channel Conflict under Grey Market Threats: Pricing and Third-Party Warranty Responses

*Rajanish Chandra, Chiranjit Das and Tanmoy Kundu*

**Abstract:** 1. Introduction Grey markets, where genuine products are distributed through unauthorised channels, pose a significant challenge to global supply chains, undermining manufacturers' control over pricing, distribution, and brand reputation while eroding profits (Ahmadi & Yang, 2000; Howell et al., 1986; Jiang et al., 2024; Yu et al., 2024). These markets thrive on price differentials, cross-border trade, and consumer demand for discounted goods, often facilitated by the rise of e-commerce platforms and advancements in logistics (Autrey et al., 2014; Xu et al., 2024). A key distinction between authorised and grey market products is warranty coverage. Manufacturer-backed warranties provide assurance and reinforce brand trust, whereas grey market goods often lack post-sale support, leading to customer apprehension. In response, grey sellers have begun offering third-party warranties (TPWs), attempting to reduce perceived risk and enhance buyer confidence. TPWs are externally managed service agreements that aim to mimic or replace, or extend manufacturer warranties for consumers (Huang et al., 2022). The growing adoption of TPWs complicates the traditional value proposition of authorised retailers and raises strategic questions for both manufacturers and retailers: Should authorised sellers respond with price rebates, increase warranty length, or rely on the credibility of manufacturer branding? How does the presence of TPW affect consumer behaviour, particularly when buyers are risk-averse? 2. Objectives This study seeks to investigate the strategic interplay between authorised and grey market sellers in the presence of third-party warranties and risk-sensitive consumers. Specifically, the objectives are threefold: First, to model pricing and warranty decisions in a two-period market structure where the grey market may or may not offer TPW; second, to analyse how consumer risk aversion influences segmentation and channel selection; and third, to derive managerial implications for warranty design and price competition when grey market activity is strategically motivated. The study aims to provide a nuanced theoretical understanding of how TPW offerings reshape competition, demand allocation, and profitability across both channels. 3. Methodology The study adopts a Stackelberg game-theoretic framework to model the hierarchical interaction between the authorised retailer (leader) and the grey market seller (follower), reflecting the sequential nature of pricing and warranty decisions. Within this framework, closed-form solutions are derived analytically for equilibrium prices, demand segments, and consumer thresholds under different market conditions. To assess the strategic impact of third-party warranties (TPWs), the analytical results are supplemented with comparative statics and

numerical simulations. The model explores four distinct scenarios: (i) Case n, where TPW is absent and consumers are risk-neutral; (ii) Case w, where TPW is present with risk-neutral consumers; (iii) Case nr, where consumers are risk-averse, but TPW is not offered; and (iv) Case wr, which combines both TPW offerings and risk aversion. 4. Results Our model yields several key insights: (1) Without TPW (Case n), the grey market attracts only low-WTP consumers who forgo warranties. (2) With credible TPW (Case w), grey market demand expands, pulling in mid-WTP consumers and shifting demand away from the authorised channel. (3) Under risk aversion (Case wr), even modest TPW improvements significantly increase grey market demand. Seller responses follow accordingly: authorised retailers cut prices to defend their share, while grey sellers raise prices due to enhanced perceived utility. Notably, the relationship between perceived quality difference and grey market profitability is non-monotonic; demand initially rises with perceived quality but declines past a threshold, forming an inverted-U. Finally, deep discounting by authorised sellers does not fully recover demand once TPW credibility is high, due to diminishing returns among risk-averse consumers. 5. Discussion This study models a two-period competitive setting with risk-averse consumers to examine the impact of TPWs on pricing and warranty strategies. We show that credible TPWs reduce the perceived gap between authorised and grey products, enabling grey sellers to capture demand at higher price points and shifting equilibrium outcomes. As a result, authorised retailers face increased pressure, particularly in the second period, where discounting strategies lose effectiveness. The evolving role of TPW providers transforms them into critical actors in post-sale service. By offering credible alternatives to manufacturer-backed warranties, they shift consumer perceptions and introduce new forms of competition. Their growing influence not only challenges brand control but also necessitates rethinking coordination mechanisms, warranty regulation, and the structure of after-sales service markets. 6. Conclusion This study develops a dynamic, game-theoretic framework to investigate pricing and warranty strategies in a grey market setting where third-party warranties may be introduced. By modelling consumer behaviour over two periods and incorporating risk aversion, we show that the presence of TPWs significantly expands the grey market's reach and alters equilibrium outcomes. When grey sellers offer credible TPWs, they erode the service-based differentiation of authorised retailers and shift consumer demand toward lower-cost alternatives, even among risk-sensitive buyers.

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Submission ID: 885

Track 06: Transportation and Logistics

## Labor Market Effects of Free Bus Travel for Women: Evidence from Time Use Data

*Vartika Singh, Sandip K. Agarwal and Tista Mukherjee*

**Abstract:** This study examines the effect of gender-specific public transport subsidies on women's labour market employment and time use, using India's free bus travel programs launched across five states between 2019 and 2023. With microdata harmonized from the Time Use Surveys (2019 and

2024), we apply a difference-in-differences approach comparing women and men across treated and control states to derive causal effects on employment and unpaid domestic work time, travel time, and learning time. Evidence indicates that the policy increased women's employment and travel time by significant proportions, and decreased unpaid domestic work time modestly. The effects are most pronounced among working-age women and those with household access to amenities such as LPG. Robustness checks using state-year and region fixed effects confirm that changes in time use are not spurious trends. Future extensions to current research include a triple-differences specification comparing women in high- and low-mobility-need households, heterogeneous effects by education and caste, and a time-location change analysis (public vs. private space use). These results indicate that increasing women's physical mobility can redefine gendered time constraints and release latent labour supply.

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Submission ID: 887

Track 06: Transportation and Logistics

## **Resilience Remix: Platform Orchestration Through AI, Gamification, and Digital Twins for Quality-Driven Supply Chain Networks**

*Shubhrakant Shadangi, Pritam Mazumdar, Ishan Mahapatra and Soumik Pal*

**Abstract:** EXTENDED ABSTRACT Introduction COVID-19 pandemic disrupted global supply chains, affecting 94% of Fortune 1000 companies and changing logistics resilience approaches (Tran et al., 2021; Fortune, 2020). It increased the significance of supply chain resilience, the ability to forecast, react to, recover from, and adapt to disruption while maintaining operations (Scholten & Schilder, 2015). Traditional linear supply chain models struggle with complex, interdependent networks across many organizations and geographies (Ivanov & Dolgui, 2020). Platform orchestration as a strategic method of controlling diverse stakeholders via digital platforms has emerged (Brusset et al., 2024). The foundational technologies behind this are AI for automation and analytics; gamification to inspire stakeholders; and digital twins to simulate and dampen risk (Roman et al., 2025; Ivanov & Dolgui, 2020). Although increasingly used, little theoretical basis exists for how these technologies are to be applied within platform orchestration frameworks for supply chain resilience improvement, especially in transport and logistics. Objectives This research proposes a comprehensive theoretical framework that explores how platform orchestration—enabled by AI, gamification, and digital twins—contributes to robust and resilient supply chain operations. The study is guided by three primary research questions: 1. How do AI, gamification, and digital twins function as platform orchestration mechanisms to enhance supply chain resilience? 2. What key constructs emerge when integrating Dynamic Capabilities Theory (DCT) and Socio-Technical Systems Theory (STS) to examine platform orchestration? 3. How can these constructs be organized into a framework that provides practical guidance for resilience-building throughout the supply chain lifecycle? Methodology A meta-theory topic modelling approach was



applied, supported by theory intermeshing, to integrate perspectives from Dynamic Capabilities Theory and Socio-Technical Systems Theory. A systematic Scopus database review yielded two corpora: 138 papers under DCT and 238 papers under STS, all related to AI, gamification, digital twins, and supply chain resilience. Using Latent Dirichlet Allocation (LDA), three optimal topics were identified from DCT literature and eight from STS literature. The theory intermeshing process involved using complementary theoretical lenses (STS in DCT literature topics & DCT in STS literature topics) to analyse keywords, generating a total of 33 thematic labels. Through a Delphi technique involving expert input, these labels were distilled into 11 Higher Order Constructs. Each construct was mapped to a two-dimensional framework: one axis spanning Technical-Social Integration, the other Exploration-Exploitation—aligned with stages of the resilience cycle. Results The 11 core constructs derived from the study are: 1. AI-Sensing Intelligence 2. Digital Platform Infrastructure 3. Gamified Human-AI Orchestration 4. Strategic Network Orchestration 5. Adaptive Learning Systems 6. AI-Gamified Capability Engine 7. Platform Reconfiguration Systems 8. Digital Twin Opportunity Systems 9. Socio-Technical Coordination 10. Logistics Dynamics 11. Performance Optimization These constructs were mapped across four resilience stages: detection/prevention, preparation/response, adaptation/recovery, and integration/innovation. Discussion The model demonstrates how platform orchestration can enhance supply chain resilience in transportation and logistics. Technical-exploration mechanisms are focused on environmental scanning and infrastructure improvement through AI and digital twins. The social-exploration quadrant is aimed at collective preparedness through gamification and adaptive learning. Resilience is a counter-clockwise loop from detection to innovation, which promotes a holistic, iterative practice of resilience. The paper presents a new meta-theoretical framework for theory integration. It extends DCT into platform ecosystems and adapts STS to inter-organizational logistics. The framework links firm competences with the orchestration at the platform level. This framework gives logistics and transport managers a guide to resilience. It presents a step-by-step way: building technical infrastructure, building human coordination, applying strategic recovery, and achieving performance optimization through continuous learning. Conclusion This study presents a unified framework detailing how platform orchestration—leveraging AI, gamification, and digital twins—can foster resilience across logistics and transportation supply chains. Eleven Higher Order Constructs are identified and situated within a multidimensional model that aligns technical-social dynamics with the exploration-exploitation continuum, mapped against phases of the resilience cycle. Policy implications of this work include practical guidance for enhancing multimodal transportation efficiency and optimizing supply chain logistics—fostering sustainable development and economic resilience through structured technological integration. The framework serves as a strategic tool for building resilient, adaptive, and intelligent logistics networks. Future research should empirically test the proposed framework and develop measurement tools to assess the Higher Order Constructs across varied transportation and logistics contexts.

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## SELLING VS LEASING COMMERCIAL EVS: MANAGING BATTERY UNCERTAINTY AND CUSTOMER BEHAVIOUR

*Satyajit Roy, Haritha Saranga and Sreelata Jonnalagedda*

**Abstract:** While the growth and adoption of personal electric vehicles (EVs) is struggling in developing countries like India, the uptake of commercial EVs has been rapid, specifically three-wheelers and light four-wheelers. Owing to accelerating e-commerce activities beyond tier-1 cities, the growing need for last-mile connectivity, and policy-driven incentives, commercial mobility space has been in the forefront of electrification. EVs have proven to offer more operational cost efficiency and environmental benefits (negligible direct emissions) compared to its conventional internal combustion engine (ICE) counterpart. However, EV battery longevity remains a key concern – especially in the commercial sector, where consistent performance throughout prolonged vehicle operation is critical for economic viability. Battery degradation over time can lead to substantial losses in vehicle range and performance, rendering the vehicle less useful or even unviable for commercial applications. This leads to anxiety among consumers about the residual value, particularly beyond a certain period. Consequently, automakers face a dual challenge: convincing consumers about the benefit EVs offer in terms of operational cost and addressing the anxiety around the lifetime of an EV battery. Without the battery, the vehicle bears minimal value and battery replacement is very expensive. As these vehicles increasingly replace traditional ICE fleets, a central question emerges: Should EVs be sold to customers or offered through short-term leases? With the help of a stylized model, we examine this question by comparing selling versus leasing in the presence of battery life uncertainty and customer usage behaviour. Given technology immaturity, EV battery longevity is inherently uncertain: while the battery is guaranteed to function in the first usage period, its survival in the second period is always not certain, reflecting technological risk and variability in quality. In a selling model, this risk is transferred to the customer, which suppresses willingness to pay and may hinder adoption. By contrast, in a leasing model, the automaker retains ownership and bears the risk of battery failure, enabling higher upfront customer utility and potentially improved demand outcomes. However, this transfer of risk introduces a moral hazard: since customers do not bear the long-term consequences of their actions under leasing, they may abuse the EV by not following the standard guidelines. For example, for optimum battery life, every fast charging needs to be followed by one slow charging. However, customers often do not follow the same, further degrading the probability of second-period survival. There can be other abuses like overcharging, high-load driving, or neglect of maintenance in a leasing model. The automaker thus faces a dual challenge: managing technological uncertainty and mitigating behavioural degradation. To address this, we build a two-period model in stages. In the baseline model, we abstract away from customer abuse and analyze conditions under which leasing is strictly more profitable than selling, given the value of second-period monetization and the production cost of replacing failed vehicles. This helps isolate the value of leasing purely from a risk-allocation and revenue-smoothing perspective. In the extended model, we incorporate customer behaviour as a choice variable. The customer may choose an abuse level, gaining personal benefit in the form of higher immediate utility but increasing the likelihood

of battery failure. We consider two distinct strategies for the automaker to counteract this – (a) Incentive-based leasing, where the automaker offers a performance-contingent reward, received at the end of the first period, if the customer complies with suggested guidelines for responsible use and (b) Effort-based leasing where the automaker absorbs the risk by incurring a maintenance cost that buffers the impact of customer abuse, effectively reducing the sensitivity of battery failure to customer behaviour. For both cases, we develop symbolic expressions for optimal pricing, incentive design, and effort level. Customers are modelled as heterogeneous in their private valuation and propensity to abuse. We find out the optimal strategies and use the same to compute two key outcome metrics: (i) the automaker’s total profit, representing the economic attractiveness of the contract and (ii) the total number of new EV units that must be produced, which reflects the environmental impact of the chosen mechanism (as more replacement implies greater material use and higher carbon footprint). Our results uncover key insights. While leasing expands market access and can increase firm profit, it may induce excessive abuse if not monitored. Incentive schemes can successfully curb abuse, improving environmental outcomes, but at a cost to the automaker’s margin. Conversely, automaker-led maintenance offers a more direct control mechanism but may become costly if customer behaviour is highly erratic. The trade-off between profit maximization and sustainability goals is sharpened when these behavioural and technological frictions interact. This model contributes to the growing literature at the intersection of contract theory, sustainable operations, and electric mobility, offering both theoretical foundations and practical implications for policymakers and firms designing future-ready EV programs.

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Submission ID: 1090

Track 06: Transportation and Logistics

## Food security in rural India. Digitization experience of a supply chain

*Ravichandran Narasimhan*

**Abstract:** In this work we document a case study of an organization which provides food security to rural households in India by a digital organization of its supply chain. The organization is RUDI (Rural DIstribution) a unit promoted by Self-employed Women Association (SEWA). RUDI provides food security and economic empowerment by organizing a rural (digitized) supply chain of food items like pulses, cereals, food grains and the essential ingredients for cooking. RUDI is organized in a cooperative format by women, and spans in eight districts of Gujarat state, supporting 70,000 marginal and small farmers, reaching 100,000 households for food security, and providing employment to 3000 RUDI Sales force and recording a turnover of Rs 15 crores in 2024. It is well known that the farmers who produce food for others, usually starve and do not get adequate access to healthy nutritious balanced food. RUDI was conceived with a mission to eliminate this discrepancy in the context of marginal rural farmers and households. The interventions include enhanced productivity of marginal farmers by providing them quality seeds and farming advisory support. Purchase of marginal farmer’s produce at the village level

so that they are not exploited by the market forces, process, store and distribute the produce at the village level. The surplus produce moves to regions where there is a net deficit and the net surplus moves to the central warehouse for sale in the market place by the Rudy Multi Trading Company Limited. The distribution is focused at the Village household level. The food security is enabled by provisioning commodity kit of grains, pulses, cereals and other essential ingredients for cooking (by supplementing items which are not produced or available in the village). The supply chain is predominately local and focused on the village produce and consumption requirements. Money supply is enabled by timely purchase of village produce at fair price. This provides cash to buy the food items needed again available at fair price and high quality and processed, stored and distributed by RUDI woman. The supply chain consists of issue of seeds, support for agricultural productivity, sourcing produce, processing (cleaning and packaging) managing surplus and deficits at the regional level, moving the net surplus to central location, sales realization of surplus, sourcing food ingredients that are not available at the village level centrally and allocating them to the villages, making kids dynamically based on seasonal needs, managing sales proactively and door step delivery of food items to the relevant market segments and management of account receivables and payables. This is managed by women with modest education qualification. The entire supply chain in terms of inventory monitoring, inventory location, material reconciliation, accounts receivable, accounts payable are all managed by a well-connected network of applications which run on mobile phones, internet, and an ERP system. In order to ensure that the rural women with modest education are able to use this system effectively, adequate training was organized for them at different points in time with customized content. The digital applications were developed in local languages to facilitate the usage of them by the stakeholders in the system. Enabling food security by digitizing the supply chain

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Submission ID: 1162

Track 06: Transportation and Logistics

### **Minimum Guarantees, Maximum Gains? A Stackelberg Analysis of Online Food Delivery Restaurant Contracts**

*Arvind Shroff and Bhavin Shah*

**Abstract:** Setting up a network of partner restaurants is a long-term strategic decision for online food delivery (OFD) platforms. To secure restaurant partnerships, platforms often offer incentives, such as a Minimum Business Guarantee (MBG), in exchange for reserving service capacity dedicated to fulfilling online orders. This paper models the iterative negotiation process between platforms and restaurants using a Stackelberg game framework. We extend existing research by analyzing how various incentive mechanisms - MBG, capacity reservation, and commission fees - jointly impact platform profitability, particularly when restaurants serve both dine-in and online customers. Evaluating these platform-restaurant negotiations is critical to understanding the sustainable growth of the OFD ecosystem.

Despite its practical relevance, this phenomenon has received limited attention in academic literature. This study seeks to address this gap and contribute to the evolving discourse on OFD platform operations.

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Submission ID: 1213

Track 06: Transportation and Logistics

### Factors affecting sites of potential temporary facility locations – Findings from the Plackett–Luce model

*Kirtesh Gadiya, Gopal Patil and Nagendra Velaga*

**Abstract:** Having a proper idea of temporary facility locations will help reduce the load on disaster operation management. From the literature review, 24 factors were identified that can affect the sites of temporary facility locations. Out of these 24, 9 critical factors were identified, which are important to India's point of view and are unaware of the areas that can be affected by disaster. With the help of the Plackett-Luce model, the weights of the factors are found. Distance to hospital has the highest weight, followed by the availability of water.

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Submission ID: 1226

Track 06: Transportation and Logistics

### Barriers to Autonomous Vehicle Adoption in Urban Transport Systems: A Multi-Domain Analysis for Future-Ready Mobility Policy

*Anita Sengar and Ashish Pratap Singh*

**Abstract:** Autonomous Vehicles (AVs) are poised to transform the transportation and logistics landscape by offering the promise of safer, more efficient, and environmentally sustainable urban mobility systems. However, despite significant technological advancements and pilot implementations across several global cities, the integration of AVs into mainstream urban transport remains limited and fragmented. The gap between technological feasibility and real-world deployment points to a complex ecosystem of adoption barriers that span across multiple domains—technological, infrastructural, regulatory, socio-behavioral, and economic-institutional. This paper presents a comprehensive, multi-dimensional analysis of the key barriers that impede the adoption of autonomous vehicles in urban environments, using a fuzzy Analytic Hierarchy Process (FAHP) approach to prioritize these barriers from a stakeholder-centric perspective. The study is positioned within the broader conference theme—The Future of the Economy: People, Organizations, and Policy—by exploring how AV integration

challenges intersect with human behavior, organizational readiness, and policy inertia, thereby shaping the trajectory of urban mobility ecosystems and their role in future economies. The investigation begins with an extensive literature review and domain-specific classification of 36 distinct barriers to AV adoption. These were grouped under five major domains: (1) Technological, (2) Infrastructure, (3) Regulatory & Legal, (4) Socio-Behavioral, and (5) Economic & Institutional. Technological barriers include limitations such as sensor failures in adverse weather, AI's inability to manage edge-case scenarios, and high computational demands. Infrastructure-related constraints involve the lack of smart traffic signals, inadequate 5G coverage, and unplanned urban layouts. Regulatory and legal uncertainties include undefined liability, fragmented policy frameworks, and the absence of universal safety standards. Socio-behavioral challenges range from low public trust and ethical dilemmas (e.g., the trolley problem) to fear of job loss among traditional drivers. Lastly, economic and institutional barriers encompass high deployment costs, unclear business models, and inefficient public procurement processes. To quantify the relative significance of these barriers, expert input was solicited from urban planners, policymakers, AV developers, and transport researchers through structured pairwise comparisons. These inputs were processed using Fuzzy AHP, which enables better handling of uncertainty and subjective judgment in multi-criteria decision-making. The results indicate that regulatory and legal barriers were perceived as the most critical, followed closely by technological and socio-behavioral factors, with infrastructure and economic-institutional constraints slightly lower in perceived urgency but nonetheless significant. One of the standout findings of the analysis is the perceived dominance of regulatory inertia and ambiguity in slowing AV deployment. Stakeholders highlighted that existing regulatory frameworks are ill-equipped to address liability issues in cases of partial or full automation (Levels 3–5), leading to risk aversion among manufacturers, fleet operators, and municipal authorities. Furthermore, the lack of standardized safety certification mechanisms and unclear data governance policies hinders cross-jurisdictional collaboration and technological interoperability. On the technological front, concerns remain about the reliability of AV systems under unpredictable urban conditions such as dense traffic, erratic human behavior, and adverse weather. Edge-case failures, especially in mixed-traffic environments, continue to raise safety and liability concerns. These issues are compounded by the absence of robust V2X (Vehicle-to-Everything) communication infrastructure, essential for real-time interaction with city systems and other road users. From a socio-behavioral standpoint, the study uncovers deep-seated resistance to AV adoption rooted in fear, ethical ambiguity, and cultural preferences for human-driven vehicles. Public skepticism, particularly regarding machine-led decision-making in life-and-death situations, poses a formidable barrier to acceptance. Furthermore, resistance is also linked to broader anxieties about automation-induced unemployment in the transport sector, raising questions about the inclusivity and fairness of AV-driven economic transitions. Economically, while the long-term cost savings and efficiency gains of AV deployment are widely acknowledged, the current capital-intensive nature of the technology deters widespread investment—especially in developing economies. Moreover, the absence of scalable and profitable business models for AV-based public transport or logistics further stalls momentum. Institutions face challenges in aligning incentives, managing multi-stakeholder interests, and demonstrating clear returns on investment for smart mobility infrastructure. This analysis contributes to

the policy discourse by providing a barrier prioritization matrix that urban governments, transport agencies, and private mobility operators can use to strategically target the most critical issues. By adopting a systemic and integrated approach, the study calls for the development of an adaptive regulatory environment that balances innovation with accountability, the redesign of urban infrastructure to be AV-ready, and investments in public education to build trust and behavioral alignment. The implications of this study extend beyond transportation to the broader economic and societal context. The future of urban economies is increasingly shaped by how cities manage transitions to emerging technologies. The failure to address AV adoption barriers not only risks stalling innovation but also exacerbates inequality, inefficiency, and environmental degradation in urban logistics. Conversely, thoughtful and inclusive AV integration can generate ripple effects across labor markets, city planning, energy systems, and public safety—positioning AVs as both a technological and institutional innovation. In conclusion, this paper argues that the path to AV adoption is not merely a function of engineering prowess but a deeply human-centric challenge that requires coherent policy design, organizational agility, and public engagement. As urban economies pivot toward automation and digital infrastructure, a failure to address these layered and interconnected barriers could reinforce existing inefficiencies and inequities. To realize the future economy’s vision—where people, organizations, and policy harmonize with technology—policymakers must treat AV adoption not as a singular transportation project, but as a foundational pillar of smart, inclusive, and resilient urban ecosystems.

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## Track 07: Digital Transformation



## Travel While the Sun Shines: How Indian Information Technology Outsourcing Firms Counter Institutional Voids Through Geographic Mobility

*Rajarshi Mukherjee*

**Abstract:** The prevalence of institutional voids in emerging economies creates difficulties for emerging economy firms in conducting business transactions. Extant literature highlights an aggressive asset-seeking behaviour of emerging economy firms (EEFs) through springboarding as a countering mechanism. However, the impediments and limitations of resource constraints may not allow firms to do so. Situating my research in the Indian context, I look into how information technology outsourcing (ITO) firms have adopted geographic mobility to client locations through onsite footprint as a low-cost alternative to improve internationalization footprint. Further, I discuss how this relationship changes with institutional changes in the home country. I intend to extend the academic discourse on institutional voids and the unique strategies Indian information technology outsourcing firms adopt to counter them. Managerial implications include increased investments in onsite footprint as a response to institutional weakness in home countries.

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## Look Before You Book: Exploring Challenges & Opportunities in Telepresence through Immersive Technology for Luxury Hospitality & Tourism Services

*Tanya Ahuja*

### **Abstract:** 1. Problem Statement

The emergence of immersive technologies such as Virtual Reality (VR) has created new opportunities for transforming consumer experiences in luxury hospitality and tourism. However, despite its potential to replicate high-end services virtually, VR adoption remains uneven and often misunderstood by both consumers and practitioners. Key challenges include limited sensory authenticity, skepticism toward substituting physical travel, and uncertainty about how immersive engagement influences consumer decision-making. While much literature explores technology adoption in general retail, few studies empirically assess how immersive environments shape luxury consumer perceptions, attitudes, and behavioral intentions. This paper addresses this critical gap by examining whether and how VR can complement or substitute physical hospitality experiences. It further investigates how emotional engagement, telepresence, and ‘flow’—a state of immersive absorption—shape consumer responses to digital previews of luxury hotels. The problem thus lies in reconciling immersive simulation with luxury’s inherent emphasis on tactile and personalized service.

### 2. Methodology

This study employs a multi-stage sequential mixed-methods design to assess the impact of VR on luxury hospitality consumption. Stage one uses netnography to analyze consumer discourses from Reddit threads on luxury VR experiences, identifying key constructs like escapism, interactivity, and perceived realism. These findings inform the second stage—a controlled lab experiment involving 10 adult participants randomly assigned to treatment (VR tour) and control (static image) groups. Participants evaluated luxury perception, brand trust, and behavioral intentions through structured surveys. Statistical analysis, including T-tests and ANOVA, assessed significance. In stage three, semi-structured interviews with a subset of participants offered qualitative depth, capturing nuanced insights into telepresence, emotional engagement, and usability barriers. The triangulated approach ensures internal validity, thematic saturation, and conceptual robustness. Each method is anchored in the theoretical frameworks of telepresence (Steuer, 1992) and flow (Csikszentmihalyi, 1990), allowing both breadth and depth in understanding consumer-technology interaction in luxury tourism.

### 3. Key Findings

The netnographic analysis revealed five themes—accessibility, market feasibility, experiential expectations, social engagement, and design challenges. Lab experiment results showed that participants exposed to VR perceived hotels as significantly more luxurious (mean = 6.1 vs. 4.2), exhibited higher trust (6.0 vs. 4.5), and showed greater behavioral intent (6.2 vs. 4.3), all statistically significant ( $p < 0.005$ ). Interviews reinforced that VR enhanced emotional connection and brand trust but fell short in replicating sensory richness. Participants preferred VR as a decision-making aid or marketing complement rather than a substitute. Flow-inducing VR experiences—visually rich, intuitive, and uninterrupted—were particularly effective in enhancing engagement. However, barriers such as motion sickness, limited interactivity, and high development costs were flagged. The findings suggest that while VR fosters emotional immersion and cognitive engagement, it currently complements rather than replaces traditional luxury hospitality experiences, especially for discerning travelers.

### 4. Implications for Research

The study offers a novel contribution to digital transformation literature by proposing the Immersive Technology Adoption Framework (ITAF), integrating telepresence and flow theory into consumer decision-making in luxury services. It empirically demonstrates that immersive environments can influence not only perception but also trust and intention, validating calls for interdisciplinary models that connect consumer psychology with technological affordances. Future research can extend ITAF to cross-cultural settings or study longitudinal behavioral shifts as immersive technologies mature. The paper also highlights the need to develop metrics specific to VR-based luxury experiences that go beyond traditional service quality indicators. Scholars may build on this design by using larger samples or exploring neural and biometric responses during VR engagement. By unpacking both affective and cognitive dimensions of simulated experiences, this work invites researchers to reconceptualize customer journey mapping in hybrid physical-virtual ecosystems.

### 5. Implications for Practice

For luxury hotel marketers and experience designers, this study offers actionable insights: VR can serve as an effective marketing tool to build trust and boost bookings by offering immersive previews that simulate exclusivity and personalization. However, these experiences must be designed to induce

flow—visually engaging, easy to navigate, and emotionally resonant. The findings caution against over-reliance on VR as a substitute; instead, firms should position it as a complementary touchpoint. Operationally, VR also presents opportunities in employee training and sustainability communication, especially for showcasing eco-conscious infrastructure. However, firms must address infrastructure gaps, digital literacy concerns, and technological barriers to adoption. Investing in scalable, mobile-accessible VR solutions can democratize luxury previews and reach newer consumer segments. Overall, immersive tech offers luxury hospitality players a route to enhance engagement, reduce information asymmetry, and personalize digital touchpoints—without compromising the physical essence of service.

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Submission ID: 158

Track 07: Digital Transformation

## **Harnessing Entrepreneurial Ecosystem Elements for Digital Transformation in Sustainable Women Entrepreneurship in Developing Countries**

*Samanwita Mishra and Chandan Kumar Sahoo*

**Abstract:** 1. Introduction Entrepreneurship has become a powerful driving force with the potential to tackle the great challenges of our time, such as climate change, poverty, unemployment, and widening socio-economic disparities (Liguori et al., 2019; Venkatesh et al., 2017). Of its many types, sustainable entrepreneurship (SE) has garnered increased research and policy interest because of its double concern with economic sustainability and socio-environmental concerns (Hossain et al., 2025). Sustainable entrepreneurship is also most frequently aligned with the Sustainable Development Goals (SDGs) and serves as a critical developmental instrument for Global South countries, where conventional state-centered development paradigms are commonly failing. In such contexts, women entrepreneurs emerge as powerful drivers of transformation. Their businesses frequently enjoy close social networks and are more likely to adopt inclusive and sustainable business practices. Even with their transformative capacity, sustainable women's entrepreneurship is limited and unevenly advanced in low-resource environments. In India alone, with more than 13 million women-owned enterprises, most are informal, undercapitalized, digitally excluded, and caught in institutional and socio-cultural limitations (Crittenden et al., 2019). The enterprises suffer from limited access to financial capital, poor institutional assistance, poor digital literacy, and constricted market access. Against this background, the entrepreneurial ecosystem as a conceptual framework for the comprehensive understanding and facilitation of sustainable women entrepreneurship has come into prominence. The entrepreneurial ecosystem perspective focuses on the interaction of various interdependent actors and forces of financial capital, social networks, institutions, policy climate, and cultural legitimacy required to enable entrepreneurial action. Despite this, the special challenges that women entrepreneurs in developing economies face call for reconsidering the operation of ecosystems in light of digital change. More specifically, the contribution of digital financial literacy (DFL) and digital technology adoption (DTA) has become ever more crucial to unleash entrepreneurial potential and ensure sustainability-oriented outcomes. Against this background, this study aims to answer the following central questions: • How

do entrepreneurial ecosystem elements interact to influence the balanced performance of women entrepreneurs in developing economies, and under what configurations does it lead to success? • To what extent does digital financial literacy act as a moderator between entrepreneurial ecosystem elements and sustainable entrepreneurial performance? • How does the embracement of digital technology moderate entrepreneurial ecosystem effects on sustainable performance, and under what circumstances will the moderation strengthen or weaken those effects? 2. Theory building To answer these questions, the research is grounded in the Resource Orchestration Theory (ROT), which is a development of the Resource-Based View (RBV). While the RBV is concerned with resource ownership as the root of competitive advantage (Barney, 1991), ROT follows up by incorporating structuring, bundling, and leveraging resources as dynamic processes (Sirmon et al., 2007, 2011). This makes ROT especially useful for examining how under-resourced women entrepreneurs in emerging economies leverage their entrepreneurial ecosystems to produce sustainable results. ROT offers a strong framework for examining how women-owned businesses re-arrange ecosystem resources strategically, particularly in digitally poor environments. It allows an examination of how digital competencies and institutional capacities can be mobilized to orchestrate inclusive growth. The theory assists in capturing agency nuances of capability-building and institutional navigation, which are essential for women micro-entrepreneurs under systemic constraints. It also provides a dynamic perspective in which to evaluate how digital enablers like DFL and DTA unlock value creation and extend sustainability impacts in marginalized contexts. Figure 1 represents the hypothesized relationships by providing a conceptual framework Figure 1. Conceptual framework Source: Developed by authors. 3. Methodology A cross-sectional survey methodology was adopted to gather primary data from a sample of 411 women micro-entrepreneurs operating across various sectors in developing regions of India. The sampling focused on rural and peri-urban areas with low digital penetration to ensure the inclusion of digitally underserved populations. To capture the complexity of interactions between ecosystem elements and digital enablers, the study adopted a hybrid analytical approach, combining Partial Least Squares Structural Equation Modeling (PLS-SEM) and Fuzzy Set Qualitative Comparative Analysis (fsQCA). PLS-SEM was used to test the hypothesized relationships and the moderating roles of digital financial literacy and digital technology adoption. fsQCA was employed to uncover multiple, equifinal causal pathways leading to high sustainable performance, thereby accounting for the configurational nature of ecosystem dynamics. Normality, common method bias, and robustness checks were conducted to ensure the validity and reliability of the results. 4. Findings The analysis provided a number of important findings. Firstly, components of the ecosystem, financial capital, social capital, and institutional support, were found to significantly contribute positively to sustainable entrepreneurial performance. Yet these relationships were non-linear and were heavily influenced by the degree of digital enablement. The moderating analysis indicated that financial and institutional ecosystem support had a significantly stronger impact on sustainability outcomes in the presence of digital financial literacy. High levels of DFL enabled entrepreneurs to better access and exploit financial capital, use electronic governance platforms, and expedite bureaucratic processes. This highlights the essential position of DFL in narrowing structural gaps and converting ecosystem potential into concrete performance. Likewise, adoption of digital technology was identified as one that positively mediated the financial capital-sustainability

performance relationship. Women entrepreneurs who embraced digital technology, mobile banking, digital marketing, e-commerce sites, and cloud accounting were more inclined to experience better performance. These technologies increased market reach, enhanced operational efficiency, and facilitated decision-making in real-time. In contrast, a counterintuitive and contradictory result was observed for institutional and policy support. When moderated by high digital engagement, institutional support occasionally negatively affected sustainable performance. This indicates an instance of institutional overload or regulatory friction whereby too many or poorly coordinated policies could hamper entrepreneurial action, particularly in the context of digitally transforming settings. It also indicates digital exclusion, whereby policy interventions take for granted digital readiness that is not uniformly present in populations, thereby deepening marginalization.

**5. Implications** This study has immense implications for academics, practitioners, and policymakers who want to use digital transformation for sustainable development. To begin with, it identifies the strategic significance of integrating digital enablers, specifically DFL and DTA, into entrepreneurial ecosystem models. Digital literacy is not to be regarded as an add-on skill but as a fundamental ability that defines the degree to which ecosystem assets can be successfully accessed and exploited by women entrepreneurs. Second, the report necessitates reconsideration of institutional support systems. Even with the best of intentions, most digital policy initiatives are top-down and frequently misaligned with on-ground realities. Policymakers need to craft context-sensitive, bottom-up digital inclusion plans factoring in the digital divide across gender, geography, and education. This involves co-designing solutions with local innovators, promoting digital infrastructure, and providing customized capacity-building interventions. Thirdly, the research adds to theory by applying Resource Orchestration Theory to the context of digital transformation in developing worlds. It demonstrates how ecosystem components can be orchestrated not only for competitive gain but for sustainability and inclusivity, especially among digitally disadvantaged communities. Furthermore, application of fsQCA uncovers plural, non-linear paths to success, indicating that various combinations of ecosystem and digital parameters can lead to similar sustainable results.

**Conclusion** In conclusion, this study bridges a critical gap at the intersection of digital transformation, gender-inclusive entrepreneurship, and ecosystem development. It demonstrates that entrepreneurial ecosystems, when strategically configured and digitally enabled, can become powerful levers for sustainable women entrepreneurship in developing countries. However, success depends not only on the availability of resources but also on the capabilities of entrepreneurs to orchestrate them within complex and evolving digital landscapes. Such studies in the future need to investigate longitudinal effects and generalize this trend across various socio-cultural contexts to establish a more comprehensive and internationally applicable understanding of digitally inclusive entrepreneurial ecosystems.

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**Submission ID: 274**

**Track 07: Digital Transformation**

## **Message Trumps Modality: Functional Equivalence in Perceptions of Human–AI Social Support**



**Abstract:** 1. Problem Statement Social support, defined as the provision of psychological and material resources intended to enhance an individual's ability to cope with stress (Cohen & Wills, 1985; House, 1981), encompasses types such as informational (e.g., advice, guidance) and emotional (e.g., empathy, reassurance) aid. The rapid proliferation of diverse Artificial Intelligence (AI) technologies, from voice-based assistants (VBAs) and social robots to advanced generative AI (GenAI) systems, is increasingly extending into roles offering such support. While initial investigations have begun to explore the influence of agent and message types on social support perceptions in human-machine communication (Abendschein et al., 2021), the specific area of how people perceive support from machines remains largely underdeveloped (Inkster et al., 2018). Traditional human-machine communication theories, such as the Computers Are Social Actors (CASA) paradigm (Reeves & Nass, 1996) and dual-process models like the Elaboration Likelihood Model (ELM) or Heuristic-Systematic Model (HSM) (Petty & Cacioppo, 1986; Chaiken, 1987), often emphasize an AI's embodiment or peripheral cues. This study addresses a critical gap by examining whether the specific type of AI or the content of the social support message primarily influences user perceptions of AI social support, aiming to refine existing theoretical frameworks and guide the development of more effective and context-appropriate AI systems. 2. Methodology This study investigated user perceptions of AI social support across different modalities and support types. Our research questions were: RQ1: Are perceptions of each agent (VBA, robot, GenAI) on credibility (competence, caring, character), task/social attraction, social support, and social presence significantly higher than the scale midpoint? RQ2: How do the type of agent (VBA, robot, GenAI) and the type of support (informational vs. emotional) influence participants' perceptions of credibility, attraction, social support, and social presence? We used a 3 (AI type)  $\times$  2 (Interaction context) between-subjects experiment with 203 Prolific workers (M age = 37.08; 55.7% women). Participants were assigned to pre-recorded vignettes featuring a human interacting with a VBA (audio), a Pepper robot (verbal and gestural), or a GenAI (text). Contexts were Information Retrieval ("What are the benefits of regular exercise?") or Emotional Support ("I've had a stressful day. I do not know how to deal with it.") Dependent measures encompassed quantitative scales for credibility (competence, character, caring), task/social attraction, social presence, and social support (all with  $\alpha > .90$  reliability). A set of open-ended questions further captured participants' perceptions of the AI social support provided. Quantitative data were analyzed using one-sample t-tests, a two-way MANOVA, and subsequent univariate ANOVAs, complemented by a qualitative analysis of the open-ended responses. 3. Key Findings Our analysis revealed two core insights. First, RQ1 showed that participants generally rated all three AI agents significantly above the neutral midpoint (4) across most positive perception variables (competence, caring, character, task attraction, social support, social presence), with consistently large effect sizes (all  $p < .05$ ). However, a crucial finding was that social attraction did not significantly differ from the midpoint in most conditions, suggesting a weaker interpersonal appeal (e.g., GenAI informational:  $M = 3.95$ ,  $p = .831$ ; Robot emotional:  $M = 4.60$ ,  $p = .089$ ). Second, for RQ2, the MANOVA found a statistically significant multivariate effect of type of support (Wilks'  $\Lambda = .764$ ,  $F(7, 182) = 8.01$ ,  $p < .001$ , partial  $\eta^2 = .236$ ), confirming message type's strong influence. Critically, the



multivariate effect of type of agent was not statistically significant (Wilks'  $\Lambda = .920$ ,  $F(14, 364) = 1.11$ ,  $p = .346$ ), nor was the interaction ( $p = .425$ ). Follow-up ANOVAs showed informational support led to higher competence ( $M = 5.86$  vs.  $5.28$ ,  $F(1, 188) = 12.27$ ,  $p < .001$ ), while emotional support yielded higher caring ( $M = 5.20$  vs.  $4.83$ ,  $F(1, 188) = 4.97$ ,  $p = .027$ ). Qualitative analysis corroborated these findings, with participants focusing on the clarity of informational responses and the warmth of emotional ones, irrespective of the AI's modality.

4. Implications for Research Building on our findings, we propose the Source-Agnostic Message Evaluation (SAME) framework, which suggests a pivotal shift in how users perceive AI in social support contexts. By demonstrating functional equivalence across diverse AI modalities (VBA, Robot, GenAI) and establishing message determinism where message type, not AI form, drives perceptions of competence and caring (Abendschein et al., 2021), suggesting that perceptions may be more a product of what the AI produces versus which AI contributes to that production. Our results corroborate the Computers Are Social Actors (CASA) paradigm (Reeves & Nass, 1996) by showing that all AIs elicit social perceptions. However, importantly, our findings challenge traditional applications of dual-process models, such as the Elaboration Likelihood Model (ELM) or Heuristic-Systematic Model (HSM) (Petty & Cacioppo, 1986; Chaiken, 1987). We show that while peripheral cues (AI form) are present and trigger social responses (as per CASA), the central route (message content) appears to dominate in determining specific perceptions of functional social support interactions, contrary to expectations that varying peripheral cues (AI modalities) would have a strong, independent influence. This calls for future research to explore the boundary conditions of the SAME framework across different tasks and cultures, investigate specific linguistic features that trigger competence versus caring, and examine how user factors (e.g., AI literacy, individual differences) might moderate these effects. Long-term studies are also necessary to determine if functional equivalence persists over extended human-AI interactions.

5. Implications for Practice Our findings provide crucial and actionable insights for developers and practitioners designing AI systems for social support. First, designers should prioritize the quality and strategic framing of the AI's message over costly and complex physical embodiments. Effective social support can be delivered through more accessible and scalable modalities, such as generative AI or voice assistants, as the message content, rather than the "machine," dictates key user perceptions. Second, AI training should be explicitly tailored to the type of support it aims to provide, emphasizing clear and accurate information to enhance perceived competence, and integrating empathetic and reassuring language to boost perceived caring. Third, these results suggest that while AI can be highly effective for functional support, organizations should manage user expectations regarding deep social connection. Since social attraction did not consistently exceed the midpoint, AIs may not foster the same interpersonal bonds as human interactions, highlighting a practical limitation in their social roles. This enables more cost-effective and functionally optimized AI development.

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## Unlocking Loyalty Through Digital Payments: Examining the Adoption by Low-Income Retailers and Its Impact on Consumer Behaviour

*Gautam Agrawal, Ruchi Garg and Dr Kareena Bhatia Kakkar*

**Abstract:** 1. Problem statement: The study seeks to examine the effect of the customer experience on the customer citizenship behaviour in the context of low-income retailers' adoption of digital payments. The low-income retailers refer to the retailers having annual income of less than Rs. 2,40,000 i.e. Rs. 20,000 per month in urban retail ecosystem. These retailers majorly cater to low-income or BoP (Bottom of the Pyramid) customers with low ticket size, multiple visits, short-term credit, unbranded products or small packet size and preference for one-stop shop for their needs. Consequently, the retailer has to stock a wide variety of products resulting in inventory pile-up and struck working capital. The extant studies highlight that a positive customer experience motivates customers to become citizen-consumer. The previous studies shows that citizen-consumers engage in constructive feedback, spread positive word of mouth, assist other customers, and are more tolerant of service failure. 2. Methodology: The authors conducted survey-based qualitative research among the low-income retailers. Purposive sampling technique was used to conduct semi-structured interviews. The respondents were included on the basis of following selection criteria: • Should be filing GST and annual tax forms (even if Zero tax liability) for at least 3 consecutive years. • Should have pucca /constructed shop (owned or rented). Retailers selling through weekly markets were excluded. • Should accept digital payments. • Retailers selling products only were included. Service retailers were excluded. The geographic area to conduct the survey was primarily Delhi- NCR (Gurugram, NOIDA). The period of interviews was Feb 2025-April 2025. A total of 53 interviews were conducted before the insights became repetitive and theoretical saturation was deemed to be achieved. The language of the interactions was Hindi, translated by two professional translators. The data was analyzed using Atlas.Ti software. The codes were drawn and further collated to form sub-themes and themes to render the Thematic analysis. 3. Key findings: Retailers benefitted due to efficient cash management, lower credit demand from consumers, repeated customers, track consumer behaviour, calculate their purchase value on weekly & monthly basis and reduced risk of non-payment. Further, the retailers discussed about increased customer loyalty, and reduced service time. One significant barrier to digital payment adoption observed among the small retailers was the lack of awareness and education about the benefits and functionality of digital tools. Transaction Fees was another concern for the small retailers. While some digital payment platforms offer low-cost or free services, other fintech companies levy a transaction fee that add up for low-margin businesses. Connectivity Issues due poor internet infrastructure was also discussed due to service interruptions; however, it was a very minor concern and primarily the retailers were satisfied with the digital infrastructure. 4. Implications for Research: Present research showcases the multifaceted impacts of digital payment adoption, specifically for low-income retailers. It enhances the understanding of the technical, financial, and behavioural challenges faced by low-income retailers and offers insights into the digital divide that exists between different demographic groups. The study contributes to understanding the consumer-retailer relationship in the digital age. It shows that small retailers can gain competitive advantage viz. loyalty and citizenship by accepting digital payments. For future research,

there is an opportunity to conduct empirical studies on the social impact of digital payments on local economies and to evaluate the effectiveness of policy interventions aimed at fostering digital adoption. Furthermore, an analysis of the economic outcomes of digital payment adoption across different income brackets can provide deeper insights into how such innovations are reshaping retail behaviour in India or similar economies. 5. Implications for Practice: Subsidized Setup Costs: Policy: Retailers are reluctant to adopt digital payments due to the high upfront costs of POS devices and software. Fintech companies or government policies can provide subsidies or low-interest loans to help small retailers with initial setup costs. Monetization: Fintechs could generate revenue through leasing or rental models for POS devices, where retailers pay a nominal monthly fee, thus lowering the upfront cost while still having access to the required technology. Transaction Fee Reductions and Rewards: Policy: To incentivize digital payment usage, fintech companies could offer lower transaction fees for small retailers, possibly through government-backed initiatives or partnerships with banks. Incentivization: Retailers who accept digital payments could be rewarded with cashback, rebates, or special offers on further fintech services. For example, a retailer who meets certain transaction thresholds could get reduced rates on transaction fees or receive a rebate on monthly POS device rentals.

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Submission ID: 282

Track 07: Digital Transformation

## How Government Dashboards Shape the Way We See the State

*K. Salmanul Faris and Anupam Das*

**Abstract:** 1. Problem Statement In recent years, public-facing dashboards have become a central feature of India's digital governance landscape. Promoted under flagship initiatives like Digital India, these platforms are presented as tools for enhancing transparency, accountability, and citizen awareness. Government ministries and agencies now routinely publish dashboards that track everything from welfare distribution and infrastructure rollout to administrative uptime and policy milestones. These platforms are often framed as neutral information systems, offering a window into the functioning of the state. Yet, the role these dashboards play is not purely technical. Their visual design, language, and structure suggest that they also function as communicative artefacts, telling stories about governance, delivery, and progress. The state's presence, competence, and intent are increasingly performed through metrics and visual cues. Despite this shift, we know little about how such dashboards operate as narrative interfaces: how they shape public perception through design and how they contribute to political legitimacy in subtle, often aesthetic ways. This study examines how three central government dashboards visually and textually constructs narratives of state leadership. It asks how the interface itself through layout, colour, and language becomes a site where governance is not only measured, but visibly enacted and politically shaped. 2. Methodology This study approaches public dashboards as narrative interfaces that perform governance through design. It combines multimodal content analysis (Serafini & Reid, 2019) with multimodal critical discourse analysis (Machin, 2013) to examine how meaning is constructed through the interplay of visual, textual, and spatial elements. MMCA provides a structured

way to identify and categorise interface features such as layout, colour, iconography, and headlines, while MCDA offers a lens to interpret how these design choices relate to broader narratives of authority and legitimacy. To further understand how these interfaces may shape user perception, the study draws on insights from cognitive fit theory and affective design research. These perspectives help explain how certain layouts enhance cognitive processing and how visual cues such as colour schemes, movement, and sequencing evoke emotional responses like trust, urgency, or reassurance. The analysis focuses on three Indian government dashboards: NIC's e-Governance Dashboard (DARPAN), the National Data and Analytics Platform (NDAP), and the Transforming India Dashboard. These platforms were selected for their institutional visibility, varied aesthetic styles, and explicit use in representing governance. The study examines three interconnected layers: visual design, textual framing, and narrative structure, to trace how dashboards construct governance as both a narrative and a perceptual experience within India's digital transformation landscape.

**3. Key Findings** The analysis finds that public dashboards construct governance not only through data but through layered visual and narrative strategies. Each platform presents a distinct vision of the state, shaped by its aesthetic, structure, and tone. The NIC dashboard adopts a restrained, technocratic design. Its minimal colour palette, rigid grids, and plain counters communicate administrative order and stability. This subdued interface reinforces a perception of quiet authority and procedural reliability. In contrast, the NDAP dashboard uses modular layouts and vibrant topic panels that encourage user interaction. Its design supports a narrative of openness and analytical clarity, suggesting governance as collaborative and data-driven. The Transforming India dashboard takes a more symbolic route, with animated counters, saturated national colours, and patriotic imagery. These elements amplify the state's performative presence, evoking progress and urgency through visual dramatization. Textually, NIC remains formal and institutional, NDAP is neutral and descriptive, while Transforming India adopts aspirational, development-focused language. Despite these differences, all three platforms use layout, headlines, colour, and visual flow not just to report governance, but to shape how it is perceived by tapping into familiar visual grammars that support legibility, trust, and emotional resonance in a digital public sphere.

**4. Implications for Research** This study contributes to information systems and political communication research by reframing public dashboards as narrative and perceptual interfaces i.e., spaces where state authority is shaped not only by data but by the design choices that structure its reception. While much existing work focuses on usability, infrastructure, or data accuracy, this research draws attention to how layout, colour, and textual framing participate in the performative construction of governance. By integrating insights from cognitive fit theory and affective design research, the study offers a way to understand how dashboards leverage visual familiarity, spatial fluency, and symbolic cues to foster trust and legitimacy. These platforms are not passive carriers of information; they are calibrated to be seen, felt, and cognitively processed in ways that reinforce institutional credibility. For political communication research, the study extends narrative theory beyond speeches and campaigns to include quiet, interface-level storytelling embedded in routine digital infrastructures. Methodologically, it demonstrates how a layered multimodal approach can be adapted to analyse state platforms and opens space for future work that links interface aesthetics with user cognition and public affect, especially as digital governance becomes increasingly performative and design-driven.

**5. Implications for Practice** Designers and administrators

of public dashboards must recognize that interface design is not just a matter of usability. It is central to how governance is made visible, credible, and persuasive. Dashboards frame not only what information is shown, but how the state is seen. Visual and structural choices: layout, sequencing, colour, and animation, guide attention, shape emotional tone, and influence perceptions of authority and legitimacy. From a cognitive perspective, dashboards that align with users' processing expectations, such as through clear spatial flow or recognizable visual structures can enhance comprehension and reduce interpretive strain. When design supports cognitive fit, it enables users to more easily interpret complexity as order, or delivery as progress. At the same time, affective cues like patriotic colour schemes or animated metrics can evoke emotional reassurance, but may also tip into performance if not grounded in context. Another implication concerns the risks of one-way communication. Dashboards that focus solely on celebrating metrics without offering space for reflection or critique may erode trust over time. Including explanatory overlays, temporal comparisons, or basic forms of feedback can foster more dialogic and credible encounters. Ultimately, designing for public reasoning, not just reporting, can strengthen institutional legitimacy in an increasingly interface-mediated state.

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Submission ID: 282

Track 07: Digital Transformation

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*K. Salmanul Faris and Anupam Das*

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Submission ID: 315

Track 07: Digital Transformation

## Block the Adblockers? Strategic Choices of Competing Platforms and Their Impacts

*Himanshu Joshi, Govind Kumawat and Suyog Nigudkar*

**Abstract:** In recent years, the widespread adoption of adblockers has created significant challenges for digital platforms (e.g., websites) by limiting their ability to monetize content through advertising. In response, platforms have adopted divergent ad-recovery strategies: some platforms deploy gates (anti-adblock walls) that block access to users with adblockers, while others allow unrestricted access. Motivated by these contrasting industry practices, this paper investigates whether and under what conditions platforms adopt the gating strategy. We develop a game-theoretic model in a duopoly setting, incorporating user heterogeneity and same-side network effects, to analyze the strategic decisions of competing platforms. Our analysis yields several important insights. First, in equilibrium, platforms adopt symmetric ad-recovery strategies: either both use the gating, or both use the no-gating, driven by the interplay between gating costs and ad revenue. Second, regardless of the competitor's strategy, a platform adopting gating sets a lower ad intensity than one without gating. Third, contrary to general intuition, we find that blocking the adblockers does not always improve a platform's profit. When the cost of deploying and maintaining gating technologies is sufficiently high, the net profitability of the gating strategy may fall below that of the no-gating alternative. Finally, although consumer surplus declines under gating, social welfare may increase when gating costs are low, as the gain in platform revenue offsets the consumer utility loss.

## Role of Invisible Digital Innovations in Shaping Consumer Experience: A Qualitative Study

*Vikrant Singh and Dr. Mayank Yadav*

**Abstract:** Invisible In-store Technologies (IIST) profoundly influences the purchasing process by creating a seamless, data-driven retail experience that stimulates customers' decision-making at every phase. Interestingly, this transformation of the purchase journey takes place without customers' awareness or explicit consent at the point of action; thus, satisfaction may increase due to convenience or decrease because of unauthorised data access. The study utilised a multi-method qualitative approach to gather data through walk-along observations, sensory ethnography, and narrative elicitation of in-store experiences, involving 30 purposively selected participants. The data were analysed based on the 'Grounded Theory Approach' and 'Interpretative Phenomenological Analysis'. The theoretical background comprises three state-of-the-art frameworks, which enable the critical exploration of retail experiences as co-constructed by consumers and non-human technological agents. The study's findings suggest that some of the key drivers identified are convenience, personalised product suggestions, autonomy, etc. These factors convey a sense of seamlessness and store intelligence. On the contrary, the study also identified barriers, including low awareness, discomfort with backend data collection, impersonal services, distrust of algorithmic recommendations, and privacy concerns.

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## Impact of Digital Inclusion on Women Empowerment through Entrepreneurship

*Eva Maitreyee and Dr Vanita Singh*

**Abstract:** 1. Problem Statement The rise of digital technologies has reshaped the entrepreneurial environment and has opened up new avenues for women start and develop businesses. This paper argues that access to digital technologies, including mobile phones, internet, and digital banking, can enhance women's opportunities by eroding traditional barriers to entry, improving market access, and igniting their potential for innovation. The critical question this paper addresses is: Does providing digital access to women lead to entrepreneurial awareness or entrepreneurial action? We also explore the mediation of this relationship by financial autonomy. We propose that the relationship between digital access and financial autonomy is moderated by working/occupational status, whereas the relationship between financial autonomy and entrepreneurship is moderated by patriarchal attitudes faced by women in their household. 2. Methodology To study the research question, we use the methodology of Structural Equation Modelling (SEM). The software used for the same are SmartPLS4 v.4.1.1.1 and IBM SPSS Statistics v.29.0.0. We use Hayes PROCESS Macro for our regression analyses. The rationale for using SEM in this research is to investigate complex models and deal with latent variables by including moderation and mediation. Our model is a mixed model composed of both formatively measured constructs and reflectively measured constructs. The data for this study has been taken from the DHS (Domestic Household Survey) NFHS-5 survey data. The NFHS-5 survey was conducted between June 2019 and May 2021. The sample size with all completed interviews for the household survey was 636,699 households, 724,115 women with all completed interviews for the women's interview, and 101,839 males with completed interviews for the males' interview. From that massive amount of data, we are only concerned with women's data in this study. Therefore, the women's module will be the main source of data for our analysis. 3. Key findings We run two models with entrepreneurship1 & entrepreneurship2 as our respective dependent variables. Our first model tests whether digital access leads to awareness of entrepreneurial avenues, while the second one tests whether it leads to entrepreneurial action. We find that digital access significantly relates to entrepreneurial awareness, but only relates to entrepreneurial action through indirect mediating effect of financial autonomy. We also find that, in both models, working status of respondent significantly moderates the relationship between digital access and financial autonomy. Also, patriarchal attitudes at home significantly moderate the relationship between financial autonomy and entrepreneurship. 4. Implications for Research The study draws on national level survey data, and empirical literature to show how digital inclusion spurs flexibility; expands networks and interaction; and increases access to funding, training, and other resources. The paper will also address the social and structural challenges that deny women the opportunity to innovate and benefit from technology despite progress in the underlying technology; and the gap between women's digital literacy, access, and uptake of technology that could unleash their entrepreneurial potential. In acknowledging the nuances of these dynamics, this study will conclude

with a discussion of how digital tools can be leverage to enhance women's entrepreneurship along with outlining policy recommendations to close the digital divide and create inclusive and sustainable economic growth. 5. Implications for Practice This paper has public policy implications with policy development for bridging the digital divide by helping the government prioritize investment in digital infrastructure and increase financial agency of women to boost entrepreneurial opportunities. Our results may also justify tax incentives for technology adoption among aspiring entrepreneurs. For business implications, this could lead to targeted training and platform partnerships as specialized programs could be designed to include digital and financial literacy for female workers. Schools and universities can integrate entrepreneurship education with digital skills training and financial education, especially in regions with young female population. NGOs and development agencies can focus on how digital access and financial autonomy empowers women to become entrepreneurs. Projects can use entrepreneurial outcomes as a measurable impact of digital inclusion programs.

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Track 07: Digital Transformation

## FROM CRISIS TO CAMPAIGN: DIGITAL POLITICAL ADVERTISEMENT IN THE AFTERMATH OF AN ASSASSINATION ATTEMPT

*Ambikesh Pandey, Probal Mojumder and Siddharth Bhattacharya*

**Abstract:** Online advertising has emerged as a leading force in the digital age, changing consumer behaviour and influencing results. Social media sites have amplified the reach and impact of advertisements. However, scandals or policy announcements can dramatically disrupt the ad landscape. This study explores how assassination attempts involving a high-profile political figure, Donald J. Trump, affected the posting, reach, and effectiveness of political advertisements on social media during the 2024 Presidential election campaign in the USA. This research aims to uncover the complex interplay between external shocks, advertising strategies, and public opinion by analysing ad data and considering broader trends. The study captures the differential impact of similar shocking events on online advertisers. This study would benefit advertisers, politicians, and researchers interested in the changing dynamics of digital advertising. Political advertisements serve as persuasive tools intended to shape voter behaviour and influence electoral outcomes (Huber & Arceneaux, 2007; Enos & Fowler, 2018). Their effectiveness, however, can be influenced by external shocks, particularly events that capture national attention. While existing research has extensively examined the role of political advertisements in voter mobilization, limited studies have explored how unexpected political events dynamically reshape campaign advertising strategies in real time. This research seeks to answer the following questions: how did the assassination attempt impact the volume and frequency of political advertisements for Trump's and Biden's campaigns? Did the attempt influence the geographical distribution of advertisements, particularly in key swing states? Were there noticeable differences in response strategies between the Republican and Democratic campaigns?

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## UNLOCKING VALUE THROUGH DIGITAL TRANSFORMATION: A LONGITUDINAL STUDY OF ENTERPRISE SYSTEMS IN HIGHER MANAGEMENT EDUCATION INSTITUTION

*Anshu Singh Bais and Preeti Khanna*

**Abstract:** 1. Problem Statement International accreditation standards and growing stakeholder expectations in academic's present major challenges for Higher Management Education Institutions (HMEIs) in today's VUCA world. AI-driven disruption, varied multiple student's programs, and rapid expansion across several locations in HMEIs necessitate prompt and data driven decision-making at the right time. However, many institutions continue to rely on outdated systems, resulting in inefficiencies, data silos, and poor decision-making [1]. Lack of consistent practices and standardization across multiple locations makes managing the student lifecycle difficult at all performance levels: strategic, tactical (academic & program Management), operational (administrative & support Services), and engagement (student & stakeholder). Manual workflows lower employee productivity, and the absence of data-driven insights weakens strategic alignment. Without a single digital platform, stakeholder engagement is still dispersed. Obstacles to digital adoption include a lack of managerial attention, financial limitations, a lack of skilled workers, and change aversion. Long-term sustainability is also threatened by issues with scalability, vendor lock-in, customisation requirements, cybersecurity risks, and data privacy. In order to standardize processes through a single, consolidated digital platform, this study intends to fill in knowledge gaps for all the stakeholders at strategic, tactical, operational and engagement level in HMEI. According to NEP 2020, digital change is essential for productivity, openness, and creativity [2]. 2. Methodology We conducted a qualitative case study to examine the digital transformation path of a large, multi-campus HMEI across a 15-year time period (January 2010 to January 2025). Using an exploratory case study methodology and grounded theory principles, the study examines the key success factors, difficulties, and long-term effects of implementing enterprise systems. The selected university is notable for its broad academic offerings and multiple campuses across the country. The objective of our study is to use the longitudinal lens to comprehend the implication and significance of operational and institutional experiences over a period of time. The research is designed as an exploratory case study having following research objective – RQ- “To understand the value associated with the experiences at institutional & operation side over a time in a large multi campus management education institute through a longitudinal study” Deep investigation of organisational, cultural, and technological aspects is made possible by this methodology. Semi-structured interviews were conducted with the implementation team, student support units, and academic and administrative team leaders as well as end users. System adaptability, training efficacy, change resistance, and user experiences were main focus areas. Secondary data such as project implementation plans, training manual, usage statistics were gathered and studied to validate interview findings, and to assess alignment between planning and execution. Triangulation enhanced the study's validity and offered insights for institutions undergoing similar transformations. 3. Key findings The

results of the study point to a number of crucial success factors for digital transformation, including a strong leadership vision, active participation from stakeholders and top management, an efficient change management procedure, a well-organised implementation plan, a competent consulting team, an internal project core team, thorough training, and documentation. Themes such as "data chaos," "resistance to change," "process standardisation," "system integration challenges," "improved transparency," "accountability," and "user adaptation" emerged prominently through qualitative coding. Coding also made it easier to see how these themes changed over time. For example, early resistance gradually diminished as individuals became more digital-savvy and began to recognize the benefits of automation because of standardization and integration of the data using unified digital platform. The deployment of the enterprise system led to both tangible as well as intangible benefit realization. Operational efficiency has increased by automating manual operations which leads to decreased in misinformation. Complete digitisation of academic and non-academic procedures, real-time data access, and faculty, parent, and student self-service portals all contributed to an increase in productivity. For example, all major processes such as merit list, result processing are automated enhancing the accuracy and speed of execution. Improved user experience, cultural change, and increased cooperation were few examples of intangible results because of this digital transformation. Another major benefit is easy scalability and expansion and reduction in manpower as all repetitive tasks are automated.

**4. Implications for Research**

The study's conclusions have important ramifications for future investigations into enterprise systems, organisational transformation, and the digital transformation journey in HMEI especially in developing nations like India. Change management emerged as one of the most difficult aspects. Other challenges included end-user resistance, a lack of knowledge about the advantages of the system, and the disruption of established workflows. Top management intervened to align the expectations of various stakeholders and keep lines of communication open across departments. More than just technical training, a transition and a cultural change towards data-driven and process-oriented practices was also necessary. Furthermore, most enterprise system research focuses on the implementation stage or short-term results, frequently ignoring post-deployment dynamics and long-term sustainability. This long-term study, which runs from 2010 to 2025, sheds light on system evolution, organisational learning, and prolonged user adaptation. It highlights the significance of long-term digital maturity in educational transformation initiatives and creates new opportunities for researching the long-term effects of enterprise systems.

**5. Implications for Practice**

Research findings offer valuable practical guidance for HMEI administrators, policymakers, and technology solution providers aiming to implement or optimize enterprise systems in educational institutions, particularly within the Indian context. Institutions should begin with thorough pre-implementation planning, including comprehensive needs assessments, stakeholder mapping, and alignment of digital initiatives with institutional goals. A phased implementation strategy helps manage system complexity, reduce operational risk, and ensure smoother adoption across academic and administrative functions. Early and sustained involvement of all key stakeholders—including faculty, administrators, students, and IT teams—is essential to improve system ownership, reduce resistance, and ensure the solution meets user needs. Digital transformation efforts frequently trigger behavioural and cultural shifts, particularly in institutions with a long history of manual, paper-based processes. Sustained success depends on periodic system upgrades, dedicated budget allocation,



and robust performance monitoring mechanisms. Leaders must view enterprise systems as long-term strategic investments rather than one-time projects. To fully realize the benefits, system implementation should be accompanied by business process reengineering and data governance practices. Institutions that integrate enterprise systems into their broader digital vision and cultivate a culture of continuous improvement will be better positioned to unlock long-term value, enhance institutional agility, and meet evolving stakeholder expectations.

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Submission ID: 466

Track 07: Digital Transformation

### **Unveiling the relation between Digital Transformation and sustainability performance: Human skills-based perspective**

*Dr Sarika Kumar and Dr Vatsala Bose*

**Abstract:** Extended Abstract Track 07 Sub Section-- Digital Leadership and Organization Title of the Paper Unveiling the relation between Digital Transformation and sustainability performance: a Human skills-based perspective Problem Statement The digital economy has shown challenges and opportunities for sustainability and human development (Zhu and Zhu 2025). Amid the fast-paced evolution of the digital landscape, organizations are experiencing significant changes in how they function, compete, and deliver value (Kane et al 2015). Specifically, through digital transformation, enterprises apply these technologies to areas of production, operations, and management, enhancing efficiency, quality of product and services, and promoting sustainable growth. When economic performance improves—financial stability strengthens—companies develop both the capacity and the will to assume a larger social role. This active participation not only promotes corporate responsibility but also enhances brand image and public confidence (Kong et al., 2024; Zhao et al., 2023). As enterprise change is led by technological innovation and capital deployment, misalignment with labour and other productive resources could decrease efficiency or cause loss. Digital change has especially increased the need for highly qualified workers—particularly those with bachelor's or higher degrees. There seems to be a misalignment between digital transformation and human capital readiness as well as lack of integrated understanding of digital transformation's ESG impact. The literature examines the inconsistencies in ESG evaluation in the context of digital change. Methodology This study analyses NSE listed top 500 companies of India from the period 2012-2024 and utilized the data sourced from Prowess IQ (database maintained by CMIE). For the sustainability variables, Environment E, Social S, Governance G, the data has been collected from Thomson Reuters. To ensure the dataset's robustness and relevance for further study, a panel dataset of 20,042 observations was methodically created. The paper employs the ordinary least square (OLS) analysis to examine the relationship between digital transformation and sustainability performance (ESG) from the perspective of Human skill force of the firm being employed. Variables Identified A) Independent Variable Digital Transformation B) Dependent Variable Sustainability Performance High-quality Labour force. Environmental Regulations Governance- corporate governance responsibility Labour force skill level Leverage Drawing on Wang

et al. (2021) research, the paper constructed a two-stage regression model based on the benchmark regression model to probe the transmission mechanism whereby digital transformation influences ESG responsibility performance through the structure of human capital. The model is as follows:  $ESGi,t = a_0 + \beta_1 DT_{i,t-1} + \beta_2 HLF_{i,t} + \lambda \sum \text{controls}_{i,t-1} + \delta_i + \gamma_t + \epsilon_{i,t}$  .....a And,  $ESGi,t = a_0 + \beta_1 DT_{i,t-1} + \beta_2 LFS_{i,t} + \lambda \sum \text{controls}_{i,t-1} + \delta_i + \gamma_t + \epsilon_{i,t}$  .....b

**Key findings** The mean value of digital transformation (DT) for firms is, indicating that on average about 1.312% of the words in the Management discussion and Analysis (MD&A ) portions of their annual reports are related to digitization. The highest value of DT is 5.52, which indicates considerable differences in digitization activities across firms. The test results of whether high-quality labour force (HLF) has a moderating effect on the interaction between digital transformation and ESG performance signifies the coefficient of digital transformation is statistically significant at a 10% level, implying that digital transformation has a significant positive effect on ESG performance considering the impact of high-quality labour. This result confirms the hypothesis that digital transformation results in better ESG outcomes, especially when supported by a quality labour force. The regression results with high-quality labour (HFL) as the mediator, digital transformation (DT) as the independent variable, and ESG performance as the dependent variable, show that both DT (coefficient = 0.0660, significant at 1%) and HFL (coefficient = 0.0925, significant at 1%) have a positive and statistically significant impact on ESG performance.

**Implications for Research** This research adds to the academic literature on how digital transformation interacts with ESG performance, with emphasis laid on the effect of human capital. The conclusions conform to the common perception that digital transformation tends to have beneficial effects on ESG performance, albeit to varying degrees across various dimensions. Interestingly, human capital was determined to be the key driver through which digital transformation improves ESG performance. Through enhancing labor quality and boosting workforce skills, digital transformation efforts lead to enhanced environmental responsibility, social stewardship, and governance in operations. Environmental regulation is also identified by the study as playing a moderating role in influencing the effect of digital transformation on labor quality and developing skills, thereby affecting firm-level ESG performance. If enterprises are to leverage fully the potential of digital transformation towards enhanced ESG performance, they should embrace fully integrated and holistic management approaches. One of the priority areas is employee skill development reinforcement. With the fast pace of technological shifts, ongoing investment in training and education is mandatory to keep employees' skills aligned with the latest digital trends. Having a culture of lifelong learning helps the workforce utilize new technologies effectively and supports quicker progress toward ESG targets.

**Implications for Practice** If enterprises are to leverage fully the potential of digital transformation towards enhanced ESG performance, they should embrace fully integrated and holistic management approaches. One of the priority areas is employee skill development reinforcement. With the fast pace of technological shifts, ongoing investment in training and education is mandatory to keep employees' skills aligned with the latest digital trends. Having a culture of lifelong learning helps the workforce utilize new technologies effectively and supports quicker progress toward ESG targets. Another critical area is the optimization of human resource management and motivational tools. Embedding ESG metrics in employee assessment and reward systems can drive enthusiasm and responsibility for ESG targets. Rewards for

those championing sustainability efforts further solidify organizational alignment. Strengthening data governance and transparency is also imperative for establishing trust from stakeholders. Digital transformation requires businesses to assure proper, accurate, and transparent data handling, allowing stakeholders to see clearly the progress on ESG. Plain language builds more robust stakeholder relationships and improves brand image. Finally, the integration of ESG objectives with strategic objectives is critical for generating synergy between digital transformation and ESG performance. Interdepartmental collaboration and strong monitoring mechanisms guarantee coordinated efforts and allow ongoing measurement of the effect of digital transformation on ESG results.

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Submission ID: 507

Track 07: Digital Transformation

## Enhancing Retail Value Creation through LLM-Powered Automation of Consumer Insights and Sales Engagement

*Clara Anna George and Divya D*

**Abstract:** Problem Statement In the current intensely competitive and digitally connected retail and B2B sectors, immediate engagement and tailored interactions have become essential tools for enhancing customer value. Organizations are overwhelmed with both structured and unstructured data, yet they still struggle to convert that data into actionable insights. The conventional business development process, including manual lead qualification, generic outreach, and irregular follow-up, simply cannot adapt to the market's need for highly personalized and data-driven interactions. This issue is worsened for deep-tech companies in high-context sectors such as connected mobility, where successful and efficient personalization requires specialized knowledge that is difficult to acquire and even more challenging to expand. The constraints these companies encounter are clearly evident when you recognize that the manual gathering of insights from tangible web content and imitation sales interactions essentially replicates the classic lead qualification process, destined to rotate within the low-power and high-friction area of lost chances and operational inefficiencies. Methodology This research employs the CRISP-DM (Cross Industry Standard Process for Data Mining) framework to create a modular and intelligent automation pipeline that integrates machine learning with large language models for B2B sales enhancement. The process begins by comprehending the business, concentrating on the necessity to automate lead engagement. Data comprehension and gathering entail two sources: (1) organized company data obtained via Python web scraping from prospective clients' sites and (2) unstructured notes from sales calls recorded by sales agents. Web page text is cleaned and analyzed with natural language processing (NLP) methods, and call notes are converted into vectors for sentiment analysis. A Linear Support Vector Classifier (SVC) model is utilized to categorize caller sentiment as Positive, Neutral, or Negative. Simultaneously, Groq-hosted LLMs through LangChain generate concise company overviews and tailored cold-call sales presentations. These results are integrated through rule-based logic and prompt engineering to propose tailored next-best actions. Evaluation metrics consist of model accuracy, F1-score, and input from the sales team to assess business relevance.

The approach guarantees data integrity and dependability in automation while enabling scalable customization in digital retail, rendering the pipeline an effective resource for engaging consumers and enhancing sales. **Key Findings** The research demonstrates that merging traditional machine learning models with generative AI successfully addresses difficulties in lead qualification and retail interaction. The combined machine learning and extensive language model system enhanced lead qualification precision, reduced the manual effort required for pitch creation, and facilitated practical segmentation of customer sentiment. Crucially, sentiment analysis effectively detected adverse interactions, allowing sales teams to direct their efforts more efficiently. Employing large language models to create sales pitches not only reduced time spent but also enhanced the relevance of communication with customers. The prototype demonstrated that automation can transform disorganized consumer feedback into structured, value-oriented approaches for engagement. This ultimately results in more customized, prompt, and effective interactions in a retail environment. These results emphasize that digital technologies, when applied strategically, can (i) accelerate lead qualification, (ii) enable tailored outreach, and (iii) enhance conversion rates by aligning communication with customer emotions and demographics. The project showcases that automation powered by AI minimizes manual tasks while converting unstructured, raw data into structured, actionable information. Crucially, it establishes AI as a central force in retail value, aiding organizations in navigating digital transformation, prioritizing customer requirements, and discovering innovative avenues for competitive edge via intelligent engagement strategies. **Implications for Research** This research contributes to the expanding body of work on artificial intelligence, digital transformation, and consumer involvement. It demonstrates that integrating machine learning with large language models can enhance intelligent retail automation by transforming unstructured data into useful business insights. Employing a consistent framework grounded in the CRISP-DM approach, the study establishes a strong foundation for scholarly investigation of AI technologies in customer-oriented operations. It promotes deeper exploration of areas such as model interpretability, collaboration between humans and AI, and the regulation of generative AI within decision-making frameworks. Additionally, it brings forth significant inquiries regarding aligning LLM results with organizational objectives and moral concerns in automated communication. The adaptable design of the pipeline enables modifications for various industries, rendering it an important subject for cross-domain and comparative research. Future studies may explore the lasting impacts on customer lifetime value, brand image, and operational efficiency. Furthermore, integrating reinforcement learning along with real-time feedback mechanisms may improve adaptability and customization over time. This research acts as a foundation for cross-disciplinary studies focused on developing accountable and scalable digital transformation frameworks in retail and business settings. **Implications for Practice** Practically, this study provides a distinct framework for organizations aiming to digitize and enhance their customer engagement strategies. Retailers and B2B solution providers can leverage the ML-LLM pipeline to streamline lead qualification, customize outreach efforts, and prioritize follow-up tasks with little human involvement. Utilizing sentiment analysis alongside generative AI, the framework enables sales teams to grasp customer needs more effectively, optimize resource allocation, and craft messages that resonate with buyers' circumstances and challenges. This results in quicker engagement processes, increased conversion possibilities, and

reduced mental stress for sales professionals. Crucially, the method extends beyond basic CRM automation by incorporating contextual intelligence into sales operations, enabling strategic targeting and informed choices. Organizations can utilize the framework to create feedback loops, monitor customer sentiment trends, and consistently enhance their messaging strategies. Focusing on prompt engineering, ensuring data quality, and establishing AI governance will be vital for sustaining the system's relevance and efficiency. The approach is very flexible and can be applied to other fields, like healthcare, education, or finance, where personalized solutions in real-time and sound decision-making are crucial. In the end, this project illustrates that digital transformation, when carried out carefully and methodically, can significantly enhance value creation in the evolving landscape of consumer experience.

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Submission ID: 513

Track 07: Digital Transformation

## Organizing Shared Digital Platforms: Leveraging Distributed Anchoring in Public Sector Digital Transformation

*Parvathy Venkatachalam and Saurabh Kumar*

**Abstract:** The rapid pace of global urbanization presents immense opportunities and significant challenges for sustainable development. This includes deep digital transformation, yet its implementation in public sector contexts faces unique complexities. From a socio-technical perspective, successful transformation hinges on interplay between technology, organizational structures, practices across diverse actors, and the chosen platform governance model (De Reuver et al., 2018; Hein et al., 2020). Implementing shared digital platforms as public infrastructure involves distinct orchestration processes, particularly where multi-level government structures operate with significant autonomy, making traditional top-down control ineffective (Panetti et al., 2018). Despite growing IS research on digital platforms, studies largely originate from private sector ecosystems assuming central firm control (Kohli & Melville, 2019; Nambisan et al., 2017). There remains a critical gap in understanding digital transformation for public services in a federal government structure, where central and state government manage the delivery of services. Our research question is “How does a central platform provider of digital transformation of public services organize the sustained adoption of shared digital platforms by autonomous government agencies at state level?”. Our study addresses this gap by investigating these dynamics in India's government digital transformations.

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## RESONATING FACES IN VIRTUAL SPACES: EXAMINING THE INFLUENCE OF REALISTIC AND UNREAL AVATARS ON TRAVEL INTENTION THROUGH PSYCHOLOGICAL ENGAGEMENT

*Sumiran Maheshwari, Ankit Kumar and Ranjeet Kumar Raman*

**Abstract:** Problem Statement In the age of immersive digital environments, virtual influencers (VIs) are redefining how audiences connect with digital content, particularly in the tourism domain, where travel inspiration now stems from computer-generated characters rather than real humans. Marketers collaborate with VIs to convey destination appeal through their algorithmic reach and customization flexibility. Despite VIs' expanding real-world presence, research on their endorsement in tourism marketing is limited. While previous literature compares VIs to human influencers, it overlooks within-VI variations, particularly across culture and realism, which may impact consumer behavior. This gap is especially relevant in culturally diverse markets, such as India, where consumer responses may differ based on avatar appearance and identity. To address this, the study integrates theoretical perspectives from Social Identity Theory, suggesting stronger engagement with similar in-group characteristics, and the Computers are Social Actors (CASA) paradigm, along with Anthropomorphism Theory, which explains users' social responses to VIs by attributing human-like traits to artificial characters. We specifically examine how different VI sub-types and their content formats influence Indian Zillennials' travel intention (TI) through psychological variables like perceived homophily (PH), perceived anthropomorphism (PA), para-social interaction (PSI) that offer new insight into avatar-audience alignment and emphasizing the need for tailored influencer strategies in tourism marketing. Methodology This study employed a 3 (VI type: Foreign-human looking vs. Indian human-looking vs. Anime cartoon-looking) x 2 (Content Format: Photo vs. Reel) x 2 (Generation: Gen Y vs. Gen Z) between-subjects experimental design, using a mixed-method approach integrating laboratory experimentation and online field testing to enhance ecological validity. A pre-test was conducted with 64 Indian Zillennials (aged 22-35) randomly assigned to twelve groups and shown Instagram-style VI posts in either reel or photo format. The stimuli's validity was confirmed with 92.2% manipulation check accuracy for the main experiment. The lab experiment involved 360 participants randomly assigned to 12 groups. After viewing their assigned posts, they completed a structured questionnaire measuring PH, PA, PSI, and TI using validated scales. VI type was modeled as the independent variable, while psychological variables were parallel mediators, and TI was the dependent variable. Content format and Generation were examined as moderators using multi-group SEM in R (lavaan), following Hayes' PROCESS models 4 and 8. Control variables included racial homophily, VI familiarity, and travel frequency for in-group similarity biases. A three-way ANCOVA assessed group-level TI differences. The online field experiment utilized Instagram A/B testing through Meta-Ads to promote the same six VI posts and triangulate lab findings using engagement metrics. Results The SEM results highlighted the central role of PH in shaping psychological engagement (PSI and PA) across all VI



types. However, its impact on TI varied by group. As for the Indian human-like VI, PH had a strong influence on TI ( $\beta = 0.839$ ,  $p = 0.05$ ). Whereas for foreign human-looking VI, PH indirectly impacted TI through PA ( $\beta = 0.341$ ,  $p = 0.012$ ), which helps compensate for lower social similarity. Moreover, the strongest predictor of TI for the anime-looking was PSI ( $\beta = 0.673$ ,  $p = 0.011$ ), emphasizing emotional connection over physical similarity. Within moderation analysis, Gen Z responded more strongly to reels and PSI of anime-style VI. At the same time, Gen Y preferred photo content and responded more directly to PH and Indian VI. ANCOVA confirmed significant interaction effects between generation and format on TI. Further, Instagram A/B testing validated the lab findings as anime and Indian VI's photos received higher interaction, altogether these outcomes emphasize VI's effectiveness varies by type, format, and audience. Implications for research This study contributes to digital and tourism marketing literature with a focus on intra-virtual influencer variation. It showcases the variation in avatar characteristics in influencing travel intention through perceived homophily, anthropomorphism, and para-social interaction. This study triangulated the perspectives of Social Identity Theory, the CASA paradigm, and Anthropomorphism Theory to develop a model that elucidates the relevance of identity, human likeness, and emotional resonance in shaping consumer responses to VIs. This research also extends the theoretical framework by incorporating generation and content format as moderators, which reveals their influence on the relationship between avatar-audience engagements. Methodologically, the study addressed the concerns of limited generalizability in experimental research on influencer effectiveness by combining lab-based SEM and online field-based A/B test, enhancing both internal and external validity through behavioral data in a natural environment. It also represents a replicable design with enhancing causal inferences and ecological validity. This provides a multi-dimensional lens to understand the response of individuals to visual realism, identity congruence, and affective traits in VIs' mediated communication across social media platforms. Implications for practice The current research presents actionable insights relevant to both digital marketing professionals and tourism practitioners. The findings of this study reveal that the importance of avatar-audience alignment by explaining the cultural familiarity and realism aspects. For Gen Y, the Indian human-looking VI and photo format were more persuasive. In contrast, Gen Z was more responsive to stylized or emotionally expressive characters, as anime cartoon-like visuals and reel formats were more influential to them. These outcomes support the use of generational segmentation in influencer campaigns and customization to audience preferences in the context of media format, platforms, and, especially, influencer type. The study also reveals how to compensate for low cultural similarity and realism by enhancing relatability through emotional connection and human-like features. Anthropomorphism and PSI are found to be good predictors of engagement. Furthermore, the study employed a mixed-methods approach to evaluate message effectiveness and campaign uncertainty, allowing marketers to refine content by considering both psychological insights and behavioral engagement metrics. VIs are rapidly becoming prevalent in the global marketplace, and our study offers insights for developing audience-specific and context-sensitive collaboration strategies across digital platforms.

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## Driving the Knowledge Economy: Digital Leadership and Organizational Innovation in BRICS

*Shimna Mol.M and Christabell Pj*

**Abstract:** Shimnamol M Ph.D. Research Scholar, Department of Economics, University of Kerala [shimnasresearch@gmail.com](mailto:shimnasresearch@gmail.com) and Christabell P.J. Associate Professor, Department of Economics, University of Kerala [christabell@keralauniversity.ac.in](mailto:christabell@keralauniversity.ac.in)

**Abstract Statement of the Problem** The rapid evolution of the global knowledge economy has made innovation and digital transformation critical drivers of economic competitiveness, yet significant disparities persist in how emerging economies harness these forces. This study examines the troubling divergence in innovation performance among BRICS nations (Brazil, Russia, India, China, and South Africa). Collectively representing forty-two per cent of the world's population and twenty-six per cent of global GDP, despite their similar development aspirations (Moch, 2024). While China and India have demonstrated remarkable, consistent improvements in both Global Innovation Index rankings and ICT adoption, other members show concerning patterns of stagnation (Russia), volatility (Brazil), or decline (South Africa). The core problem lies in understanding why nations with comparable development goals and access to similar technologies achieve such markedly different innovation outcomes. Of particular concern is the apparent disconnect between ICT infrastructure investment and actual innovation output in several cases, suggesting deeper systemic barriers beyond mere technological access. Furthermore, the inconsistent effectiveness of national innovation policies across these contexts points to a critical knowledge gap regarding what institutional frameworks and implementation approaches actually work in emerging economy settings. These disparities have profound implications, as nations failing to bridge their innovation gaps risk permanent marginalization in global value chains and technology markets. This research, therefore, seeks to uncover the structural, policy, and implementation factors that explain these divergent trajectories, providing actionable insights to help underperforming nations develop more effective innovation ecosystems in an increasingly competitive digital era.

**Methodology** This study employs a quantitative analysis of secondary data from the Global Innovation Index (GII) reports (2015-2024) to examine innovation performance across BRICS nations. The methodology incorporates ICT-related indicators from GII's infrastructure pillar. It includes specifically ICT access, ICT use, e-participation levels, and government online services. The statistical tools used in this study are the Wilcoxon Matched Paired Signed Rank Matrix, one-way ANOVA, and Friedman One Way ANOVA. The Wilcoxon Matched Pairs Signed Rank is used to test the changes in GII rankings of BRICS countries from 2015 to 2024. One-way ANOVA is used to test whether at least one country's mean ICT score differs significantly from the others among the BRICS countries. The Friedman one-way ANOVA test is used to test statistically significant differences among four digital development indicators, such as ICT access, ICT use, Government online services, and E-participation in BRICS.

**Key Findings** From 2015 to 2024, the Global Innovation Index (GII) and ICT performance of Brazil, Russia, India, China, and South Africa revealed distinct trajectories. Brazil showed an improved GII ranking but stagnant

innovation scores, with a dramatic surge in Innovation Inputs in 2024 (score: 58, rank: 37th) offset by volatile Outputs (62per cent growth in 2023 followed by a 26per cent drop in 2024). Russia experienced a notable decline in GII (48th to 59th), with collapsing Innovation Inputs (43rd to 76th) and stagnant Outputs, despite ICT advancements in usage and e-participation. India emerged as a standout performer, with its GII rank soaring from 81st to 39th and scores rising from 31.7 to 38.3, supported by strong Innovation Outputs (69th to 33rd), though ICT Use lagged behind its e-government progress. China demonstrated consistent growth, climbing from 29th to 10th in GII, driven by top-tier Innovation Outputs (7th) and robust ICT development, particularly in e-participation and digital governance. South Africa, however, struggled with declining GII performance (60th to 69th), weakened Innovation Inputs (75th), and inconsistent ICT adoption, despite relatively strong government online services. Overall, China and India led in sustained innovation and digital transformation, while Brazil and Russia faced fluctuations, and South Africa lagged, highlighting disparities in innovation ecosystems and ICT integration among these economies.

**Implications for Research** The findings from this comparative analysis of GII and ICT performance among Brazil, Russia, India, China, and South Africa (2015-2024) offer crucial insights for innovation policy and digital development strategies. China and India's sustained progress demonstrates how coordinated investments in R&D, digital infrastructure, and e-governance can drive innovation-led growth, with China's state-directed model particularly effective in scaling technological outputs. Brazil's mixed results reveal the challenges of maintaining consistent innovation policies, where recent improvements in input indicators need to be matched with stable output performance. Russia's declining trajectory highlights the vulnerability of innovation systems to geopolitical and economic disruptions, despite strong ICT foundations. South Africa's struggles underscore how innovation gaps can widen without sustained investment in human capital and digital adoption. The research emphasizes that successful innovation ecosystems require more than just ICT access - they demand digital literacy, policy stability, and institutional support. Key policy implications include the need for long-term innovation strategies, better alignment between digital and industrial policies, and targeted programs to bridge digital divides. Future research should examine specific policy mechanisms that enable countries to transition from sporadic innovation gains to sustained advancement, particularly in volatile economic contexts.

**Implications for Practice** The comparative analysis of GII and ICT performance among BRICS nations yields critical practical implications for fostering innovation-driven growth. For policymakers, the key lesson is that innovation success requires integrated, long-term strategies combining digital infrastructure development with human capital investment and institutional reforms. China's model demonstrates how coordinated state support for R&D, coupled with robust digital governance systems, can create sustainable innovation ecosystems. Business leaders should prioritize digital adoption beyond infrastructure, focusing on workforce upskilling and user-centric technology design to bridge the implementation gap evident in countries like Brazil and South Africa. The findings particularly highlight the need for emerging economies to balance input factors (education, funding) with output enablers (commercialization, entrepreneurship support), as India's success story illustrates. Development agencies must tailor interventions to address specific national innovation bottlenecks - whether institutional weaknesses (Russia), digital literacy gaps (South Africa), or policy inconsistency (Brazil). Crucially, the research underscores that innovation systems

require both stability and adaptability, with mechanisms to sustain progress during economic fluctuations.

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Submission ID: 589

Track 07: Digital Transformation

## Digital Capabilities and Value-Based Competition: Evidence from Informal Firms in Emerging Markets

*Swati Ghulyani and Punyashlok Dwibedy*

**Abstract:** Digital transformation is increasingly reshaping competitive dynamics for both formal and informal firms. This study examines how digital capabilities empower informal firms to shift from traditional cost-based competition toward value-based strategies, thus challenging established assumptions about informality and competitive disadvantage. Drawing on data from 24,136 informal firms across 11 developing economies collected through the World Bank Enterprise Survey (2019–2024), we employ multilevel logit regression to analyze how market and digital capabilities interact to influence firms’ pricing strategies. Our results reveal that while market capabilities alone tend to heighten awareness of competitive constraints—leading informal firms to remain cost-focused—the integration of digital capabilities significantly moderates this effect. Digital tools enable informal firms to operationalize market knowledge more effectively, facilitating differentiation, customer engagement, and legitimacy building. Notably, firms combining market and digital capabilities are substantially more likely to adopt value-based pricing, signaling a digitally enabled transformation in competitive behavior. This study extends the dynamic capabilities framework into the context of informal firms and contributes to the digital transformation literature by highlighting how digital technologies can act as strategic enablers in resource-constrained environments. The findings offer practical insights for policymakers and practitioners seeking to promote inclusive digitalization and support informal firms in emerging economies. By demonstrating how digital adoption can drive competitive repositioning, this research provides evidence that digital transformation is not merely a technological shift but a strategic path for entrepreneurial firms to redefine their market positioning.

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Submission ID: 690

Track 07: Digital Transformation

## Knowledge Management Capabilities Greasing the Cogs of HRM 4.0 to Drive Strategic Agility: A Moderated Mediation Model

*Abhyudaya Anand Mishra, Mridul Maheshwari and Jatin Pandey*

**Abstract:** This study explores the influence of HRM 4.0 on strategic agility, examining the mediating role of organizational ambidexterity and the moderating effect of knowledge management capabilities. Utilizing time-lagged survey data from 226 HR managers across the United Kingdom and the United States, the research employed the PROCESS macro to conduct a moderated mediation analysis. The results reveal that HRM 4.0 is both directly and indirectly (through organizational ambidexterity) related to strategic agility. Additionally, knowledge management capabilities moderate the relationship between organizational ambidexterity and strategic agility and moderate the mediated path from HRM 4.0 to strategic agility. By linking advanced technology-driven HRM to the organizational meta capability of strategic agility, this research contributes to strategic HRM literature. It addresses a critical gap by shifting focus from the efficiency and effectiveness benefits of HRM 4.0 to understanding how HRM 4.0 facilitates the development of strategically agile firms.

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Submission ID: 740

Track 07: Digital Transformation

## Consumer Satisfaction of Digital Public Immunization Services in Pandemics: A Cross-Cultural, Public Value based Assessment

*Pratik Rai*

**Abstract:** 1. Problem Statement Digital Public Immunization Services (DPIS) are vital for managing pandemic vaccination programs aimed at rapidly immunizing large populations under urgent and uncertain conditions. Although DPIS aim to enhance accessibility, usability, and reliability, their success hinges significantly on consumer satisfaction, which drives trust, technology adoption, and sustained user engagement. Existing research on consumer satisfaction with DPIS largely emphasizes technical performance, overlooking broader influences such as government legitimacy and institutional credibility. Particularly during pandemics, perceived legitimacy may profoundly impact user satisfaction, influencing tolerance for initial technical glitches and shaping overall public value judgments. However, how these legitimacy perceptions interact with evaluations of service outcomes and operational capabilities remains inadequately explored. This study addresses this critical research gap by employing the Public Value Theory's strategic triangle framework, comprising public value creation, operational capacity, and authorizing environment, to systematically analyze user-generated online reviews. Further, recognizing that legitimacy perceptions may differ culturally, the study comparatively examines DPIS satisfaction in India and the UK, guided by Grid-Group Cultural Theory.



Insights from this inquiry promise significant theoretical advancements in understanding how legitimacy shapes satisfaction dynamics in DPIS and practical guidance for designing culturally sensitive, trusted, and effective digital health interventions during crises.

**2. Methodology** User-generated reviews of Aarogya Setu (India) and the NHS COVID-19 app (UK) were scraped via `google_play_scraper` and `app_store_scraper`. After discarding texts < 20 characters, 102,253 reviews (66,000 India; 36,253 UK) were tokenised, purged of stop-words, stemmed, and normalised. Structural Topic Modelling (STM) identified correlated latent themes and returned topic probabilities for every review. Each topic was classified into Public Value Outcomes (PVO), Operational Capacity (OC) or Authorising Environment (AE) in Public Value Theory's strategic triangle. Once the themes were identified after running STM, then the ordinal logistic regression was performed where in review wise probability scores of these topics were independent variables and reviews wise satisfaction score was dependent variable. Because satisfaction ratings are ordered (1–5 stars), we estimated cumulative-logit models: Main-effect model:  $\text{logit}(P(Y \leq k)) = \theta_k - \sum \beta_i \times \text{Topic}(PVO, OC, AE)$  Moderation model:  $\text{logit}(P(Y \leq k)) = \theta_k - \sum \beta_i \times \text{Topic}(PVO, OC, AE) + \sum \beta_{ij} \times \text{Topic}(PVO, OC) \times \text{Topic}(AE)$  ] The main-effect model gauges baseline drivers of satisfaction and the moderation model tests AE's conditioning role. This mixed-methods pipeline marries large-scale text analytics with theory-driven econometrics to reveal how performance, perceived benefits and legitimacy jointly shape pandemic-era DPIS satisfaction.

**3. Key Findings** User sentiment toward the NHS COVID 19 and Aarogya Setu apps is governed by a dual logic. Operational capacity failures remain the largest drag on ratings: installation/OTP loops, stalled test status updates, heavy battery drain and perpetual update prompts all post steep negative coefficients ( $\beta \approx -4$  to  $-7$ ). Fixing these “hygiene” glitches offers the quickest route to higher satisfaction. Yet the analysis also shows that citizens judge the apps through a public value lens, and here disappointment can be just as punishing. Bottlenecks in vaccine slot booking and digital certification ( $\beta \approx -5.2$ ) trigger the strongest backlash because they block the very outcome many users downloaded the app for. Errors in exposure alerts ( $\beta \approx -3.6$ ), coarse location based risk displays ( $\beta \approx -2.1$ ) and inconsistent risk based mobility guidance ( $\beta \approx -3.0$ ) further erode trust when accuracy or timeliness falters. Thus, high value features do not automatically yield positive sentiment; they do so only when delivered flawlessly. Across both countries, government credibility & data privacy assurances are the sole main effect driver that lifts ratings ( $\beta \approx +1.2$  UK;  $+1.8$  IN). Moderation tests reveal a double edged role: higher trust amplifies frustration when mission critical services fail yet cushions annoyance over peripheral burdens such as background battery use.

**4. Implications for Research** Overlaying the results with Douglas's grid-group cultural theory sharpens several avenues for public value scholarship. India's Aarogya Setu operates in a high group / high grid (hierarchist communitarian) context: citizens accept strong state coordination (grid) and feel morally bound to collective outcomes (group). Here, high government credibility tightens expectations for mission critical tasks (e.g., vaccine booking) and magnifies disappointment when they fail, yet simultaneously tempers irritation about background battery drain, consistent with a culture that privileges group protection over individual inconvenience. By contrast, the U.K.'s NHS app sits in a low group / moderate grid (individualist bureaucratic) setting. Credibility still matters, but users focus on personal autonomy; privacy lapses or risk tier errors, not energy costs, drive the harshest backlash. Future comparative



studies should therefore treat credibility as culture contingent: in hierarchist systems it functions as a “high bar” for public value delivery, whereas in individualist systems it acts more as a privacy assurance filter. Grid–group metrics can be embedded at the national or sub cultural level (e.g., partisan identity) and interacted with dynamic trust indicators to test how cultural types condition the repair of public digital failures over time. Mixed method designs—combining topic logit models with cultural cognition surveys—would enrich construct validity and trace causal pathways. 5. Implications for Practice The grid–group lens also reframes managerial priorities. In hierarchist communitarian India, collective welfare norms mean that any failure in core public value promises, vaccine passes, exposure alerts, rapidly erodes legitimacy. Agencies should therefore front load reliability guarantees for these features, pair them with visible endorsements from trusted health authorities, and use community champions to diffuse status updates. Peripheral annoyances (battery use) can be down weighted once transparent data handling assurances are in place. In the individualist U.K., users prize autonomy and low intrusion; thus, messaging must foreground choice, opt in data sharing, granular notification controls, and make privacy audits publicly searchable. Here, operational bugs still need rapid fixes, but restoring autonomy (e.g., manual “check out”, local risk detail) buys more goodwill than paternalistic nudges. Across both settings, grid–group thinking suggests differentiated UX levers: • High group cultures → emphasise collective benefit dashboards (“cases averted in your district”) and social proof badges. • Low group cultures → embed self service analytics (“your personal exposure log”) and clear exit ramps. Finally, agencies should treat credibility as a strategic asset that can either raise or lower the cultural “tolerance threshold.” Continuous monitoring of app store reviews mapped to grid–group cues can help teams prioritise fixes that resonate with each culture’s dominant logic, ensuring that operational capacity, legitimacy and public value co evolve rather than collide.

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Submission ID: 762

Track 07: Digital Transformation

## Designing Consumer Service Systems in the Age of Yelp: Integrating Digital Reviews into Queueing Decisions

*Sagnik Sarkar, Debjit Roy and Abhishek Roy*

**Abstract:** Problem Statement: Consumers these days frequently rely on digital platforms to gather insights into the quality of services or experiences before engaging with a restaurant. Online reviews serve as a trusted external source that enhances perceived product quality in the hospitality sector, especially when direct experience is lacking (Wang et al. 2019). Platforms like Yelp.com significantly shape consumer decisions by aggregating reviews and ratings, with users seeking detailed feedback on food, pricing, service, and ambience. Such reviews reduce information search costs, foster a sense of community (Parikh et al., 2015), and influence revisit intentions (Yan et al., 2015). Extended wait times at restaurants can lead to dissatisfaction, which may be reflected in online reviews. Since these reviews are key sources of information for potential patrons, especially when personal experience is lacking, they can significantly affect future customer decisions. Negative perceptions due to long waits may thus

have a cascading effect, lowering ratings, reducing future arrivals, and ultimately impacting profitability. This leads to the central research question: How do customer wait times (and service quality) influence online reviews, and how can these reviews, in turn, guide queue-joining decisions and inform the optimal design of service capacity to maximise long-run restaurant profitability?

**Methodology:** We develop a queue-based analytical model to capture the interplay between customer arrivals, service dynamics, and review-driven consumer behaviour. The restaurant is modelled as an M/M/1 queue with Poisson arrivals at rate  $\lambda$  and exponential service at rate  $\mu$ . A fraction  $\alpha$  of customers consult online reviews before deciding whether to join the queue. These customers base their decision on a review signal  $s(t-1)$  from the last  $(t-1)$ th period's consumers, while the remaining  $(1 - \alpha)$  join unconditionally. The function  $f(s(t-1))$  maps review quality to joining probability; for simplicity, we assume  $f(s(t)) = s(t)$ . Reviews are posted by customers depending on waiting time experiences: satisfied customers (waiting time  $\leq T$ ) post positive reviews with a probability  $p$ , and dissatisfied ones (waiting time  $> T$ ) post negative reviews with probability  $p'$ . Setting  $T = 0$  simplifies the waiting time distribution and review outcomes. The steady-state profit function represents the restaurant's long-term earnings by subtracting service costs from revenue earned and is optimised to maximise the long-term profits and obtain the optimal service rate  $\mu^*$  for the restaurant. This helps quantify how wait times and reviews jointly influence arrivals and long-term restaurant profitability. We also incorporate service quality and repeat the analysis.

**Key Findings:** Our analysis reveals several structural insights into the dynamics of the digital review-based queuing model. First, the equilibrium review signal  $s(t)$  increases with the service rate  $\mu$  and the arrival rate  $\lambda$ , confirming intuitive expectations: better service and higher inflow improve perceived quality. Similarly,  $s(t)$  increases in  $\lambda$  when review sensitivity  $\alpha$  is high, and in  $\mu$  across the board, reflecting how capacity expansion mitigates congestion and enhances feedback.

Counterintuitively, however, the review signal  $s(t)$  is not always increasing in  $\alpha$ . Instead, it exhibits a non-monotonic (inverted-U) shape: while moderate levels of review sensitivity help filter demand and improve outcomes, excessively high  $\alpha$  can destabilise the system. Overreactive customer behaviour amplifies noise in the review loop, ultimately degrading the review signal. Lastly, optimal service rate  $\mu^*$  rises in  $\lambda$ ,  $p$  and Revenue  $R$ , but declines with  $p'$  and cost  $c$ , highlighting operational levers. Also, as the fraction  $\alpha$  rises, optimal service rate first increases due to the greater impact of digital reviews, then declines as reviews dominate arrivals, reducing marginal returns for the system.

**Implications for Research:** This study contributes to a growing body of work at the intersection of queuing theory and digital feedback systems, revealing new directions for both analytical modelling and behavioural operations. While review mechanisms are widely studied in marketing and consumer behaviour, their dynamic interplay with congestion and system capacity has remained underexplored. By incorporating review sensitivity into steady-state queue models, we show that overly responsive systems may suffer from amplified demand fluctuations and signal degradation, highlighting the need for nonlinear, feedback-aware models. Our finding that review sensitivity ( $\alpha$ ) has an inverted-U effect on the review signal opens the door to research on behavioural thresholds, information overload, and demand filtering. Furthermore, the derivation of optimal service rate decisions under feedback-dependent arrivals offers a quantitative basis for platform design, inviting more theoretical studies on

equilibrium stability and robustness. This framework can be extended to study influencer reviews, digital platform algorithms, and AI-generated summaries, encouraging interdisciplinary exploration between operations, economics, and information systems.

**Implications for Practice:** From a managerial perspective, our findings have direct implications for platform operators, service firms, and policy designers who rely on digital reviews to shape customer expectations. First, the results highlight that more review sensitivity is not always better. Beyond a point, highly reactive systems may suffer from volatile demand and misleading feedback, harming service planning and customer experience. Firms should calibrate the visibility and weight of reviews based on observed system dynamics. Second, we show that the optimal service rate  $\mu^*$  depends on arrival rates, review responsiveness, and cost structure. This suggests that capacity planning should be tailored to both operational realities and digital influence patterns, not treated separately. Third, platforms may benefit from dampening overreactions by smoothing review displays or moderating real-time feedback loops. Finally, the model offers a basis for review-driven staffing, pricing, or throttling decisions in high-demand settings such as healthcare, food delivery, or ride-hailing. Firms embracing data-aware queuing strategies can gain a competitive edge by aligning operations with perception.

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**Submission ID: 763**

**Track 07: Digital Transformation**

## **Human Enough to Persuade? Assessing the Uncanny Valley and Nudge Effects in Avatar vs. Virtual Influencer Marketing**

*Arun R J and Dr.Nesin Mathew*

**Abstract:** 1. Problem Statement In today's fast-evolving digital landscape, brands are increasingly turning to virtual influencers and avatars to connect with audiences in new and engaging ways. While virtual influencers like Lil Miquela have millions of followers, questions about their authenticity and more importantly, their "realness" still persists. The phenomenon known as the uncanny valley, where digital entities that are almost but not quite human, elicit discomfort or distrust, may be one reason why virtual influencers struggle to build deep trust with some audiences. In contrast, avatars, especially those designed to reflect users or relatable brand personas, may avoid this eerie effect by staying either clearly stylized or intentionally personal. Despite growing use of these digital characters, we still don't fully understand how they compare in building trust or nudging consumer decisions. At the same time, behavioral economics has shown us how small cues or "nudges", which can significantly shape consumer behavior is rarely used in these studies. Much of the research so far examines trust, nudging,

or cognitive responses separately, leaving a gap in how these elements interact. This experimental study aims to bridge that gap by comparing how avatars and virtual influencers are perceived, how the uncanny valley effect might influence trust, and how nudges can potentially amplify or override these perceptions.

**2. Methodology** We designed a controlled 2×2 experimental study grounded in neuro-marketing and behavioral economics. The two main variables we explore are: the type of digital persona (Human influence vs Avatar vs Virtual Influencer) and whether or not a behavioral nudge is present. A pilot test was conducted on digital-native participants aged 20–30, who is exposed to view marketing campaigns for the same skincare product, fashion and apparel, electronic gadgets etc, one featuring a human influencer, one a popular virtual influencer and an avatar of the human influencer. Each version will appear in two forms: one with a subtle nudge like Social proof, Salience nudge and Status Quo nudge and one without any of these nudges. The study was built using Open Sesame, a platform suitable for controlled behavioral experiments and helped in collecting multiple data trials. After viewing, participants were asked to complete the surveys which measured perceived trust, emotional connection, and purchase intention. Data was analysed using ANOVA to explore both the main and interaction effects between persona type and nudging.

**3. Key Findings** Early pilot data suggests that avatars tend to be perceived as more trustworthy than virtual influencers, especially when users feel the avatar resembles themselves or avoids overly human-like design that borders on the uncanny. In contrast, some virtual influencers trigger mild discomfort or skepticism, possibly due to the uncanny valley effect, where hyper-realistic features that lack genuine human emotion can feel unnatural. Interestingly, when no nudge is present, avatars generally receive higher trust ratings. But when a social proof nudge is added, both personas see improved trust and purchase intent, with virtual influencers showing a more pronounced jump. This implies that nudging, especially social proof can serve as a cognitive shortcut that reduces reliance on emotional discomfort or aesthetic perception. Faster decisions and higher engagement and purchase intentions in the nudged scenarios also suggest that nudges help consumers rely more on instinctive decision-making. Still, avatars maintain a slight edge in likeability and preference, likely because they strike a safer balance between human familiarity and digital identity.

**4. Implications for Research** This study contributes to the growing field at the intersection of neuroscience, marketing, and behavioral economics. By combining trust theory, the nudge theory by Thaler and Sunstein, and the uncanny valley hypothesis, we offer an interdisciplinary lens to understand how consumers respond to digital entities. Our results show that trust in virtual personas is not just a function of their role or aesthetic appeal, but also how psychologically “comfortable” they feel. For marketers designing AI-based brand ambassadors or virtual sales reps, avoiding the uncanny valley could be just as critical as making the character relatable or trendy. Furthermore, integrating behavioral nudges into these designs may help overcome aesthetic discomfort or low initial trust. Future studies could build on this by using deeper neuro-measures like EEG or eye-tracking to explore the emotional and cognitive triggers behind these responses. Finally, our methodological use of OpenSesame shows how rigorous behavioral research can be conducted even outside traditional lab settings. Ultimately, this study urges both academics and practitioners to look closely at how digital persona design, user perception, and behavioral science can be combined to foster authentic, trustworthy, and effective marketing experiences.

**5. Implications for Practice** For marketers and brand strategists, this study offers practical

guidance on how to design and deploy digital personas more effectively. Avatars, especially those that are clearly stylized or resemble the user, tend to build more trust than hyper-realistic virtual influencers, which may unintentionally trigger discomfort due to the uncanny valley effect. This suggests that when creating virtual characters, it's not just about how "real" they look, but how relatable and emotionally safe they feel to the audience. The study also highlights the power of subtle nudges. Elements like social proof or visual salience can significantly boost engagement and purchase intent. These nudges are simple to implement and can help offset trust issues, especially with virtual influencers who lack human warmth. In practice, combining a relatable avatar design with thoughtful nudging can be a winning formula, particularly in sectors like fashion, beauty, and tech, where digital campaigns are growing rapidly. As more brands explore AI-driven experiences, the key takeaway is clear: trust is not built by technology alone, but by how well it aligns with human psychology. Making consumers feel comfortable, seen, and gently guided is what ultimately drives behavior.

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Submission ID: 769

Track 07: Digital Transformation

## BIMODAL INFORMATION TECHNOLOGY AND STRUCTURAL TRANSFORMATION: THE CASE OF A CONSULTING FIRM

*Siddharth Majhi, Proma Chowdhury and Arindam Mukherjee*

**Abstract:** 1. Problem Statement Digital transformation leads organizations to achieve information technology (IT) ambidexterity - a need to simultaneously deal with both existing IT and new IT systems. One option is to set up a bimodal IT function which has two modes – a traditional IT / classical IT / old IT mode that focus on the upkeep, management, and exploitation of existing IT resources, and an agile IT / digital IT / new IT mode that focuses on the exploration and leveraging of newly emerging technologies. Four archetypes of Bimodal IT have been discussed in extant literature – project by project, divisionally separated, subdivisional, and reintegrated. Since organizational resources are limited, there are various challenges (such as change in mindsets, processes, and structures) in achieving bimodal IT related reconfiguration and integration, needed for organizational transformation. It is important for both management research as well as practice to understand the reconfiguration processes involved in the transition to and the maintenance of bimodal IT structures. This paper examines the case of the technology division of a global consulting firm that underwent repeated structural transformations as a response to ongoing digital transformation, and the dynamic capabilities involved in facilitating these series of transformations. 2. Methodology The research objectives of this paper are concerned with a novel phenomenon, which has attracted very little empirical attention, and hence there is a scope for theory building. Keeping this in mind, we adopted a qualitative approach, and specifically an in-depth case study research approach. We selected a revelatory and information-rich case which allows us to capture rich, contextual data related to the phenomenon of a bimodal IT function, and an organization's dynamic capabilities facilitating bimodal IT structure transformations, in a real-world setting. We conducted our study at ConsultCo , which is a multinational consulting firm. One of the authors was



employed at ConsultCo while there was an organizational transformation from a divisionally separated Bimodal IT approach to a project-by-project approach. We collected data using in-depth personal interviews and secondary documents, and the interview participants are being identified using the theoretical sampling approach. Data was analyzed as it was being collected, using the constant comparison method and the tenets of constructivist grounded theory. 3. Key Findings This paper finds three distinct phases in the eight-year transformation journey of the studied case firm. The findings reveal how the structure of the IT delivery function in a consulting firm can act as a mechanism to deal with the changing nature of customer offerings in a digitally transforming business environment. The paper also develops a process model that explicates the role of dynamic capabilities in helping the firm reconfigure its resources and structure, to seize the sensed opportunities (due to increasing customer interest in emerging digital offerings) and the sensed threats (due to intra-firm competition caused by overlapping scope of various technology offerings). In each of the three phases, the paper identifies sensing, seizing and reconfiguring dynamic capabilities that facilitated the strategic change. 4. Implications for Research First, this paper goes beyond the known typology of bimodal IT archetypes to demonstrate how the same firm can transition between various archetypes over a period, as a response to opportunities and threats in the external and internal environments. Second, this paper is probably the first to consider the structure of the IT function in an organization as the Bimodal IT concept in focus. Third, this paper explicates the role that dynamic capabilities can play in enabling an organization to transition between various bimodal archetypes and structures. Thus, it also brings out the role of dynamic capabilities of an organization in enabling its IT ambidexterity. 5. Implications for Practice The findings of this paper offer a new avenue for service-based organizations (such as consulting firms) to look at managing opportunities and threats arising from digital transformation and emerging technologies – an amorphous and evolving structure of the IT delivery function. Further, the paper also highlights the importance of developing relevant dynamic capabilities in organizations which can help achieve IT ambidexterity (i.e., bimodal IT). The paper also emphasizes the need for organizations undergoing transformation across various bimodal archetypes to effectively plan and implement change management strategies to make optimum utilization of the various affected organizational resources. Finally, the paper also discusses certain risks that are associated with such transformations.

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## Digitally Enabling Farmer Participation: Designing a Social Platform for Co-Creation in Indian Agriculture.

*Atharva Zagade and Jayshree Patnaik*

**Abstract:** 1) Problem Statement The Indian Agriculture sector employs nearly half of the nations workforce; thus, the agriculture sector is vital for the Indian economy, and it continues to face challenges. Despite several digital advancements and government initiatives, the sector is fragmented and unorganized. Farmers remain digitally marginalised, Unlike consumers in urban areas who usually benefit from social media platforms that enable real-time updates, peer interaction, and personal branding. This difference limits access to timely agronomic knowledge and alienates farmers from co-creating value in agri retail networks and among all the agri stakeholders. The current top-down approach in the agri sector lacks the collective participatory mechanism where farmers can act as informal digital consumers and contributors to the overall upliftment of the sector. This study identifies the urgent need for a dedicated social networking platform design to bring in all the agri stakeholders in one place. Such a platform can facilitate real-time updates, peer learning and direct engagement with agri stakeholders. Such platforms can bring in community-driven innovation. It brings into the perspective of reimagining farmers not just as the beneficiaries of the sector but also as co-creators in this digital-enabled agriculture economy. 2) Methodology The study employed an exploratory qualitative research design using purposive sampling. In total, 10 semi-structured interviews were conducted by different agri stakeholders, which consisted of seven farmers, two agriculture students and one KVK scientist across rural Maharashtra. They explored the practices and activities carried out by all the agri-stakeholders, the interaction with digital tools and their perspective towards the current scenario of the agricultural landscape. The research used the thematic analysis approach to qualitatively analyze the data generated through interviews. The Analysis derived first-order and second-order codes based on farmers challenges. The insights and challenges identified through the pattern uncovered thematic analysis, which helped shape the proposed platform design and truly fit the needs of those with limited digital access. The interviews were conducted in Marath and English, ensuring participants could express themselves freely. 3) Key Findings The challenges that were revealed by the Thematic Analysis were the Lack of Easy and Trustworthy Access to Farming Information, Declining Trust and Support from Government and Institutions, Unstable and Unpredictable Income for Farmers, Unfair Markets and Farmers being left Out of Decisions. Interviewees highlight that farmers mainly depend on fellow farmers and local retailers for advice, which can lead to misinformation. Due to the top-down approach, farmers needs and shortcomings due to the recent policies rarely reach the decision-makers. Political interference in farmers unions and limited access to transparent information further weaken institutional confidence. Furthermore, market access is dominated by intermediaries, leading to price manipulation and suppressed earnings. These findings illustrate that farmers require more than just access to information; they need peer validation, real-time learning and collective decision-making. Positioning

farmers as digitally enabled co-creators allows them to collaboratively enrich their knowledge, co-create and share innovation and influence agri retail experience. This brings up the need for tools to deliver content and build digital communities for trust, transparency and co-innovation. This empowers rural farmers to be active contributors to the evolving agri-digital ecosystem. 4) Implication for Research This study contributes to the interdisciplinary discourse on digital transformation by introducing the rural consumer as a digital co-creator concept. This idea of a platform directly challenges the top-down model of digital technology in the agricultural space by bridging into the picture a bottom-up and user-centred approach by exploring farmers behavioural patterns. This study discusses digital technology adoption in rural areas by incorporating local language content, community formation, trust building and peer communication. Thus, This study bridges the gap between theoretical understanding of digital inclusion and inclusion with practical design insights for rural innovation. This study extends the literature on co-innovation in digitally underserved communities and tests for prototypes across different geographies. It emphasizes that farmers cooperation and well-equipped tools can become powerful agents for co-innovation and co-creation. This study could also inspire current platforms about how they pivot in agriculture and rural development with effective collaboration. 5) Implication for Practice This proposed design offers ideas and insights on design and strategic design to current agri-tech startups, digital platform developers and policymakers. The proposed platform includes five key elements that turn farmers from passive recipients to interactive digital participants. Home Feed is a personalized, micro-blogging content stream, images and videos from users’ connections encouraging real-time, peer-based learning. Discover Tab, verified location-based articles and media on policies, schemes and farming innovations. Offline Crop Knowledge Tab, curated agronomic guidance for low connectivity areas. Mandi Tab allows real-time market price comparison to counteract middleman exploitation, along with two additional features: a Messaging System, which would enable community formation of shared interest, and direct dialogue and AI- powered multilingual Chatbot support voice queries and response using scraping data from the revealed tabs form the platform for seamless user experience. This platform will increase participation by embedding farmers within a digitally enabled co-creation loop. This will eventually help them get informed, adapt, and innovate with market policies and inputs. With the help, this government could make efficient decisions by bringing collective participation through such platforms, closing the communication and real-time feedback gaps.

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Submission ID: 854

Track 07: Digital Transformation

## Discerning Digital Green: The Impact of AI Influencers and Perceived Greenwashing on Gen Z's Eco-Behavior

*Vrishti Jain, Arjit Malhotra, Dr. Kritika Nagdev Raisetia, Dr. Gaurav Sarin and Deepika Chhikara*

**Abstract:** 1. Problem Statement In a world increasingly mediated by digital personas, AI influencers are emerging as emotionally persuasive figures—especially among Gen Z. These synthetic avatars are reshaping the landscape of online sentiment, often delivering sustainability messages that mimic

authentic human emotions. But do Gen Z audiences truly connect with these digital beings, or are such encounters emotionally hollow? This study investigates whether emotional constructs like Parasocial Interaction (PSI), Perceived Homophily (PH), and Automated Social Presence (ASP) can generate real behavioral shifts, or if they trigger skepticism via Perceived Greenwashing (PGW). Furthermore, it contrasts emotionally-driven engagement with generic, unfamiliar AI influencers against reactions to a widely known AI figure, Lil Miquela. The research explores how perceived emotional authenticity and digital novelty affect sustainable consumption behavior (SCB), offering insights into the paradox of emotional realism in synthetic agents.

**2. Methodology** To capture the emotional and perceptual responses of Gen Z, this study employed a two-group experimental survey. One group ( $n = 236$ ) engaged with unfamiliar, generic AI influencers, while the other ( $n = 203$ ) responded to the familiar digital persona Lil Miquela. Constructs such as PSI, PH, ASP, and PC (Perceived Credibility) were measured using validated 7-point Likert scales. PGW was introduced as a key emotional filter mediating the impact of these perceptions on SCB. Advanced regression models and bootstrapped mediation (1,000 samples) analyzed both direct and indirect emotional effects. The methodology provides a lens through which digitally simulated emotions can be studied for their real-world influence. The comparative design helps isolate how digital familiarity and emotional believability interact in AI-led sustainability narratives.

**3. Key Findings** The data revealed that emotional resonance with unfamiliar AI influencers led to stronger behavioral outcomes. In the generic AI group, ASP had the highest direct influence on SCB ( $\beta = 0.226$ ,  $p = 0.005$ ), underscoring the emotional power of human-like traits. PGW partially mediated the effects of PSI and PH, confirming that emotional suspicion (greenwashing) impacts behavioral intent. Meanwhile, PC showed borderline significance, reflecting emerging concerns around emotional credibility. In the Lil Miquela condition, no significant emotional or behavioral effects emerged. Familiarity appeared to reduce emotional novelty and authenticity, leading to disengagement. These results highlight the emotional complexity of human-AI interactions in the digital world, where unfamiliar digital agents may paradoxically feel more authentic and persuasive than well-known ones, due to heightened emotional curiosity and less overexposure.

**4. Implications for Research** This study expands the conversation around digital emotion by emphasizing the role of simulated emotional experiences in shaping sustainable behaviors. The strong performance of unfamiliar AI influencers suggests that novelty can heighten emotional engagement and trust—when ASP is high and PGW is low. This introduces a new emotional paradox in digital psychology: Can emotional freshness outperform digital fame? Future studies can explore the temporal decay of emotional attachment to AI personas and examine how emotional saturation impacts trust. This research contributes to both Attribution Theory and digital sentiment scholarship by showing how perceived emotional intent mediates the effectiveness of synthetic influencers. It also opens avenues for exploring emotional authenticity in virtual interactions, making a strong case for including emotional realism as a core design principle in AI-driven communication strategies.

**5. Implications for Practice** For practitioners navigating the digital emotion economy, this research highlights the power of perceived emotional authenticity. AI influencers, when designed with strong automated social presence and emotional believability, can foster trust and drive eco-friendly behaviors—especially if they remain novel or unfamiliar. Familiar AI figures like Lil Miquela may lose emotional traction over time, suggesting that

rotating personas or refreshing narratives is key to emotional longevity. Brands must carefully calibrate emotional cues in AI design and messaging to avoid triggering greenwashing skepticism. Transparency, third-party validations, and emotionally consistent storytelling can enhance trust. Marketers should treat AI not just as a tech innovation but as a vessel for emotional connection, ensuring that digital interactions evoke genuine sentiments in consumers. As Gen Z continues to blend online identity with real-world values, tapping into the emotional architecture of AI is not optional—it's essential.

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Submission ID: 872

Track 07: Digital Transformation

## AFFORDANCES AND IMPEDIMENTS IN ASSISTIVE TECHNOLOGY: UNDERSTANDING SCREEN READER USE AMONG BLIND AND LOW-VISION USERS

*K R Subisha and Saji K Mathew*

**Abstract:** Assistive Technologies (ATs) are essential for promoting digital inclusion among individuals with disabilities, yet adoption and sustained use remain inconsistent. For blind and low-vision (BLV) users, screen readers are critical tools enabling access to educational and online resources. Despite technical advances, up to 90% of AT devices are eventually abandoned, underscoring the need to understand factors shaping successful use. Drawing on affordance theory and Social Cognitive Theory, this study investigates how BLV users perceive and enact screen reader affordances and examines whether AI-enabled remediation of complex learning materials reduces barriers. A longitudinal ethnographic design was implemented over two years with 27 BLV students in Southern India. Participants received structured training and used AI-remediated STEM materials designed to improve accessibility. Findings reveal substantial heterogeneity in affordance actualization. Blind users demonstrated higher affordance potency, adopting screen readers as their primary tool, while low-vision users without deteriorating sight often exhibited persistent affordance impotence, shaped by stigma and reluctance to transition from magnification tools. Although AI-based remediation improved usability and reduced cognitive load, psychological readiness and self-efficacy remained decisive for sustained adoption. The research develops a conceptual model defining affordance potency as positive self-efficacy that enables action, and affordance impotence as persistent non-actualization when barriers outweigh motivation. These insights advance Information Systems scholarship on inclusive technology design and highlight the importance of integrating technical, psychological, and social strategies to create environments where assistive technologies are effectively utilized.

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## INVESTIGATING THE ADOPTION OF ERP SYSTEMS AND ITS FINANCIAL IMPACT: EVIDENCE FROM INDIAN PSUs

*Nasreen Ansari, Manav Shah and Kuldeep Singh*

**Abstract:** 1. Problem Statement In the age of digital transformation, Information Systems (IS) are now a necessity to update functioning, particularly in the public sector. Public Sector Undertakings (PSUs) in India are a key player in national progress but suffer from inefficiency, accountability issues, and legacy system syndrome. To remedy these issues, the Indian government has been encouraging the adoption of Enterprise Resource Planning (ERP) systems as part of more extensive e-governance and modernization efforts. ERP systems, which are a type of Enterprise Information Systems (EIS), combine traditional finance, human resources, logistics, and procurement core business functions into a centralised digital hub. Adopting ERP is commonly linked with better public and financial performance in private companies, but empirical studies on their impact in public sector organisations are limited and inconclusive. This study investigates a critical gap: Does ERP implementation, such as digital transitions, cause long-term performance improvements in profitability margins, or does it cause inefficiencies in maintaining the profit? 2. Methodology This research practices a difference-in-differences (DID) event-time approach to assess the impact of ERP system implementation on the profitability of Indian PSUs. The sample comprises 15 non-financial public sector enterprises listed on the Indian market, observed over the period 2010–2024, with the following ERP system adoption. Profit margin is the main dependent variable to measure firm-level financial performance. The year of ERP implementation is used as the treatment point, separating the dataset into pre-and post-adoption periods for treated firms, while untreated firms are used as a control group. To make causal inference more robust, random effects panel regression is applied alongside instrumental variable (IV) methods to deal with possible endogeneity in the adoption timeline. Control variables are firm size (log assets), leverage, return on assets (ROA), sales growth, and macroeconomic conditions (GDP growth). All the variables are winsorized to control for outliers and maintain the robustness of estimation. 3. Key Findings The empirical findings identify a non-linear pattern in profit margins after ERP implementation. PSUs see a slight pick-up in profitability in the immediate post-implementation period, which may reflect initial improvements in operations or improved reporting systems. This is then followed by a plateau, and then a downward trend in profitability in the subsequent post-implementation years. This pattern implies that, in the PSU context, ERP system deployment may result in short-term increases in efficiency or cost management, but it is not always associated with long-term increases in company profitability. Robustness is confirmed by the results, which hold true for robust model applications such as instrumental variable adjustments and random effects regressions. Furthermore, the ERP variable's impact is strong across specifications. And profitability is still influenced by external factors like changes in GDP and internal factors like company size and leverage. 4. Implications for Research This study contributes to the literature on IM systems. Public Sector Performance and E-Business



Technology Adoption. Unlike prior studies that often focus on ERP in private or multinational enterprises, this research brings empirical insight into digital transformation within publicly owned institutions, particularly in emerging economies like India. It challenges the prevailing assumption that ERP always improves business performance. The study shows that the effectiveness of ERP is significantly influenced by post-adoption integration, implementation design, and institutional context. Future studies must examine organizational learning, technology change, user management, and user adaptability as moderating factors, as shown by the non-linear post-ERP performance trajectory. 5. Implications for Practice These findings provide important information for managers in the public sector and policymakers. ERP systems are not a solution for improving performance, even while they offer a technical basis for automation and integration. The study suggests that mere adoption is insufficient, and the quality of implementation, inter-departmental coordination, and ongoing training are equally vital to realize the intended benefits. Post implementation practices are as important as the adoption of these technologies for managing information. ERP deployment in PSUs should be conducted through continuous evaluation frameworks. Organisational restructuring and flexibility in system configuration to adapt to evolving operational needs. Furthermore, decision-makers should temper expectations and budget for long-term integration efforts, rather than expecting immediate returns on digital investments.

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Submission ID: 1404

Track 07: Digital Transformation

## Digital Transformation and Green Innovation Performance: An exploratory study in the context of Indian Pharmaceutical Industry

*Dr. Rubina Chakma, Dr. Ishita Batra and Dr. Sanjay Dhir*

**Abstract:** 1. Problem Statement: In the pharmaceutical industry, innovation is considered a constant necessity and a significant challenge as it requires going beyond the existing knowledge base and competencies to explore new knowledge sources (Arfi et al., 2018). Due to the increasing pressure of regulatory bodies and environmental organizations to adopt sustainable practices, a greater focus on green innovation has become a top priority for the sector. Research suggests that the adoption of Digital transformation (DT) accelerates knowledge spillover and green technological processes, impacting green innovation performance (GIP) (Zhuo & Chen, 2023). Also, a greater focus on open innovation (OI) allows access to multiple and heterogeneous knowledge sources, facilitating novel and innovative ideas. Similarly, organizations with agile mindsets can adapt and transform their capabilities and resources to develop new products. Nevertheless, the extant literature has limited focus on examining the interplay between OI, Organizational Agility (OA), and DT in explaining GIP (Thao & Xie, 2024). Considering the theoretical perspective of Dynamic capabilities, the following conceptual research framework has been proposed: Figure 1: Conceptual Framework 2. Methodology Following the scales of the extant literature, a structured questionnaire is used to collect data from the employees, including the top management teams working in the Pharma sector. The Indian Pharmaceutical companies are chosen as the industry contributes to almost 1.72% of the country's GDP and attracts greater attention



from the government to boost its manufacturing capability, improve productivity, and innovation, diversify the product offerings, and ensure sustainability. Also, prioritization of green innovation has become essential for this industry, considering the mounting pressure from environmental and regulatory bodies to adopt sustainable practices. Further, there is an increasing number of collaborations within the industry, boosting the public health objectives of quality, access, and affordability for healthcare services. The convenience sampling technique is used because of the large population size and for generalizing the findings. The questionnaire was circulated during June 2024, with follow-up calls being made after 3 weeks each. As the study is exploratory with OI, OA, and DT predicting the GIP, Partial Least Squares-Structural Equation Modelling (PLS-SEM) is the most suitable, as it can manage complex models and provides significant results with a smaller sample size. Finally, 152 responses were returned and analysed to evaluate the structural model.

**3. Key findings** The findings suggest that all the relevant parameters to assess the construct reliability and validity are within the acceptable threshold. The item loadings, composite reliability, and Cronbach's alpha values are greater than 0.70, demonstrating the reliability of constructs (Hair et al., 2019). Similarly, the AVE values above 0.5 demonstrate convergent validity. Further, HTMT ratios are within the acceptable range ( $<0.90$ ), thereby confirming the discriminant validity. Subsequently, the VIF values for multicollinearity testing are below the threshold of 3.3 (Kock, 2015). The predictive power and the model fitness are determined by  $R^2$  and the SRMR value.  $R^2$  for DT demonstrates that OI and OA jointly explain 62.9% of the variance in DT, whereas  $R^2$  for GIP signifies that DT explains 46.6% of the variance in GIP. The SRMR value is 0.079, indicating that the data fits well. The results of PLS Bootstrapping suggest that both OI and OA have a positive and significant impact on DT ( $\beta=0.506$ ,  $t=5.423$ ,  $p=0.000$ , and  $\beta=0.327$ ,  $t=3.737$ ,  $p=0.000$ ). Similarly, OI and OA have a positive and significant impact on GIP ( $\beta=0.335$ ,  $t=4.596$ ,  $p=0.000$ , and  $\beta=0.217$ ,  $t=3.483$ ,  $p=0.000$ ). Also, the impact of DT on GIP is positive and significant ( $\beta=0.662$ ,  $t=12.129$ ,  $p=0.000$ ). Further, the mediation impact of DT on the relationship between OI and GIP ( $\beta=0.335$ ,  $t=4.596$ ,  $p=0.000$ ), and OA and GIP ( $\beta=0.217$ ,  $t=3.483$ ,  $p=0.000$ ) is significant. Figure 2. PLS Path Model with Bootstrapping

**4. Implications for Research** This research contributes to the sustainable innovation literature by exploring how OI, OA, and DT impact GIP in the Indian pharmaceutical manufacturing sector. The existing literature has researched these constructs independently; however, joint investigations and mutual relationships have received scant attention, especially in the emerging economy context. This study fills the gap by explaining the interrelatedness of these constructs in a dynamic and regulated environment of an emerging economy. This study utilises Dynamic capability theory to study the relationships between OI, DT, and OA, and how they ultimately impact GIP. The study describes OI, DT, and OA as corresponding to sensing, seizing, and reconfiguring capabilities. This framework enhances the theoretical understanding of sustainability-oriented innovation in emerging economies, while suggesting further research on the micro foundations and interrelationships of dynamic capabilities for an industry such as pharmaceuticals subject to regulatory constraints. The intersection of DT with innovation strategies and agility reveals a layered understanding of how firms leverage internal and external resources to achieve their GIP objectives. Future work can employ case studies, qualitative, or mixed methods to validate this framework.

**5. Implications for Practice** This study has practical implications for industry practitioners, particularly those in

pharmaceutical manufacturing, who increasingly need to focus their innovation efforts on environmental sustainability objectives. The combination of OI and DT represents a complete understanding of how firms can adapt their innovation strategies for improved GIP. By framing OI, DT, and OA in terms of dynamic capabilities, firms can identify pathways for improving GIP. OI capabilities support the capacity to sense external opportunities, while DT capabilities are the capacity to seize opportunities through digital means. The OA capabilities are the best way to support organisations in responding quickly. Firms can evaluate and strategically align push and pull factors within the three capabilities to achieve a sustainable competitive advantage. The ability of pharmaceutical firms to utilise digital platforms and external knowledge networks offers new and better ways to plan and manage product development cycles and supply chains and improve associated operational inefficiencies. For instance, the acquisition of data from laboratory simulations, followed by its integration with the information from suppliers' inventories, has the potential to result in more environmentally friendly and effective production plans. This will generate more value and alternatives for enhancing environmental sustainability.

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## Track 08: Corporate Sustainability and Corporate Governance (IRCC 2025)

Submission ID: 79

Track 08: Corporate Sustainability and Corporate Governance (IRCC 2025)

### Turning Adversity into Action: Enhancing Sustainability Oversight in Response to ESG Reputation Risk

*Sushil Sainani, Chris Florackis, Omrane Guedhami and Jeffrey Pittman*

**Abstract:** We examine whether firms implement governance reforms in response to high reputation risks in the environmental, social, and governance (ESG) dimensions. Analyzing ESG incidents that attracted negative media attention as a proxy for “ESG reputation risk”, we find that firms facing major reputational threats are more likely to adopt new sustainability oversight measures. These reforms include forming sustainability committees, appointing sustainability officers, and enhancing transparency in ESG reporting. Such actions align with a trust-repair perspective and are more heavily concentrated in firms with poor prior internal governance structures. Further analysis suggests that these governance changes are partly driven by external pressures, such as divestment and engagement from ESG-conscious investors, along with attention from sell-side analysts. Importantly, we demonstrate that these reforms contribute to a reduction in future ESG reputation risk. Our results hold across alternative measures of ESG reputation risk, in changes analysis, and after accounting for peer firm effects.

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Submission ID: 80

Track 08: Corporate Sustainability and Corporate Governance (IRCC 2025)

### Evaluating the Policy Impact and Market Readiness of India’s EV Transition

*Suneeta Hegde, Bharath Hegde and Deepti Hegde*

**Abstract:** The transition to sustainable transport system necessitates strategic investments into electricity market capacity and infrastructure for the deployment of electric vehicles (EVs). This paper examines how policies can entice and influence these investment decisions under the Indian market context. India has an ambitious renewable energy target of achieving 500 GW of non-fossil fuel-based electricity generation by 2030. There is a greater push for electric mobility under programs like the Faster Adoption and Manufacturing of Hybrid and Electric Vehicles (FAME) scheme. Successful implementation of these schemes requires greater analysis of market dynamics. When it is about electric vehicles and the capacity to world’s mobility requirements, is essential to understand the scalability.

Analyzing existing dynamic models of the electricity market, this study investigates the relationship between electricity generation capacity expansion and Electric vehicle deployment. This study is more relevant from a policymaker's perspective. India's commitment to reducing carbon emissions and its dependency on fossil fuels is reflected through the consumer friendly schemes and policies, Interaction between these two interconnected systems is critical, thus the effectiveness of policy measures, such as tax incentives, subsidies, and preferential tariffs can be evaluated within a mathematical framework. Recent policy developments in India, includes production-linked incentive (PLI) scheme for advanced battery technologies along with regulatory mandates for renewable energy procurement, have encouraged investment in charging networks and renewable electricity generation. Further the availability of incentives like viability gap funding (VGF) for setting up charging stations and easy financing for EV manufacturers has played a pivotal role in shaping the market landscape. These policies are additionally supported by state-specific initiatives, such as Delhi's EV Policy. Maharashtra gives subsidized charging infrastructure. Karnataka's focus is on EV manufacturing. These schemes demonstrate regionally tailored approaches to accelerating adoption. This study further explores the challenges associated with demand response strategies and smart grid innovations; we assess how India can leverage digitalization and decentralized energy generation to create a more resilient and adaptive infrastructure. Using the Net Present Value method assessment is carried out on the economic viability of charging infrastructure investments India's rapid urbanization and growing energy demand, requires strategic planning for electricity capacity investments and EV deployment. This study will play a vital role in shaping clean energy future.

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**Submission ID: 105**

**Track 08: Corporate Sustainability and Corporate Governance (IRCC 2025)**

## **Industrial Patterns of Job Creation in India – Emerging Evidence from Business Responsibility and Sustainability Reporting**

*Mohammed Wakif Amin Hussain*

**Abstract:** Purpose Although India has made notable progress in development over the past, inequalities – be it between states, or between rural and urban areas – still persist. (Joumard et al., 2017) These inequalities are multidimensional in nature, and have arisen over time, through a complex set of cultural, demographic, economic, historical, political, and social factors. What is interesting in the recent past is the growing realization that businesses can play an active role in addressing societal inequalities. (Chelawat & Trivedi, 2016) This shift in thinking of businesses as responsible citizens has resulted in corporate policies that seek to incorporate ESG (Environment, Social and Governance) principles in business. Lately in India, Business Responsibility and Sustainability Reporting (BRSR) was introduced to capture how companies contribute to the environment, society, and good governance through their actions. Corporates in fact contribute to economies through various ways – one of them being gainful employment – which is the focal point of this study. (Nayyar, 2014) Considering spatial inequalities and

challenges of employment in India, the purpose of this study is to evaluate how top Indian public companies allocate their wage spendings between rural, semi-urban, urban, and metropolitan areas. And, whether statistically significant industrial patterns emerge in these allocations? For this analysis, data from BRSRs are used. Methodology The fundamental questions answered in this study are: 1) Are there industries which tend to contribute relatively more in each of rural, semi-urban, urban, and metropolitan regions through wages? 2) If yes, which are those industries in each of those regions? The scope is limited to companies in the NIFTY 500 index, which represents about 92% of the free float market capitalization of the stocks listed on National Stock Exchange (NSE) in India. Statistical analysis was performed on 427 companies, across 21 industries, and was done in a Jupyter Notebook, with Python 3 programming language, using libraries like pandas, seaborn, matplotlib, statsmodels, and scipy. The analysis adopts a quantitative approach with null-hypothesis significance testing. It can be replicated with new data from BRSRs in future, so that longitudinal patterns of wage distribution across industry and geography can be identified. Initially, four sets of hypotheses were tested with Kruskal-Wallis H test. This non-parametric test was adopted as the data did not meet assumptions of normality and homogeneity of variances (identified through Q-Q plots). After that, Dunn-Bonferroni post-hoc test was conducted to identify the industries which spend statistically significant on wages with each of rural, semi-urban, urban and metropolitan areas. Within each pair, as identified through the post-hoc test, the industry which has a tendency to spend more on the region under consideration was picked out, using sorted median values of each industry in each region. Findings As per the Kruskal-Wallis H test results, the greatest differences among industry medians were observed in the cases of metropolitan and rural areas. At least one industry was different from the rest, in each and every region, in terms of median wages. This was true with significance levels ( $\alpha$ ) of 0.10, 0.05, and 0.01. By comparing industry pairs from Dunn-Bonferroni post-hoc test with sorted medians, the following industries were found to significantly contribute through wages, in the respective regions: 1. In Rural: Automobile and Auto Components, Capital Goods, Chemicals, Construction Materials, Fast Moving Consumer Goods, Metals & Mining, and Power; 2. In Semi-urban: Automobile and Auto Components, Capital Goods, Chemicals, Consumer Durables, Fast Moving Consumer Goods, Financial Services, and Oil Gas & Consumable Fuels; 3. In Urban: Automobile and Auto Components, and Consumer Durables; and 4. In Metropolitan: Information Technology, Consumer Services, Financial Services, and Telecommunication. Upon comparing across four regions, the Metals & Mining industry was found to have a distinctive rural bias. Whereas, Information Technology, Consumer Services, Financial Services, and Telecommunication industries, a metropolitan one. Discussion points The findings are broadly in line with previous literature on industrial geography – such as on dependence of rural industries on natural capital (Wiggins & Proctor, 2001), limited rural non-farm diversification in India (Mukherjee & Zhang, 2007), concentration of services industry in high-density clusters (Desmet et al., 2012), and locational decision-making by entrepreneurs (Vaillant et al., 2011). The case of the present industrial landscape in India, and how it connects with this study, is presented. For instance, observation from Lall and Chakravorty (2005) that the new private industrial investments in India are generally biased toward existing industrial and coastal districts. And, findings from Ghani et al. (2012) that manufacturing plants in the formal sector are moving away from urban and into rural locations, whereas in the informal sector, they are

moving from rural to urban locations. Policy implications of this study relate to complexities of balanced regional employment generation, and in effect economic development. More particularly, nuances in the context of benefits of urban agglomerations (Tripathi, 2013; Spencer et al., 2009), realities of Industry 4.0 (Mehta & Awasthi, 2019), and job creation in natural resource abundant locations, while being mindful of climate policies (Godinho, 2022), are foregrounded. Towards the end, the limitations of being a descriptive study, and inadequacy of data sources, are highlighted. Future research recommendations are for identifying trends and patterns over time, perhaps within specific industries; corroborating with primary data; and controlling for influencing variables. In the light of BRSR requirements, it is also suggested to see how managers and shareholders think about job creation across geographies of India. Note: I have submitted the full paper too, for your kind perusal.

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Submission ID: 118

Track 08: Corporate Sustainability and Corporate Governance (IRCC 2025)

## FROM CSR TO SYSTEM CHANGE: BUILDING SUSTAINABLE AUTISM CARE MODELS IN INDIAN HOSPITALS

*Shaoli Dutta*

**Abstract:** This case study examines how Corporate Social Responsibility (CSR) in Indian healthcare can shift from short-term outreach to embedded institutional practice. Focusing on a tertiary hospital in Eastern India, it explores the integration of autism care into paediatric workflows, staffing models and hospital operations. Using a qualitative case study approach, it identifies key adaptations in referral systems, physical space, staffing and monitoring. The study also surfaces strategic tensions between clinical efficiency and inclusive repetition, formal hierarchies and frontline authority and internal innovation versus external misalignment. Findings suggest that sustainable inclusion requires not only intent but redesign, recognizing relational labour, redistributing authority and embedding inclusion as a repeatable function. This paper contributes to strategic CSR discourse by offering a replicable model of sustainability-oriented institutional transformation in low-resource health systems.

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Submission ID: 136

Track 08: Corporate Sustainability and Corporate Governance (IRCC 2025)

## Adani Ports and Special Economic Zone continues to grow its sustainability stature in a digital transformative way

*Rahul Agarwal*

**Abstract:** “Adani Ports and Special Economic Zone Limited (APSEZ), India’s largest integrated transport utility with a strong sustainability profile.” - Committed to achieving net-zero by 2040 by



deploying 1,000 MW of renewable energy (200 MW solar, 52 MW wind, 25 MW hybrid already operational). - Operating a fleet of 400 electric internal transfer vehicles, with recent additions of electric reach stackers and empty container handlers. - Relative to the base year (2016), APSEZ achieved 62% water intensity reduction and 53% energy intensity reduction in FY25. - Implemented 100% zero-waste-to-landfill across 12 ports. - Afforested and conserved 7,000+ Ha of mangroves and land offering enhanced carbon sequestration, in line with No Net Deforestation target by 2050. APSEZ's sustainability progress is reflective of its ratings: - CDP: Attained 'Leadership' band rating in both climate change and water security assessments. - S&P Global: Only Indian company ranked within Top-10 of the Corporate Sustainability Assessment index within the Transport & Transport Infrastructure industry. - Sustainalytics: Received 'Low' ESG risk rating of 13.7. - ISS: Received 'Prime' status making equity and bond instruments eligible for responsible investments. "APSEZ's complex structure and nuanced operations across ports, logistics, and SEZ infrastructure led to the need for a digitised platform." Standing at \$4 billion revenue (FY25), APSEZ specialises in retail, industrial, container, bulk, liquids, auto, and grain logistics: - with operations pan-India and select international presence across 80+ locations and 85+ sites, - handling 450 MMT of cargo volume and 100+ commodities across 19 ports globally in FY25, and - operating multiple rolling & physical assets – 132 rakes (cargo handled through 100+ routes), 690 kms private rail tracks, 3.1 million sq. ft. warehouses, 12 logistics parks, 1.2 MMT capacity agri-silos, owned & managed fleet of 25,000+ trucks in FY26. This complex chain of networks led to challenges in ESG data collection and processing. Recognising the need for a scalable, resilient, and transparent digital backbone, the company initiated an enterprise-wide plan to digitise its sustainability data – adopting a customisable ESG digitisation platform capable of accommodating firm's operational diversity and vast reporting obligations. This was not a plug-and-play deployment; instead, APSEZ built a tailored application architecture from the ground up, designed to suit its varied operational nuances, from port facilities to SEZs, capturing diverse data points – above-water and underwater noise data, ambient air quality data, multiple fuel energy sources, etc. "This transformation journey brought in its own set of challenges." 1. Designing a complex digitised ecosystem to incorporate these multiple nuances had significant barriers: - Incorporating ~100 ESG KPIs across Environment pillar (GHG & non-GHG emissions; energy management; waste & water management; biodiversity initiatives; environmental compliances), Social pillar (community & customer relations; employee engagement & remuneration; human capital; human rights; labour unions; health & safety; diversity & inclusion), Governance pillar (data breaches; complaints received, pending, resolved in IT/cybersecurity), Supplier management, and Operational metrics - Benchmarking KPIs against current and evolving requirements (GHG Protocol, UN SDG, UNGC, TCFD, TNFD, ISSB, NGRBC, CDP) - Mapping site-specific KPIs to ensure all relevant data fields are covered (Gujarat-based site team generated PNG data; Tanzania team gathered kerosene data) - Aggregating data at different time frequencies (social and governance-level data came in annually; environmental data is fed monthly or quarterly) - Inconsistent units of measurement across unstructured and unverified data - Initial data input errors due to lack of documentation proof, historical data backups, and version control issues - Conducting internal UI testing to identify difficulties and parallel runs for data alignment - To make the interface user-friendly for data entry and validation - Automating data extraction process – making data

extraction compatible with source files Once the data extraction piece was streamlined, APSEZ started to migrate data and onboard over 100 SPOCs across 80+ locations into the platform. 2. Internal resistance from SPOCs due to their familiarity with legacy MS-Excel tools hampered organisation's platform rollout phase. To break this barrier, - initiated firm-wide training programs, both virtual and in-person - internal trainer pool of 15-20 to ensure continuous handholding - 500+ dedicated training hours - created training materials including video tutorials, 50-page step-by-step guidance document 3. Extensive effort to design complex customised reporting system leveraging company's Data Analytics team - to automatically meet the requirements of ESG ratings firms, internal MIS, and decarbonisation plan monitoring - to make internal auditing more efficient. "However, results have been very tangible." - ~85,000 data points captured annually on the platform - Halved data collection effort by centralised sustainability team - Real-time variance detection reduced error rate by 40% - 50% cut in reporting cycle time - Version-control and data quality issues reduced by 60% - Customised reporting fulfilment supports the firm's decarbonisation plan in a much faster way - Internal sustainability initiatives that support decarbonisation plan became efficient. This transformation reaffirms that in a diversified and dynamic enterprise like APSEZ, digitisation is not merely an upgrade; it is a foundational enabler for responsible growth.

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Submission ID: 138

Track 08: Corporate Sustainability and Corporate Governance (IRCC 2025)

## Female CEO and capital structure of Indian firms: Are queens outperforming the kings?

*Aastha Mittal and Prof. Shveta Singh*

**Abstract:** Background and Motivation: The significance of gender diversity in corporate leadership has become a prominent focus in financial and sustainability research, especially as we move closer to the year 2030, marked as the deadline to achieve United Nations Sustainable Goal 5 (UN SDG). The UN asserts that the success of each SDG is dependent upon SDG 5. Although legal and policy initiatives root for women's representation in Indian boardrooms, empirical insights into the influence of female top echelons on fundamental financial management decisions—specifically capital structure decisions and consequently, company accounting performance, are rather scant. Thence, in a novel approach, this study examines the moderating role of female Chief Executive Officers (CEO) on the relationship of leverage and operating performance of Indian listed firms in a holistic manner. The study also deciphers the impact of female CEO on capital structure, agency costs and overall interest burden. According to recent NSE data, the representation of women in top echelon positions stands below 5% in Indian listed firms, exhibiting dismal state of affairs. Nonetheless, there has been rise in women occupying CEO positions in emerging markets recently (Mittal and Singh, 2024). This gives room to investigate the influence of female top echelons on corporate decision making, business performance and associated agency conflicts. Theoretical Foundations: The core idea that CEO characteristics determine firm

outcomes is grounded in upper echelons theory, propounded by Hambrick and Mason (1984). Recent studies underscore the relevance of CEO attributes in corporate decisions (Duru et al., 2016; Smith et al., 2017; Sheikh, 2022; La Rocca et al., 2023; Taha et al., 2024). Further, the agency theory argues that gender diversity ameliorates corporate governance infrastructure of the company, contributing to efficiency of operations (Jurkus et al., 2011). Acknowledging that leverage is not just a source of financing but a ‘binding mechanism’ (Jensen & Meckling, 1976; Jensen, 1986), the substitution hypothesis (La Porta et al., 2000) posits that robust internal governance (like gender diversity) reduces reliance on external monitoring through debt. Female CEOs are frequently linked to more conservative financial policies and high ethical standards, thereby serving as internal governance substitutes for discipline of debt. As a result, organizations that are managed by women may choose equity over debt in sync with the goals of the organization. Methodology and Objectives: Utilizing a sample of non-financial Nifty 500 listed enterprises, the study investigates the moderating role of executive gender on the capital structure decisions and accounting performance of Indian firms over the years spanning between 2013-2022. Capital structure decision is gauged through a ratio of total debt (short and long term) scaled by book value of assets, while Return on Assets (ROA) is the proxy used for capturing operating performance of the firms. CEO gender is a dummy variable taking value 1 if CEO is a female and 0, otherwise. Static models like (Ordinary Least Squares) OLS, Fixed effects (FE), Random effects (RE) and dynamic framework like Systems GMM have been employed to investigate the moderation effects. The data has been sourced from the Bloomberg® and World Bank database. Results: The static as well as dynamic model findings evince that presence of a female CEO adversely moderates the negative relationship between capital structure and business profitability (Tripathi et al., 2024). An integration of upper echelons and agency theories offers valid justifications (Hambrick and Mason, 1984; Jensen and Meckling, 1976). Female CEOs meliorate the overall governance framework in Indian organizations (Mittal and Singh, 2024), thereby providing managerial oversight at a reduced costs compared to debt. Debt, thence, have limited benefits in women led firms. Put differently, gender diversity substitutes the governance role of debt. In this regard, Sarkar and Sarkar (2005) present a tenuous argument regarding the disciplinary role of debt in Indian Inc. Indian organizations characterized by controlling promoters (or family firms), weak external stakeholders’ protection and fragile regulatory environment often employs debt as an expropriation or tunnelling device to squander loan funds. The corporate fiascos surrounding Satyam, Jet Airways, Nirav Modi and very recently Blusmart are evidence of the same. Moreover, Faccio et al. (2016) asserts that firms led by women prefer lower leverage in tune with their risk aversion. Therefore, gender diversity and inclusivity can facilitate the attainment of organizational objectives in closely held organizations operating in emerging markets. It is now time to revisit these established relationships for our sample set to crucially validate the findings. In an additional analysis, the findings document a negative association between presence of female CEO and leverage ratio of Indian Inc., corroborating the risk-aversion hypothesis. Women are more cautious and less likely to take risks, and thus prefer equity over loans (Faccio et al., 2016). Huang et al. (2023) assert that companies with female CEOs aim to maintain favourable debt capacity. This is in sync with the well-established literature (Graham et al., 2013; Huang and Kisgen, 2013; De Silva and Banda, 2022; Siregar et al., 2023). To boot, De Massis et al. (2024) shows that the tendency to female

CEOs to avoid debt is augmented in family firms, a peculiar feature of Indian corporate landscape (Young et al., 2008). Furthermore, it is reported that firms led by female executive chiefs have lower interest burden. This has a direct bearing on operating profitability or ROA of the company. Although, interest costs are tax-deductible expense, a high interest burden can seriously deplete the profits of the firm. This is particularly relevant for promoter driven Indian Inc. that have elevated costs of debt due to the premium attached owing to the risks associated with concentrated ownerships and poor external shareholders' protection in emerging economies (Kumar and Pathak, 2025). Regarding the association between female CEO and agency costs (gauged using inverse of asset turnover ratio), the results depict an inverse relationship, substantiating the agency theory (Jensen, 1986; Jurkus, 2010; Amin et al., 2021). On average, female CEOs have around 28% lower agency costs than their male counterparts. Reduced leverage and consequently, lower interest burden blended with improved asset efficiencies, contribute to favourable profitability numbers. Policy Implications: The study has immediate implications for UN SDG 5, which advances inclusion of women in the corporate arena by ensuring their full and effective participation in leadership roles. This study offers economic and financial justification for promoting gender diversity, even though the presence of women in top management is frequently viewed from an ethical or 'tokenist' lens. Highlighting the prudence of female CEOs in financial decisions and associated agency benefits, the study makes a business case for gender-inclusive senior leadership. Managers and investors who are interested in value creation for stakeholders may discover that female leadership serves as a catalyst for both sustainability and governance.

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Submission ID: 142

Track 08: Corporate Sustainability and Corporate Governance (IRCC 2025)

## COORDINATION UNDER CONSTRAINTS IN A PRO-SOCIAL SUPPLY CHAIN – THE CASE OF DECEASED DONATION PROGRAM IN INDIA

*Satyajit Roy and Haritha Saranga*

**Abstract:** Introduction: Traditional operations management (OM) research in areas like inventory and supply chain management (SCM) is reaching saturation, necessitating a shift toward impactful, society-focused research (Lee & Tang, 2018). Conventional SCM often overlooks challenges in less developed markets of low- and middle-income countries (LMICs) (Sodhi & Tang, 2016; Eftekhari et al., 2025). This qualitative study examines coordination in pro-social supply chains under constraints, using India's cadaveric organ donation program as a case study. Following Lee & Tang (2018)'s framework, the objective is of "Doing good" in the context of a developing economy (i.e., India) and encompassing multiple stakeholders such as public and private healthcare providers, the government or administrative body, and the society at large. Drawing analogy from the case, we explore how pro-social supply chains can develop coordination mechanisms that can operate effectively under constraints. The cadaveric organ donation program in India exemplifies these challenges. Organ transplantation is a critical treatment for end-stage organ failure, yet scarcity of donated organs and socio-economic barriers limit

access in developing countries (Brasile et al., 2001; Schlich, 2010). Inefficient coordination has resulted in limited donor supply, organ wastage or life-threatening risks for recipients due to quality deterioration (Jing et al., 2018). This study investigates these challenges, offering evidence-based recommendations to improve donation rates and organ quality. Alongside, we offer a theoretical framework of effective coordination mechanisms in a unique social development program which is primarily dependent on two sets of profit-oriented organizations and moderated by a welfare-oriented public administrative body in a developing economy. This framework is particularly relevant for mission-driven programs in developing economies, where profit-oriented organizations interact under the moderation of welfare-oriented public bodies. **Methodology and Data:** This study adopts an inductive theory-building approach to examine deceased organ donation across seven Indian states. Given the limited management literature specific to India's deceased donation context, a 2-day conclave was organized to gain insights into the end-to-end supply chain and establish a foundational understanding. Primary data collection involved multiple rounds of interviews with 27 key stakeholders, including doctors, transplant coordinators, administrative officials, and representatives from non-profit organizations. This was supplemented with secondary data sources such as newspaper articles, newsletters, administrative records, and multiple unscheduled or spontaneous conversations, providing a comprehensive perspective on the subject. For analysis and synthesis of our findings, we adopted the grounded theory through data structure approach outlined in Gioia et al. (2013) and Gioia (2021), providing utmost importance to the informant's experience and then by looking at the same from a theoretical lens. **Results and Managerial Insights:** In any demand-supply scenario, maximizing the use of available resources becomes critical, especially when demand far exceeds supply. In a country like India, where the organ donation rate is less than 1 per million population (pmp) despite high demand, it is essential to fully utilize the potential of every consented donor. Unfortunately, this often doesn't happen, as only a few organs are retrieved and transplanted from donors who could provide 7–8 organs if properly maintained. This study first investigates the system- and process-level challenges hindering the growth of the donation program across multiple Indian states, highlighting how some states have excelled in specific aspects despite facing similar obstacles. Building on these insights, we draw from supply chain coordination theory to propose a comprehensive framework for achieving effective coordination within a prosocial supply chain. Our study explores the system- and process-level attributes of both inter- and intra-organizational coordination in matching supply with demand, particularly in situations where demand far exceeds supply and actors operate in resource-constrained environments. Within a "system of systems" (Davies & Mackenzie, 2014), achieving seamless coordination – especially for time-sensitive operations – is complex and requires meticulous planning and execution across multiple levels. We examined how actors, while acknowledging these constraints, can adapt processes to enhance coordination and collaboration toward a shared objective. Our findings suggest that, in certain cases, informal workarounds may prove more effective than rigid structures. Given that the propositional approach to theorizing falls short in fully addressing the needs of the supply chain management (SCM) field – leaving significant inferential and conceptual gaps (Cornelissen et al., 2024) – we propose a concluding model (Figure 1). This model emerges from the interplay of various dimensions identified through first- and second-order thematic analysis. We identify three key dimensions that hinder the program's success:



process and system-level constraints, input constraints, and effort-reward imbalance. The organ transplantation supply chain relies on the seamless coordination of multiple living and non-living actors across the value chain, from donor identification to organ transplantation. However, achieving effective coordination and realizing the full potential of the program is challenging unless all actors share a common vision. These challenges are further exacerbated by the heavy patient load in public hospitals, along with shortages of essential resources, including medical staff, ICU beds, and consumables. Due to these constraints, hospitals often deprioritize deceased donation opportunities. As one doctor put it, “We don’t have time and resources for patients who can be saved – how can we justify spending time and effort on a patient who is about to die or is already dead?” This perspective overlooks the larger impact: a well-maintained brain-dead patient has the potential to save up to eight critically ill patients, thereby alleviating pressure on the healthcare system. The lack of both incentives (“no carrot”) and accountability (“no stick”), combined with limited technology adoption, further weakens coordination efforts. Misaligned incentives among stakeholders and the absence of clear accountability lead to inaction, with the complexity of manual coordination often cited as an excuse. Recognizing that structural policy changes are often slow and uncertain, we focus on evidence-based recommendations to navigate existing constraints. A shared vision across the value chain emerges as a critical prerequisite for improving coordination and making the system more effective. When faced with resource constraints, individually motivated professionals adopt a social entrepreneurial mindset, leveraging creativity to build unique resource environments and pursue opportunistic collaborations. A “factory-within-a-factory” approach within large organizations has proven effective in managing supply chain coordination without disrupting mainstream operations. In the absence of dedicated capacity, informally established units and shared workspaces – created by pooling available resources – have yielded significant results. To overcome process constraints, such as expediting approvals, social capital often proves to be the most effective tool. In such cases, the traditional “nexus-of-contracts” perspective shifts toward a “team” perspective (Whang, 1995), where trust within well-connected social networks plays a critical role (Galaskiewicz, 2011). Trust enables actors to extend their efforts beyond routine responsibilities and organizational boundaries, fostering collaboration. Unlike input and process constraints, output constraints can have a positive impact, as they drive greater engagement and encourage better coordination among actors. Reinforcing output constraints through accountability measures and reward mechanisms ensures that stakeholders remain motivated – not only to fulfill their responsibilities but also to engage proactively with others. Positive reinforcement, such as public recognition and media attention, alongside negative reinforcement, including regular oversight and political pressure, serves as a continuous motivator. This approach becomes even more effective when supported by advanced technology and streamlined administrative processes to ensure smooth checks and balances, minimizing bureaucratic bottlenecks.

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## Analyzing the Influence of Board Gender Diversity on Firm Performance – A Sectoral analysis of Women-Led Manufacturing Firms in India

*Kamali Gangadharan and Murugesan Ramasamy*

**Abstract:** Analyzing the Influence of Board Gender Diversity on Firm Performance – A Sectoral analysis of Women-Led Manufacturing Firms in India Introduction In recent years, the diversity of corporate boards has gained increased attention, with particular emphasis being made on the representation of women in leadership roles. As firms strive to enhance their competitiveness in the business environment, understanding the economic and strategic value of diverse boards has become a critical area of research. (Jayaraman et al., 2025). Recent studies show that women-led firms have increased in numbers in the last decade and about 36% of firms are led by women across the globe (Loan et al., 2023). Despite the growing importance of women-led firms, a significant research gap persists in comprehensively analyzing how gender diversity influences firm performance. Although a large body of literature on BGD and firm performance exists, the influence of BGD in sectors undergoing structural transformation and technological change is underexplored. This study addresses these gaps by focusing on women-led firms across seven different manufacturing sub-sectors namely Chemicals, Food and Agriculture, Machine, Metals, Miscellaneous, Pharmaceuticals and Transport and analyses the influence of BGD on firm performance. As emphasized by the Upper Echelon Theory (UET), diverse boards are often associated with improved firm performance (Bel-Oms et al., 2024). Similarly, Stakeholder theory posits that companies that prioritize financial metrics factors demonstrate a commitment to profitability, revenue generation, and shareholders interest (Esposito et al., 2025). The Resource Based View theory (RBV) highlights that efficient management of resources is highly associated with the performance of the firm (Li and Tian, 2023). Drawing on the lens of these theories, this research incorporates the following variables for analysis – 1) BGD, 2) TFP, 3) ROC and 4) PBIT. This study contributes to literature by - a sector specific analysis on the influence of BGD on firm performance and a focused analysis on performance dynamics of women-led firms. The key limitation identified is the lack of comprehensive data, underscoring the need for future research to explore additional factors and methodologies. Methodology A panel data comprising of 421 firms with women CEOs and directors has been chosen for this study. The data collected spans from 2015 to 2024 and is amassed from the Centre for Monitoring Indian Economy (CMIE) database. The Cobb-Douglas (C-D) production function proposed by P.H. Douglas and C. W. Cobb has been widely used in the measurement of TFP and the role of various input factors in its growth. To better capture the production realities of the manufacturing firms, in this study, the basic C-D model is extended to include additional input variables namely, Energy (E) and Materials (M) along with the traditional inputs Labour (L) and Capital (C). This study employs four regression models – Pooled Ordinary Least Squares (POLS), Fixed Effects (FE), Random Effects (RE) and System Generalized Method of Moments (GMM) to estimate the influence of BGD,

Age and Size on the firm performance indicators TFP, ROC and PBIT. The application of multiple models allows for a rigorous and comprehensive analysis, ensuring the robustness of the findings under varying econometric assumptions. The simultaneous use of all four models ensures a robust and triangulated understanding of the influence of BGD, Age and Size on the firm performance indicators TFP, ROC and PBIT. This multi-model approach allows for comparative interpretation and enhances the empirical validity and robustness of the findings. Results The results of the analysis demonstrate that BGD exhibits a positive influence on firm outcomes, but sectoral variations highlight that industry specific context plays a pivotal role. The negative or insignificant effect is potentially attributed to industry specific resistance, poor inclusivity, governance quality, structural challenges and openness to diversity. The impact of Age is positive underscoring that experience and organizational maturity contribute to improved performance. The effect may be insignificant or negative across sectors reflecting innovation inertia. Size of the firm is the most consistent, positive and significant variable across all the sectors suggesting that larger firms benefit from economies of scale and operational capacity leading to enhanced productivity returns and profitability. Conclusion BGD and firm performance are two important catalysts of corporate governance and economic development and are crucial for evaluating a firm's financial and operational health Thus, the study of the relationship between these variables is inevitable. This study analyses the influence of BGD on firm performance measured by TFP, ROC and PBIT using four models namely, POLS, FE, RE and GMM across seven manufacturing sub-sectors. The results of the analysis demonstrate a positive influence of BGD on firm performance. Consistent with UET, RBV and Stakeholder theory, gender-diverse boards enhances strategic decision-making and adaptability, leading to improved financial outcomes. However, sectoral variations highlight the pivotal role of industry specific characteristics. The key limitation identified is the lack of comprehensive data, underscoring the need for future research to explore additional factors and methodologies.

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Track 08: Corporate Sustainability and Corporate Governance (IRCC 2025)

## Exploring the Role of Hereditary and Acquired Skills in the Socio-Economic Development of the Chenchu Tribal Community: A Grounded Theory Approach

*P Ravi Kiran, Akriti Chaubey, Madhura Bedarkar and Abhishek Mishra*

**Abstract:** The present research explores the influence of inherited and learned skills on the socio-economic progress of the Chenchu tribe, a Particularly Vulnerable Tribal Group (PVTG) in Telangana, India. The research seeks to investigate the role of traditional and newly acquired skills in enhancing the empowerment and socio-economic advancement of the Chenchu community. The study uses Grounded Theory to evaluate qualitative data derived from interviews, participant observations, and document analysis, aiming to comprehend the cultural history of the Chenchus and the transmission of vital abilities throughout generations. Research indicates that hereditary abilities, intricately woven into

the tribe's cultural framework, are essential, although learned skills like education and occupational training augment adaptation to socio-economic shifts. Integrating both skill sets is necessary for the tribe's advancement, highlighting the equilibrium between maintaining traditional knowledge and embracing modern capabilities. The research provides actionable insights for policymakers and development practitioners by emphasising the significance of merging ancient wisdom with contemporary education and training. This study offers distinctive perspectives on the socio-economic development of the Chenchu tribe, presenting a paradigm for empowering tribal groups in an increasingly dynamic environment.

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Track 08: Corporate Sustainability and Corporate Governance (IRCC 2025)

## Decoding the Green Puzzle: Investigating How Environmental CSR Drives Sustainable-Oriented Behaviour

*Himani Choudhary, Shalini Rastogi and Deepika Pandita*

**Abstract:** With the increasing global climate crisis and expectations from stakeholders, environmental corporate social responsibility (ECSR) is being incorporated within both operational and strategic frameworks of organisations. However, the influence of ECSR on the sustainability behaviour of employees remains inconsistent. A crucial factor in this complexity is emotional ambivalence, which is the psychological conflict that employees experience when dealing with green organizational policies (Rothman et al., 2017). The promising construct to fill this gap is green advocacy - verbal encouragement, and defence of the environmental values and initiatives in the workplace (Wu & Chiang, 2023). Green advocacy is a cognitive reappraisal process that reduces emotional conflict and leads to sustainable-oriented behaviours. Individual green value, individually serves as a positive outcome for employee alignment with the sustainability goals of the organization (Mayer & Frantz, 2004). Although previous studies have examined CSR's impact on environmental outcomes, the internal mechanisms through which CSR influences employee behaviour, particularly through emotional ambivalence and advocacy, remain underexplored. (Jilani et al., 2021).

Submission ID: 342

Track 08: Corporate Sustainability and Corporate  
Governance (IRCC 2025)

## Green Game in Town: Intra-Industry Spillover Effects of Corporate Green Bond Announcements in the US

*Varun Jindal, Sourav Prasad and Arun Upadhyay*

**Abstract:** We investigate whether announcements of green bond issuances by firms have any effect on the value of their rivals. Using data on green bond announcements by US firms over the period 2013 – 2024, we find that a positive (negative) stock price reaction to a focal firm's green bond announcement is associated with a positive (negative) stock price reaction for non-announcing firms within the same industry. This suggests the presence of intra-industry contagion effects in response to green bond announcements. Further, this effect is stronger for first-time issues, relatively large issues, and issues announced by industry leaders. Our results remain robust to alternative explanations and a battery of checks.

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Track 08: Corporate Sustainability and Corporate  
Governance (IRCC 2025)

## Strategic Inventory Planning for Low-Carbon Manufacturing: A Comparative Analysis of Carbon Tax and Cap-and-Trade Policies

*Prachi Narayan and Prerna Gautam*

**Abstract:** In the face of escalating climate change and environmental degradation, sustainable manufacturing has become imperative, particularly in high-emission sectors like textiles. This study develops a comprehensive production-inventory model that incorporates both green and conventional products within regulatory frameworks such as carbon taxation and cap-and-trade. By integrating economic, behavioral, and environmental factors—including consumer sensitivity to price, advertising, and product greenness—the model enables strategic optimization of production run time, pricing, advertising, and green investments. To solve the non-linear, non-convex model, the study employs Quantum-behaved Particle Swarm Optimization (QPSO), validated through Differential Evolution (DE). Results indicate that cap-and-trade yields superior profitability due to its emission trading flexibility, while green strategies such as targeted advertising and consumer substitution enhance overall outcomes. The findings provide actionable insights for manufacturers and policymakers seeking to align environmental goals with competitive business strategies. This research advances sustainable operations modeling and offers a practical framework for low-carbon inventory planning under evolving environmental regulations.

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## Mapping the Intellectual Landscape of CSR and ESG: A Bibliometric and Thematic Network Analysis of Scholarly Convergence

*Vinita Ramchandani, Pallabi Mukherjee, Vivek S. Kushwaha and Ankita Sharma*

**Abstract:** This paper offers a bibliometric perspective on how CSR and ESG have been studied together within scholarly literature. Drawing from the database provided by Scopus, the analysis was conducted using Bibliometrix and its interactive platform Biblioshiny in RStudio. The goal was to trace patterns in publication activity, author influence, and key thematic developments. Findings show that CSR continues to be a central focus, often aligned with terms such as ESG performance, sustainability, and governance. Scholars like Wang J., Li Y., and Zhang Y. are notable for their important contributions. Thought leaders like Margolis, Walsh, and Freeman continue to be frequently cited for their foundational works. This study provides guidance for future research in sustainable business and illuminates new areas of interest, such as green innovation and ESG metrics.

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## CORPORATE GOODNESS AND DIVIDEND POLICY

*Kritish Sharma and Prof. S.V.D. Nageswara Rao*

**Abstract:** We tested the association between corporate goodness and dividend policy. Using Hackman's sample selection estimation on 397 non-financial Indian firms, we found that the corporate goodness decisions strongly impact a firm's dividend policy. First, the environment and social dimensions are positively associated with the dividend payouts; however, they do not impact the likelihood of dividend payment. Second, the governance dimension is not associated with dividend payouts, while being negatively linked to the likelihood of paying dividends. Third, there is reverse causality between corporate goodness and dividend policy. Fourth, corporate goodness is associated with initiation, cessation, increases, and decreases in dividends. Our results position the dividend policy as a tool for managerial oversight and reducing agency conflicts.

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## INCLUSIVE MICROINSURANCE POLICY DESIGN: EMPIRICAL INSIGHTS FROM LIFE INSURANCE CORPORATION OF INDIA (LIC)

*Ayushi Rai and Prof. Varadraj Bapat*

**Abstract:** 1. Introduction Microinsurance is a crucial means of providing financial protection to the bottom of the pyramid population, especially in developing economies like India (Biener and Eling, 2012). Life microinsurance addresses the needs of this segment, featuring affordable premiums, modest benefits, and simplified documentation processes (Churchill, 2007). While it aims to promote financial inclusion, field-level data shows conflicting pricing structures compared to traditional insurance pricing methods. A significant sample of LIC low-valued policies indicates that total premiums often exceed the sum assured over time. This highlights the need to consider the pricing strategies employed, consumer behaviour, and policy design. This research builds on previous theoretical and empirical work to explore the inconsistencies in microinsurance using customer-level data from the LIC office, Shahganj, Uttar Pradesh. 2. Research Objectives The study outlines the following key objectives: • To examine the effect of socio-demographic factors on premium pricing among the LIC's microinsurance policyholders. • To analyse the reasons for the total premium exceeding the sum assured and to understand the implications of such price structures. • To understand the role played by specific policy design elements in the overall pricing structure. 3. Methodology This study's empirical analysis is based on a primary dataset comprising 240 LIC's microinsurance policyholders from 2021 to 2024 in the Shahganj region of UP. The dataset includes socio-demographic variables such as family size, number of children, age, sex, income, and others, along with the sum assured, premium amount, mode of premium payment, and premium payment term. We used STATA software to perform descriptive statistics and data visualisations, including bar charts, boxplots, and quantile graphs. Additionally, we conducted a test for differences in means and performed ANOVA; there is a significant difference in the mean values of our variables between the top half and bottom half of the sum assured values. Our empirical findings are based on linear regression analysis. 4. Results From the difference in mean test, we found out that there is a significant difference in the mean values of the sum assured based on the premium amount, education, occupation, and gender. While there exists a positive association between premium and the sum assured, the premium was higher as compared to the sum assured for several low-income and less educated policyholders. As explained by Borch (1985), through the theory of expected utility, this increase in premium in comparison to the sum assured is due to risk aversion behaviour of policyholders, variance loading due to uncertainty of claims, and administrative costs inherent in low-valued insurance products. Education and occupation depict a direct influence on sum assured, where policyholders with secondary education and those employed in formal and semi-formal occupations showed a higher inclination towards better valued policies. This aligns with the studies of Browne and Kim (1993) and Bongini et al (2023), who showed that education is essential for insurance awareness



and rational decision making. Additionally, female policyholders opted for policies with higher sum assured than male policyholders, which is consistent with the study of Lin and Grace (2007), potentially reflecting their long-term financial planning and a higher risk aversion. 5. Discussions The results emphasise the need to reassess the pricing structures in microinsurance markets (Bongini et al., 2023). The presence of about 35% of policies with higher premiums than the sum assured indicates that the pricing structure is not solely determined by actuarial expectations but also influenced by the socio-demographic factors of policyholders, who opt for higher premiums in exchange for certainty of coverage (Borch, 1985). Additionally, the emergence of education and occupation as significant drivers of informed insurance decisions highlights the importance of financial literacy and financial security in guiding policyholders to select value-driven policies. This is supported by Kiwanuka and Sibindi's (2023) similar findings within the African microinsurance market. Furthermore, gender-based differences regarding the sum assured reveal distinct behavioural traits, with women exhibiting greater risk sensitivity and long-term financial planning (Lin and Grace, 2007). 6. Conclusions This study offers valuable insights into inclusive microinsurance by understanding the role of various socio-demographic characteristics of the policyholders on the pricing structure from the Shahjang, UP. The findings demonstrate that education, occupation, and gender-based differences play a significant role in evaluating the premium selection and the assessment of coverage concerning financial expectations. Higher premium payment reflects the risk-averse behaviour of the policyholders that needs to be considered while designing microinsurance products. To ensure the sustainability of microinsurance plans for low-income households, the focus should be on financial literacy initiatives and the adoption of inclusive pricing strategies that account for their economic constraints and behavioural preferences (Sane and Thomas, 2019). Wage and income inequality, as well as the gaps in social protection schemes, are the key dimensions of the future of work, reinforcing the need to provide equitable insurance solutions (Santana and Cobo, 2020).

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Track 08: Corporate Sustainability and Corporate Governance (IRCC 2025)

## Internationalisation through equity modes and its impact on domestic ESG performance: Evidence from India

*Parth Sharma and S.V.D. Nageswara Rao*

**Abstract:** A rise in internationalisation through high commitment modes like outward foreign direct investment (OFDI) from emerging economies is a pertinent issue with global significance, yet understudied. With the outflow of money from an emerging economy to other host countries, coupled with liability of foreignness, it is important to analyse if it results in responsible business operations at home. Accordingly, this study analyses the impact of OFDI from India on domestic ESG performance, and how that relationship is moderated by home market competition. Backed by legitimacy theory, a positive impact of OFDI on domestic ESG performance is found and market competition is found to

negatively moderate this relationship. The moderating role of market competition is supported by the theoretical tenets of “the quite life” hypothesis. Our study has implications for policymakers and investors. If the firms investing through OFDI improve their domestic ESG performance, which can act as a signal for future firm performance. In addition, other firms from the industry may also try to replicate the same, improving overall industry’s ESG performance.

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Track 08: Corporate Sustainability and Corporate Governance (IRCC 2025)

## Operationalizing the National Guidelines for Responsible Business Conduct: A Responsible Leadership Perspective

*Chetana Koulagi and Priya Nair Rajeev*

**Abstract:** India’s regulatory framework includes the National Guidelines for Responsible Business Conduct (NGRBC), which outline nine principles for responsible business conduct in India. While these guidelines outline what needs to be done, there is a gap in understanding who and how it is done, and what kind of leadership enables it. This paper explores whether existing conceptualizations of Responsible Leadership (RL) align with the expectations of the NGRBC and whether RL can meaningfully support its implementation. Using thematic analysis, the study conducts a conceptual mapping of RL definitions from academic literature to the NGRBC principles. The results indicate that the conceptualization of RL in literature is strongly stakeholder, ethics, and development oriented, but the other critical dimensions such as human rights, environmental protection, and responsible policy advocacy are underrepresented. Further, most definitions emphasize ‘doing good’ while leaving the perspective of ‘avoiding harm’. In response to these gaps, this paper proposes a RL definition in the Indian regulatory context. Further it advances three theoretical propositions, highlighting the enabling role of RL in operationalizing the NGRBC, managing stakeholder tensions, and navigating leadership paradoxes. The insights contribute to theory building, inform leadership development efforts, and support policy design and implementation.

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Submission ID: 572

Track 08: Corporate Sustainability and Corporate Governance (IRCC 2025)

## Innovation, Global Competition, and Environmental Orientation: Insights from the Attention-Based View

*Punyashlok Dwibedy and Sumit Chakraborty*

**Abstract:** Using the World Bank Enterprise Surveys from 2018 to 2020, the study looks at the environmental orientation of firms across multiple countries. The paper examines the relationship

among environmental orientation, firm innovation, and competition in international versus domestic markets, utilising the situated attention concept derived from the Attention-Based View (ABV). The study argues that, more so than domestic competition, international market competition enhances environmental orientation (H1) since firms functioning in global markets give environmental responsibilities high priority to maintain their legitimacy and reputation. The study further considers how firm innovation (H2) moderates this relationship. The paper argues that innovative firms may show less environmental orientation than non-innovative firms in foreign markets compared to domestic markets. In the face of international competition, firms lacking innovation may utilise environmental orientation to achieve differentiation. The study shows how international and domestic markets especially affect the environmental strategies of both innovative and non-innovative firms and challenges the presumptions about the part innovation plays in environmental orientation in global markets. The results open fresh directions for next studies on global corporate environmental policies.

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Submission ID: 581

Track 08: Corporate Sustainability and Corporate Governance (IRCC 2025)

## Evaluating the Cost of Sustainable Production (COSP) for Fairtrade-Certified Rice Varieties in India

*Gideon Balasingam, Shobana S, Deepthi Krishnan, Rebecca Anns and Adazia Ophrii*

**Abstract:** India, the world's second-largest rice producer, cultivated rice over approximately 44 million hectares in 2020, yielding 121.6 million metric tons with an average productivity of 2.8 metric tons per hectare. Basmati rice, a premium variety and significant export commodity, accounted for 4.6 million metric tons of exports in 2019-2020, primarily to markets such as Saudi Arabia, the United Kingdom, Kuwait, and the United Arab Emirates. However, challenges such as high pesticide residue levels, notably Tricyclazole, have restricted exports, particularly to the European Union, necessitating sustainable production practices that comply with stringent international standards. Fairtrade certification addresses these challenges by ensuring fair prices, decent working conditions, local sustainability, and improved terms of trade, thereby empowering marginalized producers and fostering equitable global trade relationships. The primary goal of this research is to identify the cost structure at several stages of rice production—land preparation, sowing, cultivation, harvesting, and post-harvesting processes—in order to estimate the farm gate costs that underpin the Fairtrade Minimum Price (FMP). The FMP acts as a floor price, shielding farmers from market volatility while covering the average costs of sustainable production and ensuring access to viable markets. The Fairtrade Premium offers additional income that producers can distribute for community development projects, including enhancements in agricultural techniques, education, or healthcare services. The research examines the incorporation of additional rice varieties into the Fairtrade certification framework to broaden market prospects and strengthen economic resilience for certified producers. Additionally, it aims to encompass examining the COSP-FMP disparity, assessing the socio-economic advantages of Fairtrade certification,

and developing a compendium to inform marketing and policy initiatives. The study focusses on four Indian states - Jammu, Haryana, Uttarakhand, and Uttar Pradesh where Fairtrade aids 17 producer organisations, benefiting more than 153,000 certified farmers. A combination of both quantitative and qualitative approach is used in the methodology. The primary data were collected from growers who were certified. The focus was on Basmati rice because of its relevance in Fairtrade markets. A representative sample of the 153,000 certified producers was questioned, and the profiles of those who responded are presented. Three hundred and twenty surveys were carried out amongst the four districts. A total of twelve Key Informant Interviews (KIIs) were carried out with various stakeholders, certified producer organisations, intermediaries, and external organisations. These interviews were conducted to gain operational details of FMP and administration of premiums paid by fairtrade certified producers. When conducting interviews with key informants, stringent criteria were followed. These criteria included ensuring that at least fifty percent of respondents were either small-scale farmers or representatives of producer firms, thirty percent were women, and twenty-five percent were involved in marketing. The research findings highlight that there are significant differences in outputs and expenses between regions. However, in comparison to Jammu, Haridwar has a higher cost per metric tonne due to factors such as manpower, input, and agroclimatic conditions. This is even though Haridwar has a relatively greater production rate. The use of biofertilizers and the requirements for organic certification are the primary factors that contribute to the higher costs connected with organic Basmati, which is typically associated with Fairtrade production. One of the most important findings is the difference between COSP and FMP for organic Basmati in the year 2021. In certain districts, the COSP is higher than the FMP, which suggests that the current FMP may not properly incorporate the costs of sustainable manufacturing, hence putting the economic existence of firms in jeopardy. This inequality is addressed by the Fairtrade Premium, which provides funding for community projects such as improvements to farming practices, health centres, and educational institutions we see illustrations of the factors that determine costs, which include labour, seeds, and irrigation. The study also identifies potential new rice varieties for Fairtrade certification, which could diversify income streams for producers. The results highlight the necessity for adaptive FMP modifications to account for increasing COSP, especially for organic cultivators. Regional cost disparities indicate the necessity for district-specific pricing mechanisms to guarantee equity. The Fairtrade Premium is crucial for resolving gaps in COSP-FMP, although its distribution necessitates enhanced transparency and greater participation from producers. Improving the capacity of producer organisations to implement sustainable techniques, such as biofertilizers, may reduce costs while upholding certification standards. It is recommended that future research include non-Basmati varieties as well as longitudinal studies to evaluate the impacts of certification over the long run. It is possible that market prospects may be improved by collaborations with export-oriented organisations like APEDA, which would result in an increase in revenues for producers. This compendium serves as an important resource for Fairtrade stakeholders, allowing them to improve their strategies for advertising and advocate for policy reforms that put producer welfare at the forefront of their priorities. This study provides a comprehensive analysis of the COSP for Fairtrade-certified rice in India, highlighting both the successful aspects of the Fairtrade system as well as the difficulties that it faces. Together, Fairtrade and producers could strengthen the resilience of Indian rice

growers by resolving deficiencies in the COSP-FMP and capitalising on the socio-economic benefits of certification. The findings contribute to the ongoing conversation on sustainable agriculture by offering insights that can be put into practice by policymakers, certification authorities, and producer organisations to promote equitable and sustainable rice production in the Asia-Pacific region.

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Track 08: Corporate Sustainability and Corporate Governance (IRCC 2025)

## Just transitions in coal-dependent regional economies: A model-based framework

*Dieter Grass, Michael Kuhn, Omkar Patange, Alexia Prskawetz and Stefan Wrzaczek*

**Abstract:** Coal is a major contributor to anthropogenic carbon emissions and climate change. Coal mining and combustion are also a leading cause of premature mortality due to local air pollution. On the other hand, coal is central to many regional economies that rely on its mining, power generation, industrial use and exports. For example, the Ruhr region which produced 80% of Germany's coal during the peak of 1950s or a few districts in Eastern India which mine 70% of India's coal. With the changing climate and rising pollution levels associated with coal, the urgency for coal phase-out has become prominent in recent years. This has put pressure on coal-dependent regional economies to implement energy transitions in a time-bound manner. This paper studies optimal pathways for a coal phase-out within a small, open, regional economy. We propose a modelling framework to comprehensively analyze the dynamics of coal phase-out from a regional welfare perspective. To this end, we have set out an optimal control problem, involving the maximization of the intertemporal flow of regional welfare for a four-sector economy, including a coal extraction sector, a coal-based and a renewable energy sector, and a manufacturing sector. We describe the economy by a system of ordinary differential equations, describing the states of the system, specifically the capital invested into the four sectors, that reacts on control variables (e.g., investments into the respective types of capital) set by a social planner who maximizes an inter-temporal welfare function subject to the capital dynamics, production technologies, a pollution function, and a budget constraint that embraces the investment costs, expenditures for private and public goods and the proceeds from net exports of coal, energy and final goods. The model can be applied to study how the regional coal transition is affected by national and international policies that bear on the price structure and may also prescribe certain transition thresholds. Our numerical analysis shows that the transition follows non-trivial time path and may, indeed, enter an array of different long-run equilibria, corresponding to different degrees of phase-out, depending on the energy price structure. For a given long-run cost of renewable energy, and depending on the energy prices, the optimal solution may either tend to a unique equilibrium state or be subject to bifurcation, based on the initial conditions. Our findings bear several important insights into policymaking. First, we note that the initial industrial structure of a region alone is not sufficient for predicting whether a phase-out will be in the region's interest and, therefore, materialize without further policy intervention at a national level. Notably, the development of national or international energy prices plays an

important role for whether a transition will be triggered. Second, the scope for history-dependent pathways needs to be borne in mind when it comes to stimulating and structuring a coal phase-out in any region. This is true in those cases where the initial structure of the economy (typically heavily coal-based) leads to a process where renewables are phased in, but coal mining is retained for accommodating a heavy industry and exports. Recalling that this constitutes an optimal allocation on the part of a regional planner, we note a conflict of interest between the regional interests and national and international climate commitments. While the world market integration is advantageous from a regional welfare perspective in as far as it facilitates a flexible response to the energy transition, it may also stand in the way of a global or national coal phase-out, a situation that may be reflective of, for example, the context in China. Our analysis shows that in such settings, a strong exogenous push towards the early-on adoption of renewable energy sources may be required to trigger the phase-out. Third, we note that a coal phase-out and its impact on regional welfare depends on the extent to which the region benefits from the reduction in local air pollution. While our analysis shows that substantial welfare gains are feasible, in many scenarios this comes with a strong decline in aggregate consumption. On the one hand, this trade-off brings into focus the important role of the underlying preferences and local circumstances: for a lower weight of pollution in the social welfare function and/or for a lower impact of air pollution, due to local weather conditions or the siting of coal-based activities, a phase-out may not be optimal. On the other hand, the resolution of the trade-off towards a phase-out also illustrates the importance of technological progress, as embraced by the falling cost of renewable investments. By opening the possibility to maintain electricity-based manufacturing activities, investments in renewable energy mitigate the trade-off and therefore allow for substantive reduction in pollution without giving up even greater consumption. Finally, we note that the strong trade-off between consumption and pollution can be attributed to our assumption of a stationary economy. Productivity growth and the associated income gains would soften the trade-off between consumption and pollution such that a simultaneous increase in consumption and reduction in pollution may ultimately be feasible. The superiority of a coal phase-out would even be reinforced, as for increasing levels of consumption, pollution abatement becomes socially more valuable. Plausibly, productivity growth itself may be associated with structural change in manufacturing away from heavy industry to service and IT-based industries, with the latter relying on electricity as their prime energy source. This would further boost a coal phase-out. The analysis presented has been conceived primarily with the objective of providing a conceptual framework for the comprehensive analysis of the complex dynamics behind a coal-phase out (illustrated by the scope for multiple equilibria and history-dependence). Our results will be relevant for regional governments in undertaking a transition away from coal in way that safeguards regional welfare and at the same time contributes to the global climate goals. While it provides plausible outcomes in terms of transition scenarios, further work is required to generate more practical policy insights, in particular, as to how national policies can and should be used for the simulation of a coal phase-out.

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Submission ID: 598

Track 08: Corporate Sustainability and Corporate  
Governance (IRCC 2025)

## Ecosystem Collaboration in Circular Textiles: A Framework for Analysing Product Recoverability, Social Wellbeing, and Environmental Impact

*Nidhin John*

**Abstract:** Ecosystem-based collaboration is increasingly vital for circular economy (CE) outcomes, especially in sectors like textiles where environmental, economic, and social challenges are intertwined. While prior research often focuses on firm-level efficiency or regulatory approaches, few studies examine how multi-stakeholder partnerships shape sustainability across the value chain. This study develops a conceptual and analytical framework to model the role of ecosystem partnerships and value networks (EPN) in advancing product recoverability, social wellbeing, and environmental sustainability. Drawing on the relational view, stakeholder theory, and planetary boundaries, three interlinked quantitative models are constructed—each representing a core sustainability dimension. The product recoverability model assesses how shared infrastructure and joint logistics reduce costs and improve profitability. The social model links EPN to employment, inclusiveness, and consumer surplus, while the environmental model relates collaboration intensity to waste and emissions. Each model defines key variables and derives functions to reflect stakeholder incentives and interdependencies. Results indicate that higher partnership intensity enhances material recovery, supports inclusive growth, and lowers environmental impact. By positioning EPN as a strategic enabler, the study contributes to strategic management literature on relational rents and sustainability. It offers both theoretical grounding and practical guidance for firms and policymakers promoting collaborative CE transitions.

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Track 08: Corporate Sustainability and Corporate  
Governance (IRCC 2025)

## MARKET PREPAREDNESS FOR POLICY INTERVENTIONS TOWARDS DOMESTIC SUSTAINABLE MARKETS: A STUDY ON THAI RICE SUPPLY CHAIN

*Gideon Balasingam, Rebecca Anns, Deepthi Krishnan and Shobana S*

**Abstract:** Climate change is a critical global issue affecting environments, economies, and societies. Sustainable development, which meets current needs without compromising future generation emerged in the 1987 Brundtland Report, requiring transformation across sectors, including business, where sustainability must be central. Integrating sustainability into market strategies allows businesses to attract environmentally conscious consumers, differentiate in a competitive market, and contribute to a sustainable future. This paper examines the Thai rice supply chain using Fairtrade as a voluntary

sustainability standard, exploring consumer awareness, factors influencing sustainable market practices, and market readiness for sustainable products in the Global South. Based on the research project conducted in Thailand by engaging university students by Fairtrade International, it uses desk and field methods to assess the Thai rice supply chain, Thai rice market, and Thai customers. The study is indicative of the market readiness for sustainable products and recommends that state policies are synonymous with established private sustainable standards to strengthen domestic sustainable market ecosystem.

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**Submission ID: 643**

**Track 08: Corporate Sustainability and Corporate Governance (IRCC 2025)**

## **DO INVESTORS VALUE CORPORATE CARBON PERFORMANCE? EVIDENCE FROM AN EMERGING MARKET**

*Komal Vadhwani and Dr. Ashu Khanna*

**Abstract:** The study aims to examine the impact of carbon performance (CP) on the market value of Indian firms. Further, it analyzes the role of promoters and institutional investors (IIs) in the CP and market value nexus. The study applies the panel fixed-effect regression with robust standard errors. Additionally, the results are supplemented with the System GMM method to mitigate the potential endogeneity concerns. In line with the natural resource-based view (NRBV), the findings indicate a positive association between CP and the market value of firms. Based on equity ownership classification, the result suggests a non-linear (negative) impact of promoters (domestic IIs) in moderating the CP and market value association. Finally, the subsample analysis shows that the positive relationship between CP and firm value is more pronounced for non-carbon-intensive firms. The study reveals the significant role of insiders in improving the CP of firms and the need for increased incentives for emission-intensive firms in their transition due to the higher regulatory risks involved. Moreover, to the best of our knowledge, no existing research has explored the heterogeneous role of IIs and the promoter holdings in moderating the CP and firm value association.

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**Submission ID: 644**

**Track 08: Corporate Sustainability and Corporate Governance (IRCC 2025)**

## **NON-FINANCIAL REPORTING AND CORPORATE BOARDS: LEGAL IMPERATIVES FOR ESG COMMITTEES IN INDIA**

*Saritha P and Sujith P Surendran*

**Abstract:** India's Environmental, Social, and Governance (ESG) factors have become a core part of business planning and regulation due to the growing interest of investors in investment responsibility.

The SEBI has issued a mandatory “Business Responsibility and Sustainability Reporting” (BRSR) requirement for the top 1,000 listed companies starting in FY 2023. The paper examines the legal systems and governance frameworks governing ESG compliance in India, focusing on the requirement for ESG Committees on corporate boards. It uses empirical evidence, international best practices, and stakeholder theory to assess the institutionalization of ESG governance. India's industry reports have a mix of regulatory requirements and voluntary standards. The LODR Regulations (2015) have significantly influenced Indian disclosure norms, which now align with global norms like GRI, SASB, and TCFD. However, the “World Business Council for Sustainable Development” (WBCSD) notes that while 87% of India's ESG-related reporting provisions address environmental issues, social and governance dimensions remain underrepresented (Yavuz et al., 2024). KPMG (2024) suggests that audit committees and board-level governance should fill this gap, as ESG risks are integrating into financial and strategic planning. Disjointed ESG governance in India is exacerbated by unreliable metrics and the absence of check-and-balance systems, necessitating more statutory guidance on board roles. The research aims to analyse India's legal requirements for ESG disclosure, particularly in SEBI' BRSR framework and CSR under the Companies Act, evaluate the organization of sustainability or ESG Committees, examine top listed entities' practices, and propose amendments for accountability in ESG governance and reporting. The research will analyse India's ESG governance using a legal-doctrinal methodology, focusing on the Companies Act, 2013 and SEBI's regulatory circulars. It will compare India's ESG governance practices against global standards like IFRS Sustainability Disclosure Standards, EU CSRD, and U.S SEC Climate Disclosure Rule. Secondary data analysis will be used to examine ESG disclosures of selected companies in India's NIFTY 100 index, examining sustainability reports, terms of reference, and governance procedures. The analysis will empirically support normative results by evaluating the implementation of statutory and regulatory expectations on the corporate level. Cross-source observations will be provided, focusing on ESG committee roles, accountability frameworks, and alignment with global standards. The analysis reveals there are 31 reporting provisions on ESG in India (out of which more than 60 per cent are mandatory). BRSR disclosures show that there is an increasing tendency in the formation of the ESG Committee, but it is not compulsory. About 60 percent of leading NIFTY company have ESG Committees or incorporated Subcommittees under CSR or Risk Committees. (Chow Kah Yong, Alfian, & Mustapha, 2024) Statutory requirements of Section 134 and 135 of the Companies Act and LODR of SEBI are also encouraging boards to be more active in relation to sustainability matters. Nevertheless, information tells us a great diversity of the committee mandates, composition and reporting arrangements. (Anifowose, 2025) Environmental disclosures are more established, but social and governance metrics are poorly reported. Non-financial reporting lacks mandatory assurance, compromising reliability in both Indian and international frameworks. Addressing issues of standardization of ESG metrics, financial disclosures, and stakeholder responsibility is crucial for ESG committees' responsibility. (Ghosh, 2024) The study reveals that India's legal framework supports ESG governance but lacks board-level ESG committees, compared to EU CSRD and UK Corporate Governance Code. Companies Act and SEBI rules focus on disclosures but lack structural ESG governance. (Sen, Biswas, & Ghosh, 2023) India's BRSR system promotes transparency but lacks legal authority. KPMG's audit committees may serve as interim solution until independent ESG

Committees become mandatory, combining ESG, risk management, and internal control. (Trivedi, Firdaus, & Sari, 2024). The board-level sustainability committees should ensure the strategic alignment of ESG metrics and generate long-term value. The paper suggests that despite India's ESG reporting guidelines, corporate governance still lacks clarity. It recommends institutionalizing ESG Committees on corporate boards to enhance ESG data impact on investment decisions, market access, and corporate image. The study suggests harmonizing India's ESG approach with international standards like “International Sustainability Standards Board” (ISSB), “European Sustainability Reporting Standards” (ESRS), or “Task Force on Climate-related Financial Disclosures” (TCFD) to reduce materiality assessment, risk disclosure, and external assurance defects. The report suggests enhancing India's role as a sustainable business model by establishing ESG committees, implementing BRSR disclosure assurance requirements, building director capacity, and digitizing ESG measures, and integrating ESG into board governance.

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Submission ID: 689

Track 08: Corporate Sustainability and Corporate Governance (IRCC 2025)

### More the Merrier? The Paradox of ESG Contracting and Oversight

*Divyansh Tripathi, Sreejith Kumar Krishnakumar, Anirban Adhikary and Sourav Borah*

**Abstract:** Firms around the world are increasingly linking top management compensation to environmental, social, and governance (ESG) goals, a practice known as ESG contracting. However, the impact of this practice on actual ESG performance remains debated. While some argue that ESG contracting aligns managerial incentives with stakeholder priorities, others caution that it can lead to symbolic actions or diminish intrinsic motivation. We theorize and test a curvilinear (inverted U-shaped) relationship between ESG contracting and ESG performance, and examine how the presence of a board-level sustainability committee moderates this relationship. Using a panel dataset of 3,197 firm-year observations from S&P 500 companies between 2015 and 2022, we find support for both hypotheses. ESG contracting improves performance up to a point, after which additional incentives become counterproductive. Further, board sustainability committees shift the inflection point of this relationship and reduce its negative slope.. These findings integrate insights from upper echelons theory and control theory, offering theoretical clarity on a contested issue and practical guidance for firms designing executive incentive systems that promote long-term sustainability outcomes.

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## Carbon Bank: Bridging Sustainability Ambitions with Business Delivery in the Steel Industry

*Sidhartha Sarkar, Adity Ganguly, Saurabh Kundu, Soumi Chattaraj and Anupma Arya*

**Abstract:** Background The steel industry remains a cornerstone of global infrastructure and manufacturing, yet it accounts for approximately 7–9% of global CO<sub>2</sub> emissions, making it one of the most carbon-intensive industrial sectors. Its influence extends beyond direct emissions, significantly shaping Scope 3 emissions in downstream industries such as automotive, construction, and consumer goods. Therefore, decarbonizing steel production is not only essential for the sector itself but also pivotal for broader industrial sustainability. Transitioning to low-emission or net-zero steel is fraught with technological and economic challenges. Emerging solutions—such as hydrogen-based steelmaking, carbon capture and storage, and advanced recycling—are still in nascent stages of deployment. High capital requirements, uncertain policy landscapes, and delayed returns on investment further complicate the shift. Nevertheless, rising demand for sustainable materials, driven by corporate climate commitments, regulatory mandates, and ESG-focused investment, is creating a strong market pull for low-emission steel. To integrate these sustainability ambitions with business realities, the concept of a Carbon Bank has been introduced as a transitional mechanism within a broader low-emission steel framework. The Carbon Bank functions as a strategic tool that monetizes verified GHG emission reductions from internal decarbonization projects and allocates them to specific steel products. This enables producers to deliver differentiated, low-carbon steel offerings without waiting for full-scale technological transformation. By embedding verified emissions data into product-level accounting, the Carbon Bank facilitates transparent carbon attribution, supports premium pricing strategies, and aligns with evolving customer and investor expectations. In essence, the Carbon Bank bridges the gap between long-term sustainability goals and short-term business delivery. It empowers steelmakers to participate in the low-carbon economy today, while laying the groundwork for deeper decarbonization as breakthrough technologies mature. Objectives The goal is to develop a tool “Carbon Bank” for low-emission steel framework that acts as a transitional solution to meet the urgent decarbonization targets of the steel industry. At the heart of this approach is the Carbon Bank, a mechanism that connects internal decarbonization projects—such as energy efficiency upgrades, process innovations, and renewable energy integration—with commercial outcomes. By capturing and verifying GHG emission reductions from these initiatives, the Carbon Bank enables producers to allocate carbon savings to specific steel products, thereby generating traceable, marketable low-emission offerings. Key components: • Establishing a business case for low-emission steel through product-level carbon transparency, enabling premium pricing and ESG-aligned market positioning. • Creating a verifiable system for attributing GHG reductions to individual products, supported by third-party certification and digital traceability. • Transforming sustainability into revenue by allowing producers to monetize

verified emission reductions, thus incentivizing further investment in low-carbon technologies and infrastructure. • Supporting customers in achieving Scope 3 emission reductions through credible carbon footprint certificates, enhancing their sustainability credentials and compliance readiness. By integrating sustainability with business delivery, the Carbon Bank serves as a strategic enabler of industrial decarbonization, offering a scalable and economically viable pathway toward net-zero steel production.

**Methodology** The framework aligns with GHG chain of custody principles (World Steel Association) and international standards (ISO 14067, ISO 14064-2/3, ISO 22095), and consists of three steps: 1. PCF Baseline Calculation: Each steel product's cradle-to-gate emissions are calculated per ISO 14067:2018, verified by a third party, and updated every five years or upon major process changes. 2. Emission Reduction Banking: GHG reduction projects (e.g., energy efficiency, fuel switching, logistics optimization) within the organizational boundary are quantified using ISO 14064-2 and third-party verified. Verified reductions are stored in a virtual Carbon Bank. Only post-baseline projects demonstrating additionality are eligible. 3. Product Allocation & Certification: Emission reductions are allocated to products, lowering their PCF. Customers receive a Reduced PCF Certificate detailing CO<sub>2</sub> savings. These certificates support Scope 3 reporting but are not valid for carbon markets (e.g., CBAM, CCTS).

**Project selection, Validation, Verification and Governance of Carbon Bank** The Carbon Bank framework ensures credible attribution of GHG reductions to steel products through structured project selection, validation, and governance. Eligible projects must fall within Tata Steel's organizational boundary and demonstrate additionality—proving reductions beyond business-as-usual. Accepted types include energy efficiency, fuel switching, material optimization, and low-carbon transport, while regulatory or incremental improvements are excluded. Reductions are calculated using recognized or bespoke methodologies aligned with ISO 14064-2 and verified by accredited third parties per ISO 14064-3. Only post-baseline projects are eligible, and verified reductions are stored in a virtual Carbon Bank for up to three years. Similar projects may be grouped for streamlined validation. The Corporate Sustainability team oversees governance, ensuring methodological integrity, third-party verification, and prevention of double counting. Reductions are allocated to specific products, lowering their PCF in a traceable, non-transferable manner to support transparent Scope 3 reporting. Results and Implementation The framework allows producers to offer steel products with customized carbon footprints. For instance, with a baseline PCF of 2.75 tCO<sub>2</sub>e/t and 50,000 tCO<sub>2</sub>e reductions banked, a producer can offer • 40,000 tonnes of steel at 1.5 tCO<sub>2</sub>e/t, or • 18,182 tonnes at 0 tCO<sub>2</sub>e/t. This flexibility allows producers to tailor offerings based on customer needs and available emission reductions, while maintaining transparency and integrity.

**Business Implications and Market Outlook** This scheme transforms sustainability into a business opportunity by enabling: • Product differentiation in a commodity market. • Premium pricing for low-emission steel. • Customer retention through alignment with Scope 3 reduction goals. • Regulatory readiness for emerging carbon disclosure and labeling requirements. It also enhances investor confidence by demonstrating proactive climate action and aligning with ESG metrics. The modular and scalable nature of the framework allows for expansion across sites, product lines, and geographies.

**Conclusion** The low-emission steel product framework, enabled by the Carbon Bank, offers a pragmatic and market-aligned pathway for decarbonizing the steel industry. It balances the urgency of climate action with the realities of technological and economic



constraints. By embedding GHG reduction into product-level accounting and creating a credible certification system, the framework not only supports internal sustainability goals but also empowers customers to meet their own climate targets. While full decarbonization will require long-term innovation and investment, this transitional model provides a viable business case for low-emission steel today.

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Submission ID: 695

Track 08: Corporate Sustainability and Corporate  
Governance (IRCC 2025)

## EVALUATION OF THE PERFORMANCE OF ESG-BASED MUTUAL FUNDS USING THE FAMA-FRENCH MULTI FACTOR MODEL – UNDERSTANDING CLASSIFIER EFFICIENCY USING DISCRIMINATORY AND EXPLANATORY POWER IN THE INDIAN CONTEXT

*Rajeev Rajan, Subramaniam S Iyer and Sivakumar N*

**Abstract:** This study evaluates the performance of Environmental, Social, and Governance (ESG) oriented mutual funds in India using the Fama-French multi-factor model and examines the efficiency of classifying the funds based on their ESG scores and unique fund characteristics. With assets under management by Indian ESG-based funds having ballooned from \$331.4 million in 2020 to \$1.18 billion in 2024, reflecting a CAGR of well over 35%, the empirical evaluation of the performance of these funds assumes importance for investors, fund managers and policymakers. The paper analyses nine actively managed ESG mutual funds operating in India from April 2021 to March 2025, by employing the Fama-French multifactor model. The study uses India-specific Fama-French factors developed by IIM-Ahmedabad and ESG ratings of mutual funds from the CRISIL database for a deep analysis in tune with local market conditions. Results indicate that Fama-French factors strongly explain ESG mutual fund performance, with all factors proving statistically significant for the combined portfolio of ESG funds. Individual fund-wise analysis shows various sensitivities to factors, with three funds significant on all Fama-French factors and others showing selective responsiveness to factors. The novel contribution of the study is to evaluate classifier efficiency from the perspective of discriminatory and explanatory power. Using Chow tests and Fisher Z-tests, the study examines seven bases of classification: four classifiers based on ESG metrics (E, S, G, and composite ESG scores) and three based on unique fund characteristics (expense ratios, assets under management, and asset management company profitability). The results of the fixed effects panel data regression employed indicate that all seven classifiers prove to be efficient classifiers, with significant discriminatory power in distinguishing between patterns of fund performance, and all classifiers are efficient as determined by the explanatory power of the regression models. The identification of the efficiency of ESG scores-based and fund characteristics-based classifiers is valuable to fund managers in identifying stocks to be included in the portfolios of ESG mutual funds, and offers investors empirically grounded frameworks for ESG fund evaluations in the rapidly evolving Indian sustainable investment landscape.

Submission ID: 704

Track 08: Corporate Sustainability and Corporate  
Governance (IRCC 2025)

## Political Connections and Accounting Conservatism: The Moderating Role of Market Competition in Emerging Economies

*Kumari Pushplata and Abhijeet Chandra*

**Abstract:** This study explores the relationship between political connections and accounting conservatism among NSE-listed Indian firms from 2009 to 2022, emphasising how product market competition moderates this dynamic. Drawing from agency theory, the research hypothesises that politically connected firms are likely to exhibit lower levels of accounting conservatism due to reduced external pressures, preferential access to resources, and implicit regulatory leniency. Accounting conservatism is measured using the firm-year-based Khan and Watts (2009) C-score, while product market competition is captured using the Herfindahl-Hirschman Index (HHI). Employing Ordinary Least Squares (OLS), Two-Stage Least Squares (2SLS), and System GMM techniques, the analysis reveals a significant negative association between political connection and conservative financial reporting. Notably, this relationship is positively moderated by higher levels of product market competition, which acts as an external governance mechanism, mitigating managerial opportunism. The results are robust across alternative political connection proxies and sub-sample analyses of group-affiliated versus stand-alone firms. The findings contribute to the literature by demonstrating that in an emerging economy like India, political affiliations compromise financial transparency, but heightened competition can partially restore discipline. This research introduces product market competition as a novel moderating factor in the political connection–accounting conservatism relationship, with important implications for policymakers, investors, and regulators.

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Submission ID: 733

Track 08: Corporate Sustainability and Corporate  
Governance (IRCC 2025)

## Impact of ESG Disclosures on Crash Risk: Evidence from Mandatory ESG Regulations in India

*Santushti Gupta and Prasenjit Chakrabarti*

**Abstract:** Introduction: With the rising prominence of ESG (environmental, social, and governance) regulations across economies, the policy debate on the value relevance of the same has also been fuelled. The widely taken stance of market regulators on introducing such mandates is to make markets more transparent. India is one of the pioneers in bringing about sustainability mandates. In India, since 2012, the regulatory authority overseeing the financial markets, known as the Security and Exchange Board of India (SEBI), has initiated the Environmental, Social, and Governance (ESG) disclosure requirement

for certain listed entities. Over the years, SEBI has introduced five such mandates. The latest mandate, Business Responsibility and Sustainability Reporting (BRSR) came in 2021 and aims at broadening the scope of previous mandates. We formally investigate whether mandatory ESG reporting impacts the crash risk of the firms with the passage of these five regulatory events from 2012 to 2021. Methodology We investigate the impact of events under the study on the crash risk perceived by the shareholders of the firms that were mandated. To establish causality between the regulatory announcement and the crash risk of the mandated firms, we compare or match the treated firms (mandated firms) with the control firms (non-mandated firms) and attribute any significant differences between the crash risk of these firms to the regulatory intervention. We estimate the crash risk with the three proxies, NCSKEW, DUVOL, and COUNT. We employ propensity score matching (PSM) to construct the control group. The use of PSM allows us to compare the crash risk of the mandated firms to a set of non-mandated firms that are similar in all the observable aspects. This approach helps us attribute any noted impact on crash risk more accurately to the event itself rather than to the characteristics of the firms associated with crash risk. Shareholders might be inclined to afford differential attention to the formal disclosures by the treated firms owing to the materiality of ESG issues in certain industries and firms. Also, expected crash risk is more pronounced in an environment where managers are more prone to withhold bad news, and so materiality can have an impact on the information-hoarding behavior of managers. We then examine cross-sectional variations among polluting industries and innovative firms based on the argument of the materiality of ESG information. Results: For the events under the study, we observe an overall positive and significant crash risk for the treated firms, i.e., firms under the mandate. We interpret that the increased crash risk faced by the treated firms as compared to the control firms arises out of the competitive spillover of the unregulated matched peer firms. A competitive spillover, where the unregulated control firms increase their disclosures to keep themselves away from being evaluated in the same way as their mandated peer, will impose externalities on the treated firms, which comply with strict and specific mandates. In addition to this negative externality, the shareholders might also feel uncertain about future cash flows owing to increased litigation risks and potential financial liabilities under the heightened scrutiny of the regulator. Thus, we note that overall, with the passage of events, due to the negative externalities from competitive spillover and increased shareholder uncertainty, there is an increase in the crash risk perceived by the shareholders for the treated (mandated) firms relative to the control firms. In the cross-section of polluting industries and innovative firms, we find a decrease in the crash risk for the treated firms in polluting industries and innovative firms throughout the passage of five events. The results suggest that agency motives are the primary driving force of crash risk such that shareholder uncertainty and perceived crash risk is reduced for mandated firms as against non-mandated firms. Policy Implications: The burgeoning literature on crash risk largely talks about the determinants (managerial incentives) and consequences of the same. Mechanisms that can potentially impact and curb the opportunistic tendencies of managers as to bad news can thus serve to aid in policy making. As non-financial disclosures on ESG take a multidimensional stance on the environment, social, and governance information, such disclosures can potentially impact the crash risk perceived by the shareholders. The findings of our study carry significant implications for policy formulation. The findings suggest that implementing ESG mandates can serve as a powerful tool for

mitigating information asymmetry and lowering crash risk, provided that these mandates are tailored to the materiality of ESG information specific to various industries and firms.

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**Submission ID: 759**

**Track 08: Corporate Sustainability and  
Corporate Governance (IRCC 2025)**

## **Coconut Value Chain and Livelihood in Davao Region: The Role of Fairtrade**

*Gideon Balasingam, Deepthi Krishnan, Shobana S and Rebecca Anns*

**Abstract:** The coconut value chain in the Philippines' Davao region, contributes to 13.5% of the national coconut production. This study examines the roles of Fairtrade and Non- Fairtrade coconut producer organisations in production, post-production, and marketing of coconut and related products, using Supply Chain Analysis (SCA) integrated with the Sustainable Livelihoods Framework (SLF). Findings indicate that the Fairtrade certified producer organisations benefit from price premiums, and scientific and modern farming methods improves both financial and environmental results. In contrast, the Non-Fairtrade producer organisations encounter price volatility and rely on conventional farming methods. Both grapple with trader competition, by-product wastage, and losses due to pests. These challenges underscore the struggles of the coconut farmers in this region. The findings emphasise Fairtrade's contribution to promoting sustainable livelihoods and highlight the necessity for comprehensive systemic support to tackle persistent challenges within the coconut value chain. The recommendations focus on cooperative-led integration, gender-inclusive enterprises, and climate adaptation technologies to optimise supply chains and livelihoods.

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**Submission ID: 770**

**Track 08: Corporate Sustainability and Corporate  
Governance (IRCC 2025)**

## **Exploring Higher-Order Purpose (HOP) in Marketing: A Multi-Stakeholder Perspective**

*Ranjit Thind*

**Abstract:** “Law is to justice, as medicine is to health, as business is to \_\_\_\_\_” (Donaldson and Walsh, 2015, p. 181). Amid unprecedented polycrisis ranging from environmental degradation, rising inequality, and growing socio-political unrest, questions surrounding the purpose of the modern firm in today's society have become prominent in business and academic discourse (Business Roundtable, 2019; World Economic Forum, 2024; Mayer, 2024; Hooper and Gilding, 2025). Traditional organisational purpose, driven by shareholder primacy and short-term thinking is increasingly being questioned by consumers in favour of sustainable value creation for multiple active and non-active current and future stakeholders (Friedman, 1970; Freeman, 1984; Podnar and Golob, 2024; Walter et

al., 2024). Specifically, better governance and brand management that reflects a goal and duty-bound orientation, which extends beyond profit maximisation for the common good; a HOP as exhibited by firms such as Patagonia. Driven by the laws of nature and by testing the limits of natural systems, planetary boundaries, and the finite resources that support economies and societies necessitates a new innovative approach to business and marketing (Bansal et al., 2024). By tackling systemic wicked challenges, the organisation is able to shift from meaningless profit to meaningful profit. Despite this, there remains a lack of conceptual clarity, definitional precision, and validated metrics for understanding and measuring HOP (Rindova and Martins, 2023; Blocker, Cannon and Zhang, 2024; Fernandes, Guzmán and Mota, 2024). This study therefore addresses three research questions to connect the dots and make the invisible visible:

RQ1. What determines a HOP, and how is it conceptualised in its relationship to organisational and brand purpose? RQ2. What are the dimensions of HOP, and how can they be validated and reliably measured? RQ3. How does HOP influence organisational identity and multi-stakeholder perceptions?

A sequential mixed-method research design is employed, beginning with a comprehensive interdisciplinary literature review to develop a conceptual/theoretical model and identify HOP's key dimensions and items. Next, expert interviews via a Delphi study are used to internally validate the dimensions and items. Subsequent quantitative phases involve scale development through exploratory and confirmatory factor analyses to examine the effects of HOP on normative strategic constructs and stakeholder outcomes. The expected contribution of this research is multiple. First, it extends the incipient literature on organisational purpose, strategic brand management, and stakeholder marketing, as it conceptualises, informs, and defines the theoretical determinants and its effects on multiple stakeholders. Second, the clarification of theoretical ambiguities of the role of HOP helps to provide a deeper and more nuanced understanding of the interplay with other normative strategic concepts such as corporate mission, vision, values, and culture. Third, it operationalises HOP through turning abstract concepts into measurable observations through expert interviews and a validated empirically tested scale. Fourth, it provides strategic leaders such as brand directors and chief purpose officers practical tools for embedding HOP to authentically help build their brands beyond merely narrow financial measures.

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Submission ID: 799

Track 08: Corporate Sustainability and Corporate Governance (IRCC 2025)

## CAUSAL–EFFECTUAL LOGIC IN OPPORTUNITY RECOGNITION OF A SUSTAINABLE VENTURE SUNBIRD STRAWS

*Mantry Priyathee and Dr. Jayshree Patnaik*

**Abstract:** 1. Introduction The era marked by environmental destruction driven by unsustainable practices has led to increased attention towards sustainability from the inception of the Brundtland Report (1987). Adding to these challenges, emerging countries like India, where social disparities like



inequality still prevail, including less women's representation in the workforce, labour force participation rate among females is 32.8% and among males is 77.1% for 2024 (World Bank Group, 2023). Amidst this, a major question arises: how do entrepreneurs find and seize the opportunities which is a synergy of socio-environmental factors and also beneficial to the venture? The integration of sustainable innovation into early-stage venture creation has become a vital area of research. To find this, entrepreneurial opportunity processes have long been conceived through two different logics: causal, focusing on goal-directed planning and formal collaborations (Sarasvathy, 2001; Alvarez & Barney, 2007), and effectual, centering on means-directed experimentation and emergent collaborations (Read et al., 2009; Muñoz & Dimov, 2015). The opportunity recognition of a sustainable innovation acts as a solution to social and environmental changes, giving rise to a new type of entrepreneurial activity, which is sustainable entrepreneurship (SE) (Muñoz & Cohen, 2018). There has been a dearth in understanding of the discovery and development of sustainable-oriented opportunities by sustainable entrepreneurs, especially in the context of emerging countries like India (Dawa & Marks, 2023) This paper focuses on an integrated explanation of how founders accomplish sustainable opportunity recognition through entrepreneurial effectual and causal logic, through an in-depth analysis of a single case study of sustainable venture Sunbird Straws.

## 2. Literature Review

### 2.1 Opportunity Recognition

Entrepreneurs themselves exhibit vigilance and motivation for opportunities and can mobilize resources to act on them (Nguyen & Thi Thu Le, 2024). Entrepreneurial opportunity recognition has been conceptualized as a cognitive process by “connecting the dots”, relying on pattern recognition, prior knowledge, and alertness (Baron, 2006). In sustainability contexts, this becomes complex due to overlapping social, environmental, and economic considerations (Dean & McMullen, 2007).

### 2.2 Key Antecedents

#### I. Prior Knowledge & Experience:

Traditional entrepreneurial opportunities emerge from market shifts, whereas in sustainable contexts, familiarity with natural environments facilitates recognition of eco-friendly ventures, (Hanohov & Baldacchino, 2018).

#### II. Active Search:

Entrepreneurs systematically scan environments and networks to surface opportunities (Wang et al., 2024). Active search is to “engage in structured scanning of their environment and to pursue leads until a pattern emerges” (Baron, 2006).

#### III. Alertness:

Some possess a heightened alertness to “market disequilibria,” enabling them to discover opportunities (Kirzner, 2015). Baron (2006) argues alertness interacts with cognitive ability, particularly creativity and divergent thinking

### 2.3 Sustainable Entrepreneurship

Many founders lack the necessary “cognitive frames” to perceive value in overlooked social or ecological problems, resulting in a persistent “blind spot” for sustainability-oriented ventures (Farny & Binder, 2021). Despite the growing importance of sustainable entrepreneurship, empirical research on sustainable opportunity recognition remains limited (Terán-Yépez et al., 2020).

### 2.4 Causal and Effectual Logic

- **Causal Logic:** Structured, goal-driven planning (Sarasvathy, 2001).
- **Effectual Logic:** Means-driven experimentation and adaptive decision-making. Schaltegger and Wagner (2011) call for an “integrative” logic: entrepreneurs must engage in structured environmental scans of policy and ecological trends (causal) while maintaining sensitivities to emergent social needs and serendipitous insights (effectual) to uncover truly sustainable opportunities (Galkina & Jack, 2022). Successful sustainable founders maintain core causal networks alongside effectual ties, enabling them to both plan resource commitments and leverage unexpected contingencies when refining their opportunity (Galkina & Jack, 2022).

## 3. Objectives

### RO1: To uncover



how early-stage sustainable entrepreneurs integrate causal and effectual decision-making logics. RQ1: How do effectual and causal behaviours shape initial opportunity perceptions? RQ2: How do founders oscillate between these logics in recognizing opportunities?

4. Methodology An exploratory, qualitative single-case study approach was employed, deemed appropriate for “how” and “why” research questions (Yin, 2017). The selected case venture was founded in 2020 and focuses on converting agro-waste (fallen coconut leaflets) into biodegradable straws, addressing environmental pollution and rural unemployment. It employs over 100 women and emphasizes a triple bottom line. Data included semi-structured interviews with two co-founders, supplemented by internal documentation, press releases, CSR reports, and media appearances. Interviews focused on decision-making, motivations, and innovation processes. Thematic analysis followed Braun and Clarke’s (2006) framework. Key themes were extracted: (1) Active Search, (2) Alertness, (3) Prior Knowledge—mapped to Baron’s pattern recognition model and overlaid with causal–effectual logic indicators. 5. Results 5.1 Active Search The founder conducted deliberate environmental scanning (causal), triggered by a discussion on plastic waste. Structured experiments in a home kitchen (effectual) led to material innovation. External networks (universities, botany experts) were leveraged for validation. 5.2 Alertness Recognition of the natural curl of a coconut leaflet as a straw indicated alertness and heuristic pattern recognition. This serendipitous insight led to product ideation. 5.3 Prior Knowledge The founder’s prior entrepreneurial experience and early life exposure to poverty formed a symbolic schema rooted in social impact. The goal to empower rural women and reduce plastic waste emerged as an integration of effectual (means) and causal (end) reasoning. 6. Discussion Findings reveal a dynamic, hybrid use of decision logics. Causal logic helped define sustainability-oriented goals, while effectual logic enabled resource experimentation and adaptive learning. This interplay enhanced opportunity recognition in a highly uncertain environment. The founder’s cognitive framing (Baron, 2006) and alignment with triple-bottom-line values (Elkington & Rowlands, 1999) enabled the venture to blend innovation with social impact. 7. Conclusion This study demonstrates that sustainable opportunity recognition in entrepreneurial ventures requires a synergy of causal and effectual logic. The hybrid approach enabled the case venture to transform environmental waste into marketable, eco-friendly products while generating social value. This work contributes to theory by expanding Baron’s pattern recognition framework to include hybrid cognitive logics, and to practice by offering a replicable model for sustainability-driven innovation in emerging economies.

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## CRITICAL EVALUATION OF CSR REPORTING OF SELECTED FMCG COMPANIES OF INDIA

*Belur Baxi and Dhaval Kataria*

**Abstract:** Introduction: Corporate Social Responsibility (CSR) in India has become a strategic mandate, particularly in the FMCG sector, due to its expansive consumer base and daily social influence. Companies must allocate at least 2% of their net profits to CSR, institutionalizing social responsibility within corporate governance. FMCG firms often focus on health, hygiene, education, and sustainability, using CSR not only to serve communities but also to communicate ethical values and build stakeholder trust. Reporting mechanisms like NVGs and BRR enhance transparency and accountability by documenting measurable outcomes. This study is grounded in a conceptual framework that positions corporate communication as a strategic instrument for engaging a broad range of stakeholders beyond traditional marketing audiences. CSR reporting functions as a formalized mode of disclosure, embodying both legal mandates and ethical imperatives. In the Indian context, CSR reporting is institutionalized through Section 135 of the Companies Act, 2013, obligated eligible companies to report on their CSR activities. However, existing CSR reporting practices are often critiqued for their reliance on boilerplate language, lack of comparability, and absence of standardized metrics, which may undermine the authenticity and evaluative utility of disclosures. Corporate Social Responsibility (CSR) has emerged as a critical component of sustainable business practices, yet its implementation faces significant hurdles. Scholars have identified recurring obstacles, including opaque reporting mechanisms, weak community participation, insufficient NGO capabilities, and lax regulatory enforcement. These structural deficiencies undermine the potential of CSR initiatives to generate lasting societal and environmental benefits. Literature Review: Recent studies reveal that CSR reporting in India's FMCG sector is often superficial and driven by compliance rather than genuine social commitment. Imroze and Jha (2023) found companies frequently report on hygiene and environment but fail to present meaningful impact data. Nanavati and Dave (2024) observed that while some firms disclose detailed ESG practices, many stick to minimal requirements, offering limited transparency. This inconsistency weakens stakeholder trust and masks the true effectiveness of CSR activities, highlighting a critical need for standardized, outcome-focused reporting frameworks. Many FMCG companies in India still fall short when it comes to providing meaningful information in their CSR reports. Du et al. (2014) found that while companies talk about broad initiatives, they rarely give clear data or measurable results, making the reports less useful. Similarly, ISO 26000 guidelines emphasize the need for transparency and stakeholder involvement, which are often missing. KPMG (2024) reported that only 35% of Indian companies involve stakeholders in assessing the real impact of CSR efforts. This shows that stakeholder expectations are often overlooked or insufficiently addressed. Objectives: Corporate Social Responsibility (CSR) has become increasingly important for Indian FMCG companies

in the last fifty years, not only as a legal requirement under the Companies Act, 2013, but also as a way to build trust and reputation among stakeholders. However, the real issue lies in effectively sharing information about CSR activities among stakeholders. FMCG companies are expected to report their CSR work in a clear, honest, and relevant manner. However, past studies and company reports show inconsistencies, with some firms providing only basic information to meet legal norms, while others lack proper communication with stakeholders. This research aims to critically examine how selected Indian FMCG firms report their CSR activities, focusing on clarity, transparency, and responsiveness of their communication towards stakeholders. The goal is to improve CSR communication in the sector.

**Research Questions**

1. How clear and transparent are the CSR reports of selected Indian FMCG companies? – To explore how detailed, understandable, and trustworthy the CSR disclosures are.
2. In what ways do these companies share their CSR activities with various stakeholders? – To understand the methods and tools used for communicating CSR efforts.
3. What common trends and missing elements can be identified in their CSR reporting? – To identify where improvements are needed and suggest ways to make reporting more meaningful and stakeholder-friendly.

**Methodology:** This study uses a qualitative content analysis approach to evaluate the depth, clarity, transparency, and stakeholder responsiveness of CSR disclosures. It interprets textual data from CSR and sustainability reports to identify patterns, themes, and levels of disclosure. The research focuses on selected Indian FMCG companies with the highest reported turnover over the past five financial years (FY 2019-2023), using data from financial databases and industry rankings. This purposive sampling ensures that only financially significant and publicly visible companies are studied, where CSR activities are likely to be under greater scrutiny. Data is collected from publicly available sources accessed through official company websites, stock exchange filings, and databases such as CSRBox and MCA21 which includes: CSR reports, Annual reports, Business Responsibility and Sustainability Reports (BRSR) and Standalone sustainability disclosures. The study will examine CSR reporting practices over a five-year period (2019-2023) using both standalone CSR disclosures and integrated sustainability sections within annual reports. Thematic content analysis will be used to identify recurring themes and patterns in the reports, helping to understand how companies frame their CSR efforts and how well they align with transparency and stakeholder communication standards (Khan, N. J., & Mohd Ali, H., 2023).

**Findings and Discussions:** The research reveals gaps in CSR reporting in Indian FMCG companies, highlighting gaps in clarity, consistency, and stakeholder focus. It also reveals that many companies report CSR only to meet legal requirements and rarely discuss real impact. The findings can help policymakers like the Ministry of Corporate Affairs and SEBI improve reporting guidelines by promoting standard frameworks for Indian companies and making CSR reports more transparent and useful for the public. The study also offers practical suggestions for FMCG companies, covering reporting beyond basic compliance and sharing more meaningful information about their CSR efforts, community engagement, ethical practices, and overall impact on society. New reporting practices could improve their reputation and show genuine responsibility.

**Conclusion** This study critically evaluates the CSR reporting practices of major Indian FMCG companies and finds a need for more transparent, stakeholder-responsive, and impact-driven disclosures. It contributes to academic discourse on corporate communication, provides actionable insights for policy reform, and offers a roadmap for firms to enhance their CSR reporting

practices. Similar conclusions drawn by Khan and Ali (2023) and Imroze and Jha (2023) confirm that India's CSR ecosystem must evolve from a legal obligation to a tool for responsible engagement and long-term accountability.

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Submission ID: 895

Track 08: Corporate Sustainability and Corporate Governance (IRCC 2025)

## Examining the impact of SDG-driven sustainability initiatives on financial performance in India's manufacturing sector

*Nandhini Priya Natarajan and Dr. Thillai Rajan A*

**Abstract:** Purpose of the study: Corporate sustainability is widely seen as a strategic tool for long-term value creation, yet a significant gap persists globally and this gap is especially pronounced at the firm level in emerging economies like India. This study addresses the lack of empirical evidence on how sustainability practices affect financial performance within India's manufacturing sector, a key driver of the country's economic growth and Sustainable Development Goal (SDG) progress. With the introduction of the mandatory Business Responsibility and Sustainability Report (BRSR) framework from FY23, there is an urgent need to understand the financial impact of SDG practices from such disclosures. Methodology: This study focuses on manufacturing firms listed on the Nifty India Manufacturing Index, analyzing the top 13 companies over two years (FY23–FY24). It examines five SDG-aligned operational areas: Waste Management & Urban Development (SDGs 6, 11), Renewable Energy (SDG 7), Sustainable Industry (SDG 9), Circular Economy & Climate Action (SDGs 12, 13), and Sustainable Finance (SDG 17), covering seven relevant SDGs. 23 UN-defined SDG indicators-related statements were extracted from BRSR reports manually by authors using NVivo and coded on a 0–3 scale with acceptable Cronbach's alpha score of 0.72 for the theme-wise codes and cross-verified by two industry-academia Circular Economy experts. The study applies panel regression to assess relationships between SDG implementations and financial outcomes measured by Return on Assets (ROA). Key findings: The regression analysis reveals that among the five sustainability themes, Theme 4 (Circular Economy and Climate Change, aligned with SDGs 12 and 13) and Theme 2 (Renewable Energy, aligned with SDG 7) exhibit strong positive associations with financial performance, as measured by ROA. In contrast, other themes, such as Theme 1 (Waste Management & Urban development) and Theme 5 (Sustainable Finance), demonstrate negative relationships with ROA. Consistent with prior studies, firm size, age, and leverage significantly affect ROA. Larger and older firms tend to show lower ROA, possibly due to inefficiencies or reduced agility. Higher leverage also correlates negatively with profitability, underscoring the need to control for firm characteristics in sustainability–performance analysis. Implications: This study contributes to the evolving discourse on the financial implications of SDG adoption by firms in India's emerging markets. While the original SDG indicators are designed for national or sectoral contexts, this research adapts them for corporate-level analysis, with appropriate acknowledgment of such modifications. By linking firm-level

sustainability practices with financial performance, the study provides a structured framework for identifying gaps, evaluating management efficiency, and guiding strategic decisions. The findings reinforce key theoretical perspectives, including agency, legitimacy, stakeholder, and resource-based views. Practically, the insights are valuable for investors prioritizing sustainability, firms pursuing long-term competitive advantage through circular economy strategies, and policymakers seeking to strengthen sustainability reporting and SDG integration at the enterprise level. Further work: As an extension, this study plans to collect Business Responsibility and Sustainability Reports (BRSR) for all companies listed in the Nifty India Manufacturing Index as of January 31, 2025. This broader dataset will enable a more comprehensive analysis of the relationship between SDG-aligned sustainability practices and financial performance across the Indian manufacturing sector.

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Submission ID: 910

Track 08: Corporate Sustainability and Corporate Governance (IRCC 2025)

## Evaluating Sustainability Disclosures in India's Fashion and Apparel Industry: A Content Analysis of Mandatory BRSR Reports

*Hardika Bhagat*

**Abstract:** Abstract The environment is particularly susceptible to degradation owing to the destruction of the apparel industry in India, while the water-intensive nature of production, textile waste, and the precarious state of labor also attract serious criticism. With sustainability rising to the top of the corporate accountability agendas globally, India made a landmark change by instituting a mandatory ESG disclosure regime under the Business Responsibility and Sustainability Reporting (BRSR) framework. The Securities and Exchange Board of India (SEBI) requires the top 1,000 listed companies to disclose ESG data in a structured manner following the BRSR format, taking effect from FY 2021, making India one of the first countries in the Global South to institute such a requirement (SEBI, 2021). However, the question remains whether such disclosures are the very essence of environmental and social engagement or mere tools of reputational compliance. An attempt is made to view critically the content, quality, and depth of BRSR disclosures of ten Indian fashion-and-apparel companies under the new regime of reporting. It is to find out if these disclosures mandated by law indicate that there is a transformation in the governance of ESG, or are they just a formalistic response to regulatory compliance. The study undertakes a comparative content analysis following both qualitative and quantitative dimensions, the model having been borrowed from the tradition of research in ESG reporting (Boiral, 2013; Hahn & Kühnen, 2013). Context Historically, worldwide, under the old paradigms, limited transparency has been present in India with respect to labor practices or supply chain emissions or materials. Fashion value chains are lengthy, opaque, and manufactured largely through subcontracts and with informal labor- all of which constitute a nightmare for ESG monitoring (Niinimäki et al., 2020). The introduction of BRSR served as a regulatory intervention between the discontinuation of the older BRR format and the inclusion of advanced ESG metrics and stakeholder



engagement concepts aligned to India's NGRBC (SEBI, 2021). The BRSR, by design, is a detailed one in three parts comprising general, process, and principle-wise disclosures; thus, turning ESG reporting from a voluntary narrative into an obligatory framework. Methodology A mixed-method content analysis of BRSR reports submitted by ten Indian listed fashion and apparel companies like Aditya Birla Fashion & Retail, Arvind Ltd., Raymond Ltd., TCNS Clothing, Page Industries, Trent Ltd., Vedant Fashions, Kewal Kiran Clothing, Monte Carlo Fashions, and Gokaldas Exports is used in this study. According to SEBI's eligibility requirements for required BRSR disclosure, these businesses are among the top 1,000 listed entities by market capitalization. The sources of the BRSR reports for FY 2022–2023 were stock exchange disclosures, SEBI's repository, and company websites. A coding rubric that was in line with the three sections of the BRSR - Section A (General Disclosures), Section B (Management & Process Disclosures), and Section C (Principle-wise Performance)—served as the guide for the content analysis. The study specifically concentrated on Principles 3 (employee well-being), 5 (value chain responsibility), and 6 (environmental sustainability), all of which are essential for evaluating the ESG impact of the fashion industry. Energy use, water withdrawal, greenhouse gas emissions, gender diversity, training hours, waste production, and the proportion of recycled materials utilized are among the quantitative indicators that were looked at. The study also assesses qualitative disclosures pertaining to vendor engagement, human rights due diligence, supply chain traceability, materiality assessment procedures, and stakeholder consultation. According to KPMG (2021), these components serve as the cornerstone for assessing whether businesses are making comprehensive sustainability transitions or just checking boxes. Descriptive statistics were created in Excel and RStudio to measure frequency and trends across companies in order to guarantee analytical rigor. In order to benchmark India's progress, triangulation was accomplished by comparing BRSR data with international frameworks (such as GRI and CSRD) and third-party ESG ratings (such as Sustainalytics, MSCI India). In accordance with best practices in ESG content analysis, 20% of the sample underwent inter-coder reliability checks to guarantee consistency in the application of the rubric (Hahn & Kühnen, 2013). Findings The quality and depth of disclosure vary significantly, according to preliminary findings. Bigger companies like Aditya Birla Fashion and Arvind Ltd. provided quantitative data that was comparatively more solid and included workforce and environmental metrics that were in line with the SDGs. Value chain disclosures, including those pertaining to waste traceability, subcontractor governance, and ethical sourcing, are still scarce, though. Although the BRSR framework recommends formal stakeholder consultation protocols and third-party assurance, the majority of businesses do not have these (SEBI & CII, 2023). Compared to social or governance disclosures, environmental disclosures (Principle 6) seem to be more consistent. Despite the importance of circularity and textile waste to the industry, the majority of businesses only report on their energy and water use. In contrast to proactive inclusion or gender equity, social disclosures (Principle 3) typically concentrate on adhering to legal requirements. One of the most underreported elements of supply chain responsibility is Principle 5. These patterns corroborate more general criticisms of ESG disclosure in India, which frequently draw attention to the discrepancy between material action and performative compliance (Boiral, 2013). KPMG (2021) warns that disclosures may not be sufficient to drive actual ESG performance if sectoral granularity, assurance mechanisms, and materiality determination are not standardized. Discussion This



study shows that even though BRSR has made the Indian fashion industry more transparent, there are still a lot of gaps in standard interpretation, assurance, and supply chain involvement. Even though ESG reporting in India is developing, it is still in its infancy, as evidenced by the observed discrepancies in disclosure practices. The framework's ability to foster true accountability may be hampered by its over-reliance on internal self-reporting, lack of sector-specific guidance, and poor integration of external stakeholders. Based on the KPMG finding that "what gets measured gets managed" (KPMG, 2021), this study makes the case that in order for BRSR to develop into a transformative accountability tool, SEBI and affiliated organizations need to advocate for: (a) sector-specific BRSR supplements (b) increased focus on value chain data; (c) standardized procedures for engaging stakeholders; and (d) third-party verification systems that are required. Conclusion All things considered, the BRSR represents a positive step in integrating ESG principles into Indian business culture, although its effects on the fashion and clothing industry are still uneven and in their infancy. In order to transition from disclosure to systemic sustainability transformation, this study emphasizes the necessity of sectoral customization, institutional strengthening, and improved monitoring. This study provides information on how ESG governance is developing in one of India's most significant and intricate industries for regulators, investors, and sustainability practitioners.

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Submission ID: 919

Track 08: Corporate Sustainability and Corporate Governance (IRCC 2025)

## Board Structure and Non-Marketing Strategic Choices in Indian Family Businesses: Insights from the Information Technology Sector

*Abhisek Verma (IIMA).*

**Abstract:** Family firms (FFs) have historically used corporate philanthropy to reinforce family social values. In emerging markets such as India, unique cultural norms, spiritual beliefs, religious traditions, and local practices shape these activities differently than in developed economies. Indian government policy on corporate social responsibility (CSR), notably the Companies Act 2013, has further encouraged family firms to invest in skills development alongside charitable giving. While existing literature partially addresses board structure in family firms, its impact on corporate philanthropy remains underexplored in emerging markets. This paper uses socio-emotional wealth theory and regression analysis to examine how board composition influences CSR activities among Indian family firms (IFFs) between 2017 and 2023. The study offers practical insights for executives and policymakers to understand patterns of CSR engagement in high-risk emerging market contexts.

**Keywords:** Family Firms (FF), Corporate Social Responsibility (CSR), Corporate Philanthropy, Emerging Market, Family Values

**Introduction** Family firms (FFs) have a long tradition of allocating a portion of profits to social welfare initiatives worldwide (Cruz et al., 2014; Mariani et al., 2023; Hauck et al., 2015). However, research on FF philanthropy has largely focused on experiences in the US and Western Europe (Chang et al., 2022;

Kammerlander, 2022; Giacomini & Jones, 2021; Combs et al., 2020; Abeysekera et al., 2020). While studies address FF competitive advantage, they often overlook the specific dynamics in emerging markets such as Asia, Latin America, and Eastern Europe (Porter, 2002; Ararat et al., 2018; Sahasranamam et al., 2019; Bhatnagar et al., 2019; Teixeira et al., 2020; Berrone et al., 2020; Moriana et al., 2020; Cha et al., 2021; Miroshnychenko et al., 2021; Fries et al., 2021; Ferasso et al., 2022; Mariani et al., 2023).

India, as a rapidly growing emerging market in South Asia (Kumar et al., 2020; Ararat et al., 2021; Kandade et al., 2021; Chatterjee & Bhattacharjee, 2021; Younas et al., 2021; Srivastava & Bhatia, 2022), offers an important context for examining this question. This paper assesses how the board structure of Indian family firms (IFFs) influences corporate philanthropic activities (Bhatnagar et al., 2020; Farhan et al., 2020; Kumar et al., 2022).

**Objective** This paper examines the composition of IFF boards and its impact on corporate philanthropy in India's emerging market context. Economic reforms since 1991 have enabled Indian businesses to expand through collaboration, acquisition, and entry into new sectors such as pharmaceuticals, electronics, health and insurance, and information technology (Kumar et al., 2020; Noronha et al., 2020; Anand et al., 2021). As boards incorporate new family members navigating these evolving industries, it becomes important to understand whether they continue traditional profit-sharing values or increasingly view CSR as an investment in workforce skills.

While existing research discusses FF board composition and philanthropy largely from US and Western European perspectives, this study offers fresh insights from India. Prior work on emerging markets often takes a cross-national comparative approach, leaving a gap in country-specific understanding. This paper contributes by offering quantitative evidence on the link between IFF board structure and philanthropic activities in India.

Family firms in India have traditionally fulfilled social responsibilities through religious donations and infrastructure development to support health and education for underprivileged communities. Such profit-sharing practices reflect family values and their self-image as value-based business households. However, these donations have also included contributions to civic bodies that may not directly align with family traditions.

Recognizing the need to institutionalize corporate giving, the Government of India enacted the Companies Act 2013, mandating companies meeting certain thresholds to spend at least 2% of net profits on CSR initiatives ([www.csr.gov.in](http://www.csr.gov.in)). This study focuses on the period 2017–2023, building on prior research documenting FF activities up to 2016. Data for the pandemic years 2020–2021 are treated as constant.

**Design/Methodology/Approach** This study analyzes annual reports from 2017 to 2023 for IFFs listed on the National Stock Exchange of India (NSEI) to assess the share of profits allocated to philanthropy and workforce skill development. Socio-emotional wealth theory is used to understand family values (Sánchez et al., 2021; Romero et al., 2020; Razzak et al., 2020), while stewardship and stakeholder theories explain the relationship between board structure and philanthropic engagement (Lin et al., 2021; Löhde et al., 2021; Afonso et al., 2021; Medina-Craven et al., 2021; Azizi et al., 2022; Spielmann et al.,

2022). Regression analysis is employed to test the strength of the relationship between board composition and profit-sharing mechanisms.

Research Questions a) What motivates the next generation of IFF board members to continue their families' traditions of corporate charity? b) Do new board members align CSR activities with family values? c) How does board structure shape philanthropic strategies in high-risk emerging markets?

Hypotheses H1: Board structure in IFFs does not consider corporate philanthropy as a barrier to profit maximization. H2: IFF boards align CSR activities with family values. H3: Family businesses in India perceive emerging markets as high-risk environments, motivating profit-sharing initiatives.

Findings The study supports all three hypotheses. Board structures in IFFs endorse corporate philanthropic activities, with members viewing CSR as an expression of family values and traditions. CSR is also used strategically to build competitive advantage and improve the firm's image in high-risk markets. Increasingly, IFFs allocate profits to innovation and skill development initiatives that support both nonprofit goals and government programs under the National Policy for Skill Development & Entrepreneurship (NPSDE), 2015 ([www.msde.gov.in](http://www.msde.gov.in)).

Scope and Limitations This research examines the impact of IFF board composition on family philanthropic activities, highlighting how family businesses balance traditional profit-sharing with investments in workforce development. Family firms and values differ significantly across contexts, with India's FFs often governed by immediate family members and relatively few independent directors. This study is limited to the analysis of 2% profit distribution for CSR and skill development initiatives in India.

Importance and Managerial Implications Family firms in India do not merely participate in CSR—they use it strategically to reinforce family identity and gain competitive advantage. Understanding board-level motivations and decisions is critical for managers and policymakers seeking to promote effective CSR practices. This research provides insights into IFFs' allocation of profits toward philanthropic activities and workforce development, offering lessons for sustaining competitive family businesses in an emerging market context.

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Submission ID: 928

Track 08: Corporate Sustainability and Corporate Governance (IRCC 2025)

## Tokenism and Gender-Lens Investing: The Ripple Effect of Regulations

*Debarati Basu, Shreyashi Chakraborty and Sushobhan Paul*

**Abstract:** Regulations requiring women directors are often met with tokenism. Many firms in India responded to such mandates by appointing female family members to comply and seek legitimacy without any real benefit of diversity. How do investors react to such firm behavior? Can the mandate

aimed at greater gender inclusion result in unexpected investor backlash? A dataset of 231 IPOs across 12 years reveals that tokenism leads investors, especially informed investors, to react negatively to gender diversity in top management. Investors are sensitive to lackadaisical regulatory responses and inefficiently prescribed regulations, which may have negative repercussions in the gender context. This negative ripple effect on unregulated firms raises significant questions about the value of such regulations on equity and inclusion. Understanding how firms, regulators, and investors behave with respect to gender diversity informs capital-raising decisions, policy, and society.

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Submission ID: 958

Track 08: Corporate Sustainability and Corporate Governance (IRCC 2025)

## Workplace Advantage of Inclusion of People with Disabilities

*Neha Kumari and Bhairab Chandra Patra*

**Abstract:** The aim of this research is to find the important factors responsible for enabling people with disabilities (PWD) in the labour market, which is beneficial for both the disabled and the companies. Subsequently, this study identifies the cause-and-effect relation between the factors and extends it by incorporating fuzzy logic to handle uncertainties and vagueness in the decision process. This allows for a more in-depth examination of the variables affecting the employment of PWD. According to the findings, embracing diversity and inclusivity helps businesses achieve a competitive edge and improve their brand reputation. Businesses that embrace disability inclusion gain from a more varied and engaged workforce and a more inclusive and equitable society. To the best of the authors' knowledge, limited researchers have used the fuzzy DEMATEL methodology in disability studies, and this study is the first to attempt to use the technique of fuzzy DEMATEL in disability studies, which adds to the study's novelty.

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Submission ID: 978

Track 08: Corporate Sustainability and Corporate  
Governance (IRCC 2025)

## Corporate Sustainability Implementation in the Asian Automotive Industry: An Analysis of Sustainability Reports

*Dolendra Paudel*

**Abstract:** This study examines corporate sustainability implementation in leading Asian automobile firms through in-depth scrutiny of sustainability reporting frameworks, environmental performance indicators, and governance structures. Adopting content analysis research design, this research analyzed 18 sustainability reports of six leading companies (Toyota, Nissan, Honda, BYD, Geely, and Hyundai) for the period 2022-2024, supplemented with regulatory filings and third-party ESG ratings. This study reveals high heterogeneity of sustainability maturity across Asian markets. Japanese and South Korean producers demonstrate higher consistency of global reporting standards (GRI, TCFD, SASB) with governance transparency scores of 4.37-4.57, while Chinese producers have significantly lower scores (2.90-3.17). Conversely, Chinese firms have more ambitious environmental targets, with BYD achieving 65% utilization of renewable energy versus 19-28% for Japanese firms and carbon neutrality targets by 2030 vs. 2050 for Japanese firms. 156 unique implementation challenges are identified by the research, and supply chain complexity (100% incidence, 4.2 severity score) and technology transition costs (83% incidence, 4.0 severity score) are major roadblocks that require industry-wide collaboration. Five-year cumulative financial requirements for sustainable transformation are put at \$31.1 billion. These findings provide insights into divergent evolutionary paths of sustainability adoption in institutional contexts, suggesting that technological advancement can precede governance maturation in developing economies. The research contributes to corporate sustainability literature by demonstrating how environmental performance and governance transparency can develop simultaneously, particularly in rapidly industrializing markets with conducive policy settings.

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Submission ID: 1052

Track 08: Corporate Sustainability and Corporate  
Governance (IRCC 2025)

## Institutionalization of Corporate Social Responsibility in India – Analyzing Vulnerabilities Due to Coercion Mechanism

*Dinesh Gupta, Sanjay Kumar, Santosh Kumar and Sarvesh Kumar*

**Abstract:** Corporate Social Responsibility (CSR) has evolved from voluntary non-essential activity to one of the core corporate governance activity to the institutions worldwide. Worldwide, CSR has been widespread institutionalized in multinational corporations for various reasons. In the Indian context,

CSR has been mandated by law resulting in its institutionalization across the economy. Despite its long history and current legal mandate in India, it faces significant challenges like justifying CSR from a business perspective, deviating from its impacts on the communities it aims to benefit. The inadequacy of CSR's institutionalization in addressing long-term social vulnerabilities, along with questions about the sincerity, motivations, and ethical basis of CSR continue to raise concerns about its integrity. This paper introduces a social mechanism-based framework that identifies four mechanisms—discourse, mimesis, normative learning, and coercion—that contribute to the institutionalization of CSR. A two-year study on CSR practices within Indian listed companies is conducted to examine the CSR institutionalization. The study found that organizations adopting CSR voluntarily, driven by intrinsic values, are more likely to integrate CSR authentically. However, organizations using ‘Coercion’ social mechanisms, while ensuring immediate compliance, undermines the authentic institutionalization of CSR.

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Submission ID: 1149

Track 08: Corporate Sustainability and Corporate Governance (IRCC 2025)

## Analytical sustainability assessment through financial metrics to uncover potential improvement opportunities

*Lokendra Sharma and Ushasi Sengupta*

**Abstract:** Sustainability is the most important proposition in the strategy of the company, which transcends sectors and geographies. Its significance is particularly pronounced in process and manufacturing industries, where operations are intrinsically linked to carbon emissions, chemical waste, and other environmental impacts. Moreover, each process/ manufacturing company is unique and complex in terms of its operations, resources, geography, statutory requirements, product portfolio etc. So, to analyze sustainability efforts (how much sustainability can be improved), of a particular company in comparison to other companies, there is a requirement of sustainability indexing. And indexing, in essence, is giving a number to subjective observations i.e., converting qualitative assessment to quantitative assessment. This is what various global sustainability rating agencies are doing. Though it offers ample benefits in understanding sustainability for a particular company, it has an inherent limitation of subjectivity. For instance, a sustainability initiative taken by a process company located in the Middle East can't be compared with a sustainability initiative taken by another process company located in Europe or India. Thus, we have two opposing objectives- while we want to assess a particular company and evaluate their standing in comparison to other companies (peer benchmarking) but the ratings provided are primarily subjective while assessing their sustainability efforts. Thus, to resolve this sustainability indexing conundrum, we are exploring assessment in the amalgamation of financial analysis to reduce the subjectivity as much as possible, as financial metrics are essentially numbers and



numbers can be compared with each other. For instance, the revenue of the process company located in the Middle East can be compared with the revenue of another process company located in France or India, as there is no subjectivity in the revenue figure. This paper covers important aspect of sustainability for a process company. Then deep dived into various global sustainability indexes, and their limitations. We then elaborated how to augment the Sustainability assessment with financial analysis using regression and derive sustainability improvement opportunity. Lastly, we established the conclusion with our framework through a case study of one of the prominent process chemical companies.

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Submission ID: 1212

Track 08: Corporate Sustainability and Corporate Governance (IRCC 2025)

## FINANCIAL FORECASTING THROUGH CORPORATE SOCIAL RESPONSIBILITY: AN INTERPRETABLE MACHINE LEARNING APPROACH

*Suha Bilquis, Solmaz Husain, Hina Siddiqui and Saib Fakhar*

**Abstract:** Corporate social responsibility (CSR) has become an integral part of corporate strategy, yet its effect on corporate financial performance (CFP) remains contentious. Much of the existing research relies on traditional statistical approaches, which tend to miss the intricate, nonlinear dynamics between CSR and CFP. This study re-examines the link between CSR and CFP by assessing how well CSR predicts financial performance and by identifying which CSR dimensions most significantly influence financial outcomes, using interpretable machine learning techniques—specifically Shapley Additive Explanations (SHAP). Using data of NSE 200 Indian firms between 2014 and 2024, the study finds that CSR does affect CFP, but its influence is weaker compared to factors such as firm-specific characteristics, ownership patterns, and board structure. Among the CSR components, governance shows the most substantial effect, positively influencing market valuation but negatively impacting profitability. These insights question the assumption that strong CSR always leads to better financial performance and highlight the importance of understanding CSR’s nuanced role alongside other organizational and financial drivers.

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Submission ID: 1218

Track 08: Corporate Sustainability and Corporate  
Governance (IRCC 2025)

## Impact of Fintech on Clean Energy (SDG 7) and Global Partnerships (SDG 17)

*Priya Choudhary and M. Thenmozhi*

**Abstract:** The emerging growth of fintech plays a substantial role in the arena of sustainability. Governments and policymakers are inquisitive to comprehend its role in attaining long-term economic, environmental and energy growth. This study adopts a novel research perspective that examines the influence of fintech on affordable and clean energy (SDG 7) and global partnership (SDG 17) across 67 countries from 2011 to 2021. By using the fixed effect model, our study finds that increasing growth of fintech enhances affordable and clean energy (SDG 7) and supports international collaborations (SDG 17). We find that fintech significantly supports affordable and clean energy (SDG 7), particularly in countries with higher financial market growth, developed financial institutions, greater economic readiness and more pronounced effect is observed in developing economies and higher-income countries. Conversely, fintech fosters global collaboration (SDG 17), especially benefiting countries with less developed financial institutions, lower economic readiness and particularly in countries with civil law and lower- and middle-income economies. These insights help policy implementation in specific country contexts, ultimately enhancing the scalability and impact of fintech-driven solutions for clean energy and global partnership.

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Submission ID: 1255

Track 08: Corporate Sustainability and Corporate  
Governance (IRCC 2025)

## Developing a Taxonomy of Circular Business Model Innovations in Healthcare

*Jacopo Parma, Myriam Clodt, Duygu Keskin and Vikrant Sihag*

**Abstract:** Introduction Healthcare systems globally face an urgent need to transition toward sustainability. Healthcare plays a critical role in safeguarding human health, yet paradoxically, it also contributes significantly to environmental degradation, a key determinant of public health. The sector is responsible for approximately 4.4% to 5% of global greenhouse gas emissions, placing it among the top emitters worldwide. In several countries, healthcare accounts for up to 10% of national emissions, underscoring the systemic nature of its environmental footprint (Watts et al., 2021; Pichler et al., 2019). Beyond carbon emissions, healthcare systems generate vast amounts of waste, including hazardous materials and single-use products, and consume large quantities of energy, water, and raw materials through complex global supply chains. A single primary care consultation can generate nearly 5 kg of CO<sub>2</sub>-equivalent (Forster et al., 2021), and procedures such as cataract surgery or dialysis can result in hundreds to thousands of kilograms of emissions per patient per year (Sherman et al., 2021).

Furthermore, significant emissions originate not only from medical treatments but also from mobility (patients and staff), heating, pharmaceuticals, and medical equipment (Forster et al., 2021; Rizan et al., 2020). To advance this agenda, innovations in business models are essential. Business models articulate how organizations create, deliver, and capture value, and their innovation is seen as a pivotal mechanism for systemic change. Within the context of CE, Circular Business Model Innovations (CBMIs) are emerging as promising frameworks for aligning economic performance with environmental and social value. These innovations seek to slow, narrow, and close resource loops, reducing virgin material input and minimizing waste and emissions throughout organizational ecosystems (Bocken et al., 2016; Geissdoerfer et al., 2018). In heavily regulated, high-stakes sectors like healthcare, CBMIs must also accommodate stringent requirements related to hygiene, safety, and public procurement. The potential economic and environmental benefits of sustainability innovations like CBMIs are significant. It is well disseminated that business model innovation is an essential bottom-up engine that can stimulate the healthcare companies to accelerate the transition to a circular economy (Lüdeke-Freund et al., 2019). The private sector is a vital part of the healthcare ecosystem, complementing public healthcare systems by providing additional capacity, innovation, and investment. It often plays a pivotal role in scaling up new technologies, improving service delivery, and introducing efficiency-enhancing practices. Despite their growing relevance, the literature on CBMIs in healthcare remains fragmented and underdeveloped. Existing studies tend to be conceptual or narrowly scoped, often lacking integration with established circularity metrics or sustainability frameworks (e.g., Lüdeke-Freund et al., 2019; Pieroni et al., 2020; Smol et al., 2024). In particular, there is a notable absence of systematized knowledge that links CBMIs with both the 10R framework (refuse, rethink, reduce, reuse, repair, refurbish, remanufacture, repurpose, recycle, recover) (Ciano et al., 2025; Skärin et al., 2022) and the Triple Bottom Line (TBL) dimensions—economic, environmental, and social sustainability (Velenturf & Purnell, 2021). Bridging this gap is crucial, as it enables a more holistic understanding of how circular business model innovations contribute not only to resource efficiency and waste minimization but also to broader sustainability goals. Finally, this structured mapping provides a basis for understanding the extent to which the existing CBMI literature supports the full spectrum of circular economy strategies and highlights areas for further research and development. Literature Review Circular Economy (CE) discourse has evolved significantly, but its application in healthcare has unique challenges and implications. Prior studies (e.g., Hobson & Lynch, 2016; Jaeger-Erben et al., 2021) have critiqued CE's alignment with ecological modernization, warning that economic and environmental goals often overshadow social dimensions. Acknowledging this, our research emphasizes a more holistic approach that integrates the TBL framework—not only capturing environmental and economic gains but also examining behavioral dimensions, such as stakeholder engagement, organizational culture, and adoption practices. Moreover, the 10R framework provides a nuanced lens for understanding resource management strategies. While widely cited in CE literature, its application in healthcare remains underexplored. Although the 10R framework is widely referenced in mainstream circular economy literature, its application in healthcare settings remains underexplored. For instance, the ESCH-R project notes that the academic literature on circular economy in the healthcare sector is still nascent, with significant gaps in comprehensive frameworks, interdisciplinary approaches, and empirical data,

particularly regarding the practical deployment of 10R interventions (Huijben et al., 2025). Our research bridges this gap by explicitly mapping existing CBMIs in healthcare against the 10R framework to assess the level of circularity achieved and trade-offs involved.

**Objectives** This paper addresses the critical gap in CBMI research by proposing a theoretically grounded and empirically validated taxonomy of Circular Business Model Innovations in the healthcare sector. The taxonomy will integrate:

- The 10R strategies, which provide a hierarchy of circularity measures from resource prevention to material recovery;
- The Triple Bottom Line framework, which evaluates impacts across environmental, economic, and social domains;
- The roles of stakeholders in CBMI implementation, including hospitals, suppliers, policy-makers, and patients.

High-complexity, high-stakes service systems—such as healthcare networks—are characterized by interdependent actors, dynamic decision-making, institutional heterogeneity, and high regulatory pressure, where outcomes have significant human, societal, and legal consequences (Chandler & Vargo, 2011). In these systems, complexity stems from the coordination of multiple stakeholders across public and private sectors, involving different priorities, data silos, and performance metrics (Geissdoerfer et al., 2018). Unlike product-based systems, where firms may exert tighter control over processes and materials, service systems like hospitals are embedded in institutional frameworks with fragmented ownership and unclear responsibility over circular investments and risks (Lüdeke-Freund et al., 2019; Bocken et al., 2014). As a result, the current CBMI literature, which largely focuses on discrete firm-level innovations and closed-loop supply chains, lacks the analytical tools and governance models necessary to address circularity in such open, high-stakes contexts. The objective is to offer both a descriptive framework that enables researchers, practitioners, and policy-makers to analyze, evaluate, and design circular business models in healthcare systems. By embedding CBMIs within such high-complexity systems, this work extends current theory to account for capital responsibility, inter-organizational governance, and adaptive implementation under real-world constraints, thereby filling a key gap in both CBMI and service systems literature.

**Methodology** This study employs a Design Science (DS) methodology, which is especially suited for practice-oriented research in complex systems. The DS approach combines systematic theory-building with empirical validation and stakeholder engagement. The central research question guiding the study is: What Circular Business Model Innovations currently exist in the healthcare sector, and how can they be categorized into a comprehensive taxonomy using the 10R framework and Triple Bottom Line principles? The research proceeds in three stages: 1. Systematic Literature Review (SLR): An extensive review of academic and grey literature will identify and categorize existing CBMIs in healthcare. Sources will include peer-reviewed journals, policy documents, and CE strategies. 2. Thematic Coding and Taxonomy Development: Extracted data will be coded according to the 10R and TBL frameworks. To enrich these models, inductive coding will be combined to capture emergent themes beyond their scope, enabling the development of an expanded taxonomy that reflects both established and novel insights. The resulting taxonomy will define categories based on dominant resource strategies, stakeholder involvement, and multidimensional value creation. 3. Empirical Validation: The preliminary taxonomy will be tested and refined through 3–5 case studies in Dutch hospitals and their supply chains. These case studies will focus on product categories with varying characteristics, such as low-volume/high-value items (e.g., surgical tools) and high-volume/low-value items (e.g., disposables).

Data will be collected through semi-structured interviews and co-creation workshops with key stakeholders in the ESCH-R Consortium. The validation process will assess the taxonomy's clarity, utility, and completeness. Insights from practitioners will be used to iteratively improve the framework's descriptive accuracy and prescriptive relevance. Results The primary output of this study will be a comprehensive taxonomy of CBMIs applicable to the healthcare sector. This taxonomy will: • Illustrate how CBMIs vary across circularity strategies and sustainability dimensions; • Reveal the trade-offs and complementarities between economic efficiency, environmental performance, and social value; • Highlight gaps or extensions to existing models; • Identify key actors, mechanisms facilitating CBMI adoption; • Provide scalable templates for stakeholders to replicate or adapt successful CBMI practices. Additionally, the research will generate case-based typologies that link specific business model logics (e.g., product-as-a-service, sharing platform, take-back schemes) with stakeholder configurations and regulatory constraints in the healthcare domain. Discussion From a theoretical perspective, this research advances the understanding of CBMIs as institutional innovations in high-stakes environments (e.g., Bocken et al., 2014; Geissdoerfer et al., 2020; Lüdeke-Freund et al., 2019). It integrates sustainability science, circular economy principles, and business model literature into a unified analytical framework. By grounding the taxonomy in empirical cases, it strengthens the bridge between abstract principles and practical implementation. From a practical standpoint, the taxonomy can guide hospital administrators, healthcare suppliers, and policy-makers in evaluating circularity initiatives. It can also inform corporate sustainability strategies by demonstrating how CBMIs contribute to long-term resource stewardship and social responsibility, in alignment with TBL. Moreover, the research offers implications for healthcare stakeholders. It identifies barriers (e.g., procurement policies, risk aversion, hygiene standards) and enablers (e.g., cross-sectoral collaboration, green innovation funding) that influence CBMI uptake. These findings will be relevant for institutions designing policy instruments to accelerate circular transitions. Conclusion As healthcare systems strive to meet sustainability targets under complex institutional and operational constraints, innovative business models offer a promising pathway. By proposing and validating a taxonomy of Circular Business Model Innovations, this research contributes actionable knowledge to both academia and practice. It not only enriches the theoretical discourse on CBMIs but also equips stakeholders with tools to implement meaningful, measurable change in healthcare sustainability.

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## SUSTAINABLE NEW SPACE ECOSYSTEM- EXAMINING THE ROLE OF DEMOCRATIC SPACE GOVERNANCE

*Rahul Gupta*

**Abstract:** In recent decades, the rapid advancement in space technologies and the emergence of new actors like aspiring economies, private corporations and academic institutions, have transformed outer space into a dynamic, contested and congested domain. This new space ecosystem has resulted into significant achievements, including satellite-based services that support communications, weather forecasting, disaster management, and navigation systems, profoundly impacting societies across the globe. But this competitive and unsustainable expansion has raised questions on existing space governance framework, largely rooted in the Outer Space Treaty of 1967, which reflects the geopolitical realities of the mid-20th century. This framework is increasingly seen as inadequate to address contemporary challenges such as orbital debris, space traffic management, commercialisation, and equitable access. While space is legally designated as the “province of all mankind”, it is governed undemocratically with unevenly distributed benefits. The call for the democratisation of space governance has grown louder, especially from countries of the Global South which demand a more inclusive and equitable international order in outer space. Their positions often emphasize space as a “global commons”, promoting capacity-building and equitable access to orbital slots and frequencies. The principles of “common but differentiated responsibilities” (CBDR), derived from environmental law, have also found resonance in their demands for space governance reform. The central research problem, therefore, is to understand how space governance can be democratized to foster sustainability in New space. The existing literature have examined the evolving trajectory of space governance in response to shifting technological, political and legal dynamics. The foundational principles of space governance include the peaceful use of outer space, the prohibition of national appropriation, and the designation of space as the province of all humankind. The Outer Space Treaty 1967, together with subsequent treaties like the Rescue Agreement (1968), the Liability Convention (1972), and the Registration Convention (1975) form the core of what is now known as the “International Space Law Regime”. Recent years have seen multilateral bodies like the United Nations Committee on the Peaceful Uses of Outer Space (UNCOPUOS) and its Legal and Scientific & Technical Subcommittees engage in dialogues over long-term sustainability and regulatory frameworks. Additionally, national legislation of space-faring countries, such as the U.S. Commercial Space Launch Competitiveness Act (2015) and Luxembourg’s Space Resources Law (2017), have raised concerns over the unilateral interpretation of space property rights, challenging the foundational norms of International Space treaties. Finally, the emerging challenges of militarisation, space resource extraction, and commercialisation raise normative questions that remain inadequately addressed in existing literature. As private actors gain prominence and countries begin staking claims to extra-terrestrial resources, the



role of inclusive and democratic governance mechanisms becomes even more crucial for space sustainability. This research addresses the following questions: 1. Whether modern space activities pose significant environmental and sustainability challenges, and whether current international mechanisms sufficiently address these issues? 2. Whether the historical and contemporary structures of global space governance have evolved in ways that reflect equitable representation and participation of all nations, and whether democratising the space governance can address this? 3. Whether specific policy measures can be identified and implemented to promote more equitable, inclusive and sustainable global space economy? The research has been framed around the primary hypothesis that the current space governance regime inadequately reflects the interests and needs of the developing nations. To test this hypothesis, qualitative content analysis of international legal instruments such as the Outer Space Treaty (1967), Moon Agreement (1979), and UNCOPUOS documents, including the Long-Term Sustainability (LTS) Guidelines and COPUOS session reports, have been undertaken. The second hypothesis focuses on the potential link between democratised space governance mechanisms and the achievement of sustainable and equitable outcomes in outer space activities. Data collection for this hypothesis involves examining international sustainability frameworks such as the UNCOPUOS LTS Guidelines, the Space Debris Mitigation Guidelines of the Inter-Agency Space Debris Coordination Committee (IADC) and environmental policies promoted by the European Space Agency (ESA) and NASA. In addition, national space policies from emerging space powers like India and South Africa are analysed. Case studies such as India's Mars Orbiter Mission (Mangalyaan), South Asia Satellite initiative and the BRICS Space Cooperation Framework are evaluated to demonstrate how inclusive participation contributes to sustainable practices in space activities. This work addresses the complex intersection of space exploration, global co-operation, sustainability and the equitable distribution of benefits derived from space. It finds that the established space-faring nations' strategic interests reflect in the existing space governance frameworks. A major finding is the exclusionary nature of many space governance mechanisms that fail to represent the interests and contributions of the Global South. The research also revealed significant gaps in the governance of space activities that threaten the long-term sustainability of space exploration. Space debris, environmental impact and the increasing commercialisation of space are all issues that require urgent attention. The current legal framework, primarily grounded in the Outer Space Treaty (1967), has proven inadequate in addressing these challenges. A recurring theme in the study was the call for reform in the legal frameworks governing space. The Outer Space Treaty 1967, while ground breaking at the time of its creation, no longer addresses the complexities of modern space activities. The lack of clear regulations on space resource utilisation, the privatisation of space assets and the management of space debris calls for new collaborative model of space governance with modifications to existing agreements that prioritise sustainability, equity and cooperation. This research makes several important contributions to the fields of space governance and sustainable space. It provides a nuanced understanding of the democratisation of space governance, focusing on the critical role of emerging space powers in advocating for inclusive policies and practices in space exploration. It bridges multiple disciplines, including international law, political science, environmental studies and technology policy. It draws on theoretical frameworks of global governance, international cooperation and sustainability, offering interdisciplinary insights into how space governance can evolve to meet the

needs of a rapidly changing world. The research provides an integrated view of the challenges facing space exploration and suggests a holistic approach to addressing these challenges through collaborative governance and sustainable practices. The field of space governance is rapidly evolving, with new legal frameworks, technological advancements and commercial developments emerging frequently. As a result, some of the recommendations made in this research may need to be revisited as new challenges and opportunities arise in the coming years, although the study's core themes of equity, sustainability and international cooperation remain highly relevant. While this work focused on the legal, policy and governance aspects of space exploration, future research could benefit from a more technical focus, examining how technological advancements in satellite technologies, propulsion systems or space mining could shape the space governance for sustainability. With the growing influence of private companies in space exploration, there is a need for research into how these companies can be effectively regulated to ensure they align with international space law and global sustainability goals.

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Submission ID: 1285

Track 08: Corporate Sustainability and Corporate Governance (IRCC 2025)

## GUIDED BY STARS: EMPLOYEE RATINGS AND THE FUTURE OF FIRM PERFORMANCE

*Prakarsh Singh and Rohit Duwadi*

**Abstract:** In the digital age, employee reviews on platforms like Ambition Box and Glassdoor have emerged as a novel form of stakeholder voice, offering real-time, crowd-sourced insights into a firm's internal environment. These platforms allow employees to anonymously evaluate their companies across dimensions such as culture, compensation, work-life balance, and job security. Despite their widespread use by job seekers and HR departments, the predictive power of these reviews for financial outcomes remains underexplored, particularly in emerging markets like India (Gimpl, 2025; Aguinis & Glavas, 2012). Prior studies have linked employee satisfaction to firm value and customer outcomes, highlighting the potential of internal sentiment as a leading indicator of corporate performance (Edmans, 2012; Wu, 2022; Kirk, Ray, & Wilson, 2013). This study aims to bridge that gap by investigating whether employee perceptions can anticipate a firm's financial and market performance. This research examines whether specific employee sentiment dimensions affect two key indicators of firm performance: Return on Assets (ROA) and annual stock returns. It evaluates whether attributes like internal culture, flexibility, and compensation are more predictive than others, and whether their impact varies by firm size, across large-cap, mid-cap, and small-cap firms. The study contributes to the growing literature on intangibles and environmental, social, and governance (ESG) metrics by linking soft employee perceptions to hard financial results. The analysis is based on a novel panel dataset of 150 NSE-listed firms from 2017 to 2024, covering over 800 firm-year observations. Companies span various industries and are categorized into large-cap, mid-cap, and small-cap segments based on NSE classifications. Employee ratings from Ambition Box and Glassdoor are aggregated annually across

seven dimensions: company culture, work-life balance, work satisfaction, job security, salary and benefits, promotions/appraisals, and skill development. Each rating is standardized using z-scores to ensure comparability and to allow interpretation of regression coefficients in percentage terms. To assess the impact of employee sentiment on firm outcomes, the study employs fixed-effects panel regression models. This approach controls for unobserved, time-invariant firm-specific characteristics and includes controls for firm size (log of total assets), year dummies, and lagged dependent variables. Two separate models are used: one with ROA and another with stock returns as the dependent variable. Additionally, subsample analyses for large-cap, mid-cap, and small-cap firms examine whether effects differ by firm scale. Results show a nuanced relationship between employee sentiment and firm performance. A one standard deviation increase in company culture ratings is associated with a 1.4% rise in ROA, suggesting that strong internal culture enhances productivity. On the contrary, work satisfaction and work-life balance ratings are negatively associated with ROA, with reductions of 1.3% and 0.9%, respectively. These results may indicate a trade-off between employee comfort and operational efficiency, especially in cost-conscious firms. In contrast, the stock market reacts differently. A one standard deviation increase in work-life balance ratings leads to a 10.2% rise in stock returns, implying that investors value flexibility and employee well-being. However, job security is negatively linked to returns, with a 10.8% drop for each standard deviation increase, possibly due to concerns about rigidity or inefficiencies. Similarly, skill development is associated with a 10.3% decrease in returns, potentially viewed as a cost centre with delayed payoffs. Interestingly, company culture does not significantly influence stock returns, highlighting a disconnect between what drives operational performance and what attracts investor interest. Firm size heterogeneity further clarifies these dynamics. In large-cap firms, company culture and promotion ratings are significantly associated with higher ROA (1.5 - 3.2%), and work-life balance strongly correlates with stock returns. These results are consistent with the idea that larger firms, with better governance and greater analyst coverage, transmit employee sentiment more effectively to external markets. Mid-cap firms show responsiveness to culture and job security in their ROA outcomes but weaker capital market effects. Small-cap firms display statistically insignificant results, likely due to lower visibility and fewer reviews. The findings have several implications. Theoretically, they extend the literature on ESG and intangibles by illustrating that employee-generated data, while subjective, contains predictive signals. The divergence in the impact of employee sentiment on ROA versus stock returns suggests differing priorities between internal operations and investor perceptions. Practically, the study informs corporate strategy: firms can prioritize culture and appraisals to enhance internal efficiency while projecting flexibility and employee empowerment to appeal to investors. However, the study is not without limitations. Publicly posted reviews may suffer from self-selection bias, where only extremely satisfied or dissatisfied employees leave feedback. Additionally, despite using lagged predictors to mitigate reverse causality, the observational nature of the study limits causal claims. Future work could incorporate natural experiments, sentiment analysis of review text, or explore specific sectors to deepen understanding. In conclusion, employee reviews, once dismissed as anecdotal, have evolved into valuable indicators of a firm's health. This study provides robust evidence that employee sentiment can forecast both profitability and market valuation. Firms and investors should not overlook these voices; in an era of

transparency and stakeholder capitalism, employee perceptions offer strategic insights that are too valuable to ignore.

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Submission ID: 1345

Track 08: Corporate Sustainability and Corporate  
Governance (IRCC 2025)

## Greenwashing: Corporate risks, ethics and sustainability

*Manali Paranjpe*

**Abstract:** Greenwashing: Corporate risks, ethics and sustainability At its core, greenwashing is an ethics issue. And no matter the number of regulations around the globe, it is still rampant. What are we missing? This paper is a deep dive into corporate greenwashing across the globe, and presents top 5 key learnings from these instances. Lesson no. 1: Be serious about and review your advertising. When KLM decided to advertise its eco-friendly flying in Europe, it did not consider that what it said in its advertisements did not match with the actual numbers, science and actual environmental footprint. While making customers believe that flying with KLM helped them achieve a better net zero target and contribute to removal of excess carbon, what the airline was engaging in was greenwashing: misleading consumers to take an economic decision based on an incorrect environmental claim. What followed were court proceedings, a hefty fine, and a loss of reputation for the airline that can never be quantified. While new regulations are being drafted and processed in various jurisdictions, for example the Green Claims Directive in the EU, companies must not lose focus of the fact that irrespective of the existence of an anti-greenwashing law, their liability under corporate law, environmental law and tort law continues to exist. In many instances companies do not measure advertising against the strict yardstick of greenwashing leading eventually leading to issues, both at a company level and the environmental level. In India, under the Central Consumer Protection Authority (CCPA), Guidelines for Prevention and Regulation of Greenwashing or Misleading Environmental Claims, 2024 regulate greenwashing, focusing on it from an advertising and consumer rights perspective, more than an environmental impact angle. The latter is left to companies-to decide what is right and what is wrong. Lesson no. 2: Know your science: this is not only about the law. In the US, Keurig sold to its customers, more than just single use coffee pods: a promise from a company and a consumer belief: that they could recycle the pods by just trashing them in recycling bins. The tonnes of plastic pods that could not be recycled led eventually to a \$1.5 million fine levied on the company by the SEC. Keurig's failure sits at a very interesting intersection: of scientific and practical implementation of recycling on one hand and of high investor pressure to meet sustainability targets. In a bid to fulfilling sustainability reporting and showcasing the sustainability achievements of the company, companies often make the mistake of not backing up crucial information with scientific analysis. What may look good in an ESG report may not be scientifically accurate, but it is the latter that stakeholders look for, not the former. Lesson no. 3: Boards and management may be sued and be held responsible. In 2023, ClientEarth sued Shell's directors in the UK. It was pathbreaking, since it was the first lawsuit globally to hold the board responsible for

inadequate climate strategy and failing to prepare the company for the net-zero transition. While this is not overt greenwashing, boards may be held responsible for incorrect climate claims, in breach of their fiduciary duties. As jurisprudence on this is developing across the globe, boards and management must be cautious about any green claims they make or support. Lesson no. 4: Words are vital, trust is non-negotiable. S. C. Johnson, makers of Windex cleaner spray in the US, did not differentiate between ‘ocean plastic’ and ‘ocean bound plastic’ when they pitched their product to consumers. While consumers bought the idea that the spray bottles were made from 100 percent ocean plastic – plastic removed from the oceans, it was not true. The bottles were made from ‘ocean bound plastic’ i.e. plastic sourced from plastic banks – plastics collected on land that would have otherwise ended up in the ocean. A claim that Windex is ‘non-toxic’, was also called in question in a lawsuit against S. C. Johnson in 2020, with the argument that its ingredients are harmful to people, animals, and the environment. Misleading consumers even by slight variations of terminology is a breach of trust. Closer home, there are several cases of misuse of ‘100 percent natural’, ‘chemical free’, and ‘biodegradable’. Lesson no. 5: Greenhushing, greenblushing and greenwishing are subsets of greenwashing. Greenhushing i.e. not communicating sustainability/environmental impact to stakeholders for the fear of scrutiny, greenblushing i.e. omitting to disclose to stakeholders the positive outcomes of the company’s environmental initiatives fearing questions, and greenwishing i.e. setting over-ambitious corporate environmental targets without having the means or the plan to achieve them: all are in one way or the other, facets of the larger universe of greenwashing. In the UK, Anglican Water, responsible for providing drinking water, disclosed how it created wildlife-friendly wetlands, and concealed information related to it releasing sewage into the environment. When it pleaded guilty of millions of litres of untreated sewage overflowing from a water recycling centre in Essex, it faced a fine of £2.65m. On similar lines of greenhushing, omission of vital environmental information from stakeholders is also a form of greenwashing. Greenwashing gets called out most frequently as an environmental issue but very few times as a hardcore ‘corporate ethics issue’. Companies have to navigate a complex maze of business, consumer rights, stakeholder and market expectations and environmental and social footprints. A robust culture of corporate ethics shall help companies stay clear of greenwashing. In India, regulation of greenwashing is split across different regulations: advertising guidelines, the SEBI BRSR framework, duties of directors under the Companies Act, 2013, and tort law. As an ethics issue, companies ought to build anti-greenwashing measures into their strategy, whether a comprehensive anti-greenwashing law at the national level exists or not. Companies that get their environmental claims right stand to gain a competitive advantage over those that mislead, intentionally or otherwise.

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Submission ID: 1393

Track 08: Corporate Sustainability and Corporate  
Governance (IRCC 2025)

## Linking Risk Governance to Bank Stability: An Empirical Examination

*Mehak Khanna and Abhijeet Chandra*

**Abstract:** This study involves the development of a risk governance index for banks. The index is developed by aggregating sub-indices based on the Basel lines of defence and board oversight. The sample includes listed commercial banks, including private and public sector banks, over the period 2007- 2020. The index is constructed using the linear non-weighted method of aggregation. The paper further attempts to determine the effect of the implementation of risk governance practices on the stability of banks. We employ the z-score to determine the stability of banks. Empirical findings suggest that risk governance has a negative relationship with the stability of banks.

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Submission ID: 1424

Track 08: Corporate Sustainability and Corporate  
Governance (IRCC 2025)

## Transformational Leadership for Energy Transition: A Case Study of Institutional Innovation in Gujarat's Power Utility GUVNL

*Jai Prakash Shivahare and Nitesh Bidarkar*

**Abstract:** 1. Introduction: India's commitment to achieving net-zero emissions by 2070 has elevated climate transition to a national development priority. This paper examines how state utilities, traditionally seen as operational arms, are evolving into strategic climate actors. Gujarat Urja Vikas Nigam Limited (GUVNL), the state's power sector holding company, exemplifies this shift through an institutionalised approach integrating infrastructure, policy, digital governance, and human capital development. The analysis is anchored in the Multi-Level Climate Governance (MLCG) framework, which explains how sub-national entities shape climate outcomes through vertical (federal-state) and horizontal (peer-to-peer) alignments (Gregorio, et al., 2019) . The paper also draws on the energy justice framework (Sovacool, et al., 2016) to assess equity, affordability, and inclusiveness in GUVNL's programs, including decentralized renewables and women-focused leadership initiatives. 2. Objectives: The paper assesses GUVNL's alignment with India's net-zero and energy justice goals, explores institutional innovations transforming utilities into climate leaders, and highlights the utility's role in digital governance, decentralized energy, and workforce transition through a just transition perspective. 2. Materials & Methods/ Methodology: 2.1 Conceptual Framework The study is grounded in the Multi-Level Climate Governance (MLCG) framework (Gregorio, et al., 2019) , which explains how sub-national actors influence and implement global climate goals through vertical (national-state) and horizontal (peer-to-peer) alignment. The energy justice framework (Sovacool et al., 2017); (Kirsten,



Jenkins; Darren, McCauley; Alister, Forman, (2017) is applied to assess distributional fairness and inclusiveness in the utility-led energy transition.

## 2.2 Research Design

This is a qualitative case study supported by secondary data from planning documents (CEA Resource Adequacy Plan), GUVNL's energy transition plan and annual reports, policy reports, and evaluation studies from multilateral and national bodies, along with comparative literature on global utility reform.

## 3. Results and Discussion:

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### 3.1 Aligning with Resource Adequacy and RE Goals

GUVNL's response to the Central Electricity Authority's projection of storage and clean energy needs includes procurement of 24.5 GW of renewable energy PPAs and tenders for 6500 MWh standalone and 1,600 MWh long-duration battery storage. This aligns with resource adequacy goals and supports grid flexibility, while also laying the groundwork for India's high-RE future.

### 3.2 Institutional Innovation through C-NET and GETRI

Central to Gujarat's climate strategy is Center for Net-zero Energy Transition (C-NET), India's first state-utility-promoted climate think tank established by GUVNL within rebranded GETRI. C-NET promotes hybrid GHG accounting and supports policy advisory, capacity building, and applied research. It collaborates with leading institutions like IITs, IIMs, GIZ, AEEE, NISE, CEEW, LDES Council, and IHA. By embedding sustainability and equity into utility operations, C-NET advances just transition principles and bridges the gap between strategic planning and grassroots climate action.

### 3.3 Digital Governance and System Planning

GUVNL has launched Akshay Urja Setu, a digital platform linking RE project approvals with real-time transmission planning, thus addressing chronic delays and investor risks. Additional tools like GeoUrja, E-Vidhyut Seva, and the Centralized Processing Centre (CPC) have transformed legacy processes, enabling demand-responsive, climate-aligned governance.

### 3.4 Leadership Development and Workforce Reform Through GETRI

GUVNL has implemented a five-tiered Leadership Development Program (LDP) encompassing Ignite, Solve, Lead, Represent, and Transform. A parallel LDP track for selected women officers, ensures gender-sensitive leadership development. Complementary initiatives include a merit-based Fast Track Promotion Policy, education and research policy, and mandatory training under the Employee Development Program for GUVNL's workforce of 65,000 employees. Initiatives such as Manthan, PAHAL, and the Ideation Premier League promote employee-led innovation and reinforce distributed leadership aligned with energy transition needs. Together, these platforms embed organizational learning theory (Argyris & Schön, 1996) and distributed leadership into utility management, enabling frontline-to-boardroom alignment.

### 3.5 Advancing Energy Justice through Decentralized Solar

GUVNL has empowered over 9 lakh rooftop solar users with an aggregated capacity of more than 5000 MW and implemented 1,700 MW under the PM-KUSUM scheme, including solarized agriculture feeders. These programs promote prosumers among farmers and residential consumers. However, challenges remain in extending such benefits to MSMEs, low-income groups and rural users, highlighting the need for differentiated policy support.

### 3.6 Alignment with Global Literature

The case resonates with global findings: (Frei, et al., 2018) observed a lag in utilities' response to decentralization and integration challenges. Kirsten et al., (2017) emphasized the centrality of utilities in building "electric cities." Germany's experience (Gabriel & Ignazio, 2017) reveals how inclusive, participatory models reduce conflict in energy transitions. GUVNL's approach integrates these insights while contextualizing them for India's socio-political landscape.

## 4. Practical Implications:

### 4.1 Policy and Governance

GUVNL's case study offers a

replicable model for integrating climate goals into utility operations while ensuring affordability, establishing institutions like C-NET to bridge policy and practice, and fostering participatory innovation and community-led energy transition. 4.2 Contribution to Responsible Capitalism GUVNL's transformation aligns with the IRCC themes of responsible institutions and just transitions. Its emphasis on accountability, inclusiveness, and long-term planning contributes to a more resilient and equitable energy system, critical for India's climate and development goals. Conclusion GUVNL's multi-pronged strategy, spanning clean infrastructure, digital governance, institutional innovation, workforce transformation, and community engagement recasts state utilities as strategic enablers of climate action. It reflects a bold shift from transactional service delivery to anticipatory public sector leadership aligned with global climate goals.

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## Track 09: Leadership Research & Practice in the Context of Changes in the World of Work

Submission ID: 40

Track 09: Leadership Research & Practice in the Context of Changes in the World of Work

### The Role of Emotional Intelligence in Police Departments: Policy Reforms for Organizational Efficiency and Economic Stability

*Keren Millet and Dr Kerav Pandya*

**Abstract:** The research investigates the impact of Emotional Intelligence (EI) on improving organizational effectiveness and financial stability in police departments, specifically within the Gujarat police force. A quantitative methodology was used to gather data from 384 police officers of varying ranks using a structured questionnaire. The measured dimensions included Emotional Intelligence, Policy Reforms, Organizational Efficiency, and Economic Stability. Statistical analysis was conducted using SPSS for reliability and validity assessments, and AMOS for Structural Equation Modelling (SEM). The results demonstrate that emotional intelligence significantly enhances organizational efficiency and economic stability. Policy improvements were identified as moderating the relationship between emotional intelligence and organizational efficiency, hence enhancing the efficacy of emotionally intelligent actions in conducive circumstances. Furthermore, organizational efficiency was shown to mediate the correlation between emotional intelligence and economic stability, indicating that emotionally intelligent officers enhance institutional performance and resource management. This research offers empirical data that supports the incorporation of emotional intelligence and adaptive policy improvements inside police agencies. It provides practical lessons for politicians and law enforcement executives seeking to cultivate more effective, resilient, and sustainable police organizations through emotionally intelligent strategies.

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Submission ID: 48

Track 09: Leadership Research & Practice in the Context of Changes in the World of Work

### Self-leadership and employee thriving: The role of flow at work

*Sree Charan M, Rushabh Trivedi, Swati Mathur and Murugan Pattusamy*

**Abstract:** The study advances flow at work and self-determination literature by exploring the relationship between self-leadership and employee thriving. We examined whether flow at work mediates the relationship between self-leadership and employee thriving. Further, the mediating role of flow at work between self-leadership and job satisfaction was also evaluated. The theoretical model was

tested with cross-sectional data collected from 260 working professionals using the structural equation modeling technique. The results indicated that flow at work mediates the relationship between self-leadership and employee thriving. Additionally, results supported the hypothesized relationship between self-leadership and job satisfaction, mediated by flow at work. Our results held firm while controlling for age, tenure, and employment type for our hypothesized model. The study was one of the initial inquiries examining the role of self-determination strategies in facilitating flow at work. Further, the research reported here also examined the indirect role of self-leadership on employee thriving and job satisfaction. The research paper established strong empirical evidence on how employees can proactively enhance their learning, feel energetic, and feel contented in the workplace.

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Submission ID: 91

Track 09: Leadership Research & Practice in the  
Context of Changes in the World of Work

## REIMAGINING INDIAN EDUCATION WITH ARTIFICIAL INTELLIGENCE: LEADERSHIP, EQUITY, AND THE FUTURE OF WORK

*Arpan Shrivastava, Gunjan Anand and Arpita Shrivastava*

**Abstract:** 1. Introduction India stands at a critical juncture in its educational transformation journey. With over 600 million citizens under the age of 25, the need for a robust, inclusive, and future-ready education system is more urgent than ever (Ministry of Education, 2023). The advent of the Fourth Industrial Revolution (IR4), propelled by Artificial Intelligence (AI), is redefining how knowledge is delivered, assessed, and applied. This transformation has been accelerated by the COVID-19 pandemic, which exposed deep-rooted inequities and capacity gaps in the Indian education system (NSO, 2021). AI offers immense potential to bridge these divides by enabling personalized learning, automating administrative tasks, supporting emotional intelligence, and fostering equitable access through multilingual platforms. However, the integration of AI is not merely technological—it is a leadership and organizational development challenge, calling for agile, ethical, and inclusive strategies that align with the goals of the National Education Policy (NEP) 2020. This paper situates itself within Track 09 of the ADCLOD theme, exploring the future of work, learning, and leadership in the AI era. 2. Literature Review: The literature on Artificial Intelligence (AI) in education establishes its potential for transforming learning systems but reveals notable gaps in application to the Indian context. Schwab (2015) emphasized AI's role in reshaping governance and education through the Fourth Industrial Revolution, yet lacked focus on implementation in developing countries. In India, J-PAL South Asia (2019) demonstrated the success of Mindspark, an adaptive AI learning tool, in significantly improving student performance. However, it offered limited insight into scalability, teacher adoption, or long-term impact. Kumar and Iyer (2022) examined algorithmic biases in Indian EdTech platforms, warning that such systems may unintentionally exclude rural and vernacular learners. Similarly, Kumar and Tiwari (2022) highlighted the need for multilingual AI, though real-world assessments of tools like Bhashini remain underexplored. Chatterjee and Ghosh (2023) showed how AI can aid learners with disabilities,

yet the literature lacks discussion on school readiness and inclusive leadership. Leadership perspectives are further addressed by Suseno et al. (2023), who identified digital competencies necessary for AI adoption in organizations, though their insights are largely corporate. In broader pedagogical terms, Holmes et al. (2022) discussed AI's ability to personalize learning, while UNESCO (2021) highlighted administrative burdens on Indian teachers, suggesting AI as a solution—but with little evaluation of implementation outcomes. Overall, existing studies point to AI's promise but fall short of addressing how Indian educational leaders can drive equitable, ethical, and scalable AI integration. This research fills that gap by focusing on leadership, inclusion, and policy alignment.

### 3. Objectives

The key objectives of this study are to:

- Analyze how AI can address India's systemic educational challenges in personalization, equity, and administrative efficiency.
- Examine the role of institutional leadership in driving AI adoption responsibly and inclusively.
- Evaluate real-world case studies and policy frameworks supporting AI-led transformation in India.
- Propose a roadmap for integrating AI in alignment with the NEP 2020 and IndiaAI Mission initiatives.

### 4. Methodology

This research employs a qualitative-descriptive design supported by case study analysis and policy document review. Data is drawn from:

- Government reports (e.g., NEP 2020, Digital Personal Data Protection Act 2023)
- EdTech company whitepapers and analytics (e.g., Embibe, Mindspark, CareerGuide)
- Peer-reviewed journal literature
- News sources and global reports (e.g., WEF, UNESCO, NASSCOM)

A thematic analysis was conducted to extract patterns across four axes: personalization, inclusion, leadership, and the future of work. Triangulation with case evidence ensures reliability and contextual relevance to the Indian education system.

### 5. Key Findings

- 1. Personalized Learning:** AI-enabled platforms like Embibe and Mindspark are redefining education by offering real-time analytics, adaptive content delivery, and behavior-based mentoring—improving learning outcomes by up to 2.5 times for weaker students (J-PAL South Asia, 2019).
- 2. Administrative Efficiency:** AI reduces teachers' administrative burden (25% of their work time), automates scheduling, grading, and attendance, and improves decision-making through real-time dashboards (UNESCO, 2021).
- 3. Equity and Inclusion:** Tools like Google's Read Along and Microsoft's Project ELLA are supporting multilingual access. Startups like Thinkerbell Labs promote assistive learning for children with disabilities. Government projects like Bhashini and INDIAai aim to build regional language datasets for fairer AI outcomes (MeitY, 2023).
- 4. Leadership Enablement:** Data-driven platforms like Tata ClassEdge empower principals and deans to make evidence-based decisions. Leadership capability in managing AI tools, resistance, and ethical concerns is emerging as a crucial differentiator (Suseno et al., 2023).
- 5. Career Readiness and Vocational Training:** AI-powered platforms (e.g., CareerGuide, MapMyTalent) support students in making informed career choices aligned with job market trends. Over 2 million AI-skilled jobs are expected in India by 2025 (NASSCOM, 2023).
- 6. Implications for Research** This study contributes to the emerging discourse on AI and education in the Global South, especially India. It highlights the need to shift from speculative narratives to grounded, empirical investigations. It also underlines the critical importance of contextualizing AI development—accounting for linguistic diversity, infrastructural gaps, and ethical frameworks. Future research can extend this work by exploring:
  - Longitudinal impacts of AI interventions on rural learners
  - Comparative effectiveness of human vs. AI-based assessments
  - Role of emotional AI in student-teacher engagement
  - Models of AI-augmented teacher training and

leadership development 7. Implications for Practice 1. Policy Implementation: The NEP 2020's vision must be operationalized by embedding AI literacy into teacher training (B.Ed., M.Ed.), developing state-level AI innovation missions, and incentivizing public-private collaborations. 2. Institutional Leadership: School and university leaders must become tech stewards—equipped to interpret analytics, manage staff concerns, and design inclusive, ethical AI adoption pathways. 3. EdTech Design: Developers must build AI models trained on vernacular and rural data to avoid algorithmic bias. Equity must be a core principle in product design and evaluation. 4. Ethical Governance: Institutions must ensure informed consent, data security, and compliance with India's Digital Personal Data Protection Act (2023). A student data rights charter should be introduced nationwide. 8. Conclusion AI in Indian education represents not just a technological leap, but a societal transformation. This paper finds that AI, when responsibly deployed, can humanize education, bridge urban-rural divides, and prepare learners for the future of work. Yet, realizing this potential requires visionary leadership, context-sensitive design, and robust regulatory support. India's demographic dividend, linguistic complexity, and policy readiness make it a unique test bed for AI-powered education. As the nation advances into Amrit Kaal, the challenge is not to digitize legacy systems but to reimagine education from the ground up—equipping every learner with not only information but also intelligence, empathy, and agency.

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Track 09: Leadership Research & Practice in the  
Context of Changes in the World of Work

## A STUDY ON GENDER DYNAMICS IN THE GIG ECONOMY: A QUALITATIVE REVIEW OF SELECTED GIG PLATFORMS AIMED AT FEMALE WORKERS IN INDIA

*Dr. Indranil Bose, Dr. Amar Vijay Gandhi and Zenab Trivedi*

**Abstract:** India's gig economy has experienced significant growth in recent years, generating new employment opportunities for many individuals. This development provides considerable advantages for women who are in search of flexible work arrangements and autonomy. Women are able to generate income from their homes, circumvent lengthy commutes, and manage household duties with greater ease. However, despite these benefits, there has been insufficient focus on the obstacles that women encounter when attempting to enter or thrive in gig work. The opportunities available are not as easily accessible as they may appear. The framework of the gig economy frequently reflects traditional employment roles, revealing a distinct gendered division. Women are often found in specific sectors, such as low-paying jobs or domestic services, while men are more prevalent in higher-paying positions like delivery or technical roles. This trend does not contribute to a notable increase in the Female Labour Force Participation Rate (FLPR) in India. Statistics indicate that, despite the expansion of the gig economy, women's overall involvement in formal employment remains low. The challenges that hinder women from fully participating in gig work are deeply entrenched and complex. Numerous women encounter social and cultural barriers, including safety issues and familial expectations. Restricted



access to technology or training can also limit their entry into this field. Women frequently face safety concerns while working, particularly in positions that require travel or involve late hours. Issues related to privacy and inequitable terms on certain work platforms further limit their participation. Often, platforms have terms of service and privacy policies that do not prioritize women's safety and rights. These policies may encompass ambiguous regulations regarding data sharing or inadequate protection against harassment. A comprehensive review of the existing literature indicates that these barriers are prevalent. Researchers emphasize that women often face challenges in securing reliable employment opportunities and achieving equitable compensation within the gig economy. Additionally, many experience a deficiency in social support and legal safeguards. By analyzing various gig platforms in India such as Urban Clap, Quickr Easy, Helpers4U, Helpr.in and Bookmybai through a gender lens, this study uncovers significant obstacles. For example, certain platforms lack explicit safety protocols or policies that specifically safeguard women workers. Others implement policies that may deter the reporting of abuse or discrimination due to ambiguous language or inadequate enforcement. The existence of such barriers inhibits women from fully engaging in gig employment. When women do participate, they often confront discrimination, hazardous working conditions, or exploitative practices. These challenges hinder the advancement of women's roles within the gig economy. To tackle this issue, a deeper understanding and targeted interventions are essential. Organizations, policymakers, and platform proprietors must collaborate to eliminate these barriers. This review provides specific recommendations for enhancement. It advocates for the establishment of clearer policies that prioritize the safety and privacy of women workers. It underscores the necessity for platforms to foster secure environments and build trust through transparent terms. Legal protections should be reinforced to avert abuse and guarantee fair compensation. Furthermore, it calls for training and support initiatives that help women acquire skills relevant to gig work. Only through these concerted efforts can the full potential of women in India's gig economy be achieved. This will contribute to making gig work more inclusive and genuinely advantageous for women, thereby broadening their participation and enhancing their economic autonomy.

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Track 09: Leadership Research & Practice in the  
Context of Changes in the World of Work

## Leadership at the Margins: Strategic Framing and Emotional Labour in Autism Services at a Tertiary Hospital in Eastern India

*Shaoli Dutta*

**Abstract:** Leadership at the Margins: Strategic Framing and Emotional Labour in Autism Services at a Tertiary Hospital in Eastern India Abstract In many Indian hospitals, autism services remain fragmented or absent, especially in under-resourced contexts. This paper examines how a tertiary hospital in Eastern India, strategically integrated Applied Behaviour Analysis (ABA)-based autism care into its paediatric workflows, not by mandate, but through distributed and relational leadership. Drawing on a qualitative

case study from a 750-bed tertiary hospital in Eastern India, the paper explores how administrators and Assistant Behaviour Technicians (ABTs) reframed inclusion as operational infrastructure and sustained change through emotional labour. The case highlights the role of junior, non-clinical staff in enacting leadership at the margins of formal authority, reshaping both care hierarchies and institutional priorities. This paper argues for expanded frameworks of leadership that recognize care work, relational trust and cultural negotiation as essential to system transformation in low-resource healthcare settings. Keywords: Distributed Leadership, Emotional Labour, Healthcare Inclusion, Autism Services Introduction

Developmental and autism-related services are often peripheral to the Indian healthcare agenda, particularly in tertiary hospital settings where acute care dominates. A tertiary hospital in Eastern India launched an ABA-based autism care initiative embedded within its paediatric department, marking a significant departure from prevailing practices in India, where such services are often relegated to fragmented NGOs or token CSR efforts (Gupta & Reddy, 2022). Rather than treating inclusion as charity, leadership at the hospital repositioned autism care as core health infrastructure. This reframing was relational, emotional and strategic. The effort was co-led by Assistant Behaviour Technicians (ABTs), many of whom were young, non-clinical women, whose roles extended beyond therapy into navigating institutional boundaries and brokering trust. This paper argues that leadership in such contexts should be conceptualized as distributed, adaptive and emotionally grounded, enacted by individuals who sustain transformation from within the system's most fragile and often overlooked edges (Denis, Langley, & Rouleau, 2010; Ospina & Foldy, 2010).

**Research Objectives** The objectives of this study are to:

- Examine how a tertiary hospital in Eastern India integrated autism services into its paediatric workflows without external mandate;
- Analyse the forms of leadership, formal and informal, that shaped the initiative at the hospital;
- Explore the emotional and relational labour of junior staff in sustaining cultural change within the hospital;
- Contribute to emerging leadership frameworks that account for affective and distributed leadership in low-resource healthcare systems.

**Methodology** This study adopts a qualitative case study design, informed by principles of organizational ethnography and interpretive analysis as outlined by Montgomery and Oliver (2009). Data sources include:

- Field observations from training sessions, referrals and daily routines at the hospital;
- Informal interviews with hospital administrators, paediatricians and ABTs;
- Internal documents from a tertiary hospital in Eastern India related to program design, staffing and feedback.

Attention was paid to leadership micro-practices, sense-giving, trust-building and role negotiation, often enacted outside formal decision-making processes at the hospital.

**Key Findings**

**Strategic Reframing of Inclusion** Leadership at the hospital positioned autism care within its paediatric mandate. This enabled resource alignment, clinical legitimacy and cross-functional engagement. Framing inclusion as infrastructure, not social service, reduced resistance and embedded the initiative within institutional logic.

**Partnership and Internal Capacity-Building** Rather than outsourcing, the hospital partnered with a specialist behaviour intervention organization to co-develop the model and train ABTs. This localized expertise and fostered staff ownership, contrasting with models reliant on external consultants.

**Informal Leadership by ABTs** at the hospital ABTs at the hospital provided more than therapy; they interpreted neurodivergent needs, supported distressed families and managed care logistics. Through their “sense-giving” role, interpreting needs, guiding families and navigating clinical boundaries these frontline staff helped reframe

neurodevelopmental concerns as legitimate medical priorities (Lipsky, 1980). Referral volumes increased significantly within the first two months. Emotional Labour as System Glue In a hospital setting unfamiliar with developmental care, trust had to be cultivated from the ground up. ABTs played a pivotal role in calming families, reassuring clinicians and de-escalating institutional resistance. This often-invisible emotional labour proved foundational to the initiative's credibility and uptake (Tronto, 2013). Discussion This case illustrates that leadership is not only hierarchical, it is negotiated, relational and emotionally scaffolded. Several tensions emerged: • Authority vs Trust: Although ABTs at the hospital lacked formal clinical credentials, they were nonetheless expected to guide both clinicians and caregivers. This required leadership to deliberately cultivate space for non-traditional forms of authority while safeguarding existing professional hierarchies and boundaries (Fletcher, 2004). • Innovation vs Operational Stability: ABA's structured routines clashed with the hospital's fast-paced, efficiency-driven workflows. Leaders redrew schedules and referral protocols without disrupting broader hospital functioning. • Responsibility vs Protection: While ABTs carried the emotional burden of system change, formal supervisory structures at the hospital were initially lacking. Institutional mechanisms for reflection, peer support and emotional processing were introduced only after visible strain. Conclusion The integration of autism services at a tertiary hospital in Eastern India was not a byproduct of funding or policy, it was the result of intentional, distributed leadership that operated through strategic reframing, partnership-building and emotional trust. Junior, non-clinical staff emerged as key leaders in redefining care hierarchies and embedding inclusion into hospital routines. This case contributes to leadership theory by demonstrating how affective and relational labour, not merely formal authority or strategic intent can catalyse institutional transformation in complex, resource-constrained health systems. It invites scholars and practitioners to broaden their understanding of who leads, how leadership is enacted across hierarchical and relational contexts and what emotional, cultural and organizational foundations are required to sustain inclusive change.

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Track 09: Leadership Research & Practice in the  
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## **Building Emotionally Resilient Police Forces: The Critical Role of Emotional Competence in Reducing Burnout and Enhancing Job Satisfaction**

*Keren Millet and Dr Kerav Pandya*

**Abstract:** This study explores the intricate relationship between emotional competence and the occupational well-being of police officers, specifically focusing on job satisfaction and burnout. The demanding nature of law enforcement often exposes personnel to high-stress situations, making emotional regulation and interpersonal skills crucial for sustained professional effectiveness and personal health. While the importance of emotional intelligence in various professions is recognized, its specific impact on the unique challenges faced by police officers, particularly in the context of their daily duties and long-term career trajectories, warrants deeper investigation. This research aims to

quantify the extent to which an officer's emotional capabilities influence their levels of job satisfaction and susceptibility to burnout. Utilizing a mixed-methods approach, including surveys administered to a sample of 300 police officers across various districts and in-depth interviews with a subset of 30 officers, data was collected between January and June 2025. Preliminary findings are anticipated to reveal a significant positive correlation between higher emotional competence and increased job satisfaction, alongside a notable negative correlation with burnout indicators. These insights are expected to underscore the critical need for integrating emotional intelligence development into police training curricula and ongoing professional development programs. The implications of this study extend to enhancing officer resilience, improving departmental morale, and ultimately fostering a more effective and psychologically healthy law enforcement workforce.

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Track 09: Leadership Research & Practice in the  
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## Leading with Heart and Insight in a Changing World of Work

*Khushi Rath and Khushi Rath*

**Abstract:** The workplace today is not just evolving; it is being reinvented. Artificial intelligence, remote collaboration, and hybrid work models are creating both progress and pressure for leaders. While many organizations have embraced digital tools, fewer have managed to protect the emotional and human dimensions of work. This study explores how Indian leaders are responding to this challenge and what it takes to lead teams with clarity, care, and courage in an age of disruption. Through in-depth conversations with leaders across the technology, education, healthcare, and services sectors, this study brings forward real stories of transformation. These leaders are not just implementing systems. They are rebuilding trust, ensuring emotional safety in remote work environments, and helping people adapt to change with dignity. A recurring insight from the research is that leadership today is not just about decision-making but about presence being available, being responsive, and being deeply human in moments of uncertainty. In addition to interviews, a structured survey with over 200 working professionals reveals strong connections between leadership empathy, team morale, and participation in skill-building programs. Respondents who felt seen and supported by their leaders were also the ones most willing to adapt, learn, and perform under pressure. What this paper proposes is a simple but powerful idea that leadership in the digital era is not a choice between efficiency and empathy. It is about aligning the two. The most successful leaders today are those who understand data but never forget the person behind it. They listen as much as they lead. They create clarity but also compassion. And they inspire people not just to work, but to care. The paper concludes with a framework for building leadership that is emotionally intelligent, digitally aware, and grounded in the Indian cultural context. It offers recommendations for leadership development programs, HR policy design, and organizational wellbeing practices.

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## Identifying the Role of Leaders in Shaping the Strategies for the Workforce of Management Faculty Members and the Workplace of a Business School Based in Hyderabad: An Empirical Study

*Dr. Niraj Kishore Chimote and Dr. Geethanjali G*

**Abstract:** 1. Introduction In today's dynamic educational ecosystem, leadership plays a crucial role in shaping workforce strategies and workplace culture within business schools. Rapid changes in pedagogy, expectations from academia-industry interface, and increasing pressure to publish and innovate demand a responsive strategic approach from top management. Faculty members, being the intellectual capital of these institutions, are influenced significantly by leadership behaviors that drive institutional vision and strategic alignment. This study seeks to explore how different types of leadership—transactional, transformational, and charismatic—adopted by top management influence the shaping of strategic initiatives for both the faculty workforce and the organizational climate of a Hyderabad-based business school. The research addresses a crucial gap in the Indian management education context, where studies focusing on the nuanced impact of specific leadership styles on academic strategy formulation remain limited. 2. Objectives and Hypotheses Objectives: - To identify the types of leaders prevalent in the top management of a Hyderabad-based business school. - To evaluate the influence of these leadership styles on shaping workforce strategies and institutional workplace environment. - To determine which type of leadership has the most significant impact on the faculty's strategic alignment and institutional cohesion. Hypotheses: - H1: Transactional leadership has a significant influence on shaping workforce strategies. - H2: Transformational leadership significantly shapes the strategic direction of the faculty workforce and the business school environment. - H3: Charismatic leadership positively impacts the formulation of faculty and workplace strategies. 3. Methodology Research Design: A quantitative, exploratory research design was adopted using a structured questionnaire. Dependent Variable: - Strategic alignment of the faculty workforce and institutional workplace. Independent Variables: - Leadership styles: Transactional, Transformational, and Charismatic. Sampling and Respondents: - Population: Management faculty members (Assistant, Associate, and Senior Professors). - Sampling technique: Stratified random sampling. - Sample size: 100 valid responses after data cleaning. - Eligibility: Full-time faculty members employed for over one year. Instrument Design and Pilot Study: - A 5-point Likert scale questionnaire based on validated leadership and strategy alignment constructs. - Pilot study conducted with 20 respondents; Cronbach's Alpha = 0.832 (acceptable internal consistency). Data Analysis: - Exploratory Factor Analysis (EFA): KMO = 0.786, Bartlett's Test Sig. = 0.000 (indicating sample adequacy). Total variance explained: 73.8%. Rotated Component Matrix identified 3 components corresponding to the 3 leadership styles. - Multiple Regression Analysis: Dependent variable regressed against the three leadership style scores. ANOVA,  $R^2$ , and standardized beta coefficients reported. Table 1: Total Variance Explained Component % of Variance Cumulative % 1 41.2% 41.2% 2 19.3% 60.5% 3 13.3% 73.8% Table 2:

Regression Output Predictor Beta Sig. Value Transactional Leadership 0.214 0.045 Transformational 0.496 0.000 Charismatic 0.238 0.022 R Square = 0.584 F-statistic = 28.41  $p < 0.01$

4. Results The findings suggest that all three leadership styles significantly impact the shaping of faculty and institutional strategies, with transformational leadership emerging as the most influential ( $\beta = 0.496$ ,  $p < 0.01$ ). Transactional leaders contribute moderately, particularly in procedural and goal-setting domains. Charismatic leaders also positively affect strategy shaping, especially in vision communication and morale boosting. Objective-wise findings support H1, H2, and H3. The model explains 58.4% of the variance in strategic alignment outcomes, establishing a strong influence of leadership behavior on academic strategy formulation.

5. Discussion The results underscore the critical role of transformational leadership in shaping proactive strategies for faculty motivation, curriculum innovation, and academic excellence. This aligns with existing literature suggesting that visionary and participative leadership fosters strategic coherence in knowledge-intensive institutions. Charismatic leadership, while slightly less impactful than transformational, plays a crucial role in cultural alignment and emotional engagement. Transactional leaders help in setting clear targets but may lack the adaptive foresight required for complex academic environments.

Limitations: - Single-institution study limits generalizability. - Self-reporting bias in questionnaire responses. - Leadership classification based on perception rather than behavioral observation.

Future Research: - Multi-institutional comparative studies. - Longitudinal analysis of leadership impact on strategic outcomes.

6. Conclusion This empirical study validates the significant role that top-level leadership plays in shaping workforce strategies and organizational climate in management institutions. Among the leadership types, transformational leaders have the most profound influence, followed by charismatic and transactional leaders. The findings offer actionable insights for policy-makers and business school administrators to align leadership development with strategic goals for enhanced institutional performance.

Theoretical Contribution: Enhances understanding of leadership behavior in academic strategy formulation.

Managerial Implications: Emphasizes recruitment and grooming of transformational leaders within educational institutions for long-term strategic impact.

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## “ETHICAL LEADERSHIP, SUSTAINABILITY SIGNALING, AND ALGORITHMIC WORK: A MIXED METHODS STUDY OF SYMBOLIC COMPLIANCE IN THE DIGITAL AGE”

*Devadoss Francis*

**Abstract:** Introduction This research examines how ethical leadership is performed, received, and sometimes symbolically done in algorithmically mediated, rule-rich organizational settings. With artificial intelligence, ESG dashboards, and automation of compliance restructuring decision-making, leaders are more likely to be confronted with the dilemma of seeming ethically legitimate when managing intricate institutional demands. In these contexts, where leadership is mediated by digital systems and where ethical gestures tend to be used for reputational or regulatory reasons, the research investigates how ethical leadership functions under sustainability pressures and algorithmic rule, and how these conditions shape organizational behavior, employee attitudes, and the performance of responsibility. Objectives The primary objective of the research is to examine how algorithmic governance and sustainability requirements influence ethical leadership and how algorithmic governance and sustainability requirements influence the authenticity of a leader, employee perceptions, and organizational behavior. Also, the research intends to delineate the concept of ethical disguise in digitally governed organizations. Methodology The research follows a sequential explanatory mixed-methods design. In phase one, a quantitative survey was carried out involving 376 professionals in ESG-sensitive and compliance-regulated industries such as finance, healthcare, manufacturing, and public services. Applying validated scales with relevance adapted to context, the research measured constructs such as ethical leadership, perceived commitment to sustainability, regulatory performance pressure, algorithmic mediation, perceived ethical climate, organizational commitment, and job satisfaction. PLS-SEM was used to test hypothesized relationships and to assess moderating and mediating effects. In the second phase, qualitative insights were gathered through semi-structured interviews with 12 professionals from the same sectors. Participants were selected for their exposure to algorithmic systems and sustainability governance in daily operations. Thematic analysis was utilized to examine their lived experiences of leadership, symbolic sustainability, and ethical decision-making in technology-mediated contexts. Results Quantitative phase findings validate that ethical leadership is positively linked with perceived ethical climate, organizational commitment, and job satisfaction. These linkages are, however, strongly moderated by algorithmic mediation and regulatory performance pressure. Perceived externality or technological imposition of ethical behavior reduces the authenticity and motivational potency of leadership. The research further discovers that perceived commitment to sustainability is a significant predictor of job satisfaction and organizational commitment as employees make differentiation between core sustainability values and symbolic ESG signaling. Mediation analysis shows that ethical commitment and organizational commitment are the essential mediators through which ethical leadership has its impact, suggesting leadership influence is most potent when situated

within a values-consistent organizational culture. This qualitative phase provides rich interpretive detail that validates and deepens the quantitative results. Participants from all disciplinary perspectives discussed the call of ethical leadership, most broadly stating that ethical leadership is most resonant when leaders inhabit moral nuance, cultivate open-ended conversation, and embody relational presence, especially in the context of constraint, both regulatory and digital. In contrast, a number of participants spoke about familiar examples of ethical posturing, where leaders became more moralistic when subjected to audit or ESG scrutiny, but distanced emotional engagement and ethical vulnerability. Sustainability was often felt like an external activity, not really an internalized value, especially when it was tied to automated dashboards or scripted reporting. Many of the respondents talked about ways that algorithmic tools removed ethical agency, rendering subtle decisions into binary moves and restricted employees' option to make space for moral consideration. Others spoke about how regulatory pressure gave leaders a reason to adopt compliance-oriented language at the expense of any related or cultural work to build trust. Discussion These findings imply that ethical leadership in algorithmic work is experienced amid conflicting pressures of authenticity and symbolic legitimacy. With AI, ESG metrics, and compliance mechanisms, leadership enactment has both the changing perception of the notion of leadership and the purposeful practice of leadership that intersect between actual ethical behaviour and ethical reputation. The study highlights a disconnect between the functional role of ethical leadership in influencing commitment and the emotional, cultural, and philosophical tensions associated with operationalizing ethics through performance. Conclusion This study adds to the field of ethical leadership research by conceptualizing the practice as contextually and technologically mediated. It moves forward the field of institutional theory by demonstrating ways in which both symbolic and algorithmic institutional conformity can produce ethical ambiguity. Introducing the concept of ethical disguise allows for a new perspective in evaluating a leader, socially, who to all outward appearances demonstrates normative correctness without establishing a relational depth. Practically, the study provides meaningful implications for leaders, system developers, and regulators to build cultures that maintain relational ethics, transparency, and discretionary moral space. The study ultimately suggest that sustainability practices need to move beyond signaling to cultures that can engage meaningfully with their internal stakeholders.

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Track 09: Leadership Research & Practice in the  
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### **Communicative Career Competencies: Learning from Supervisor, Using Resources and Intentional Behavior**

*Dr. Mohit Pahwa and Dr. Nilesh Kumar Tiwari*

**Abstract:** The purpose of the present study is to investigate the impact of learning from supervisor on communicative career competencies and the mediating effect of using resources. Furthermore, the moderating role of intentional behaviour is also examined. A response of 316 full-time working

professional were collected. The authors employed Hayes PROCESS Macro (Model 4 and 7) and bootstrapping procedure to investigate the hypothesis. Learning from supervisor was to be positively related to communicative career competencies through using resources. Furthermore, intentional behavior moderates the relationship between learning from supervisor and using resources, in way that association is stronger when intentional behavior is high. Also, intentional behavior moderates the indirect impact of learning from supervisor on communicative career competencies. The present study emphasized supervisor to demonstrate more supportive behaviors such as thinking together to solve work-related problems, see employees' mistake as learning curve, assist employee in shaping their learning and career, which in turn builds communicative career competencies of employees. To best of our knowledge, the present research is the pioneer effort to examine the relationship among learning from supervisor, intentional behavior, using resources and communicative career competencies.

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## EXPLORING THE APPLICATION OF HERSEY-BLANCHARD SITUATIONAL LEADERSHIP THEORY THROUGH BLOOM'S TAXONOMY FOR EFFECTIVE LEADERSHIP AND EMPLOYEE INSTRUCTION DEVELOPMENT

*Babita Bhati and Rashmi Maini*

**Abstract:** The study explores the integration of Hersey-Blanchard's Situational Leadership Theory (HBT) and Bloom's Taxonomy (BT) to enhance organizational learning and leadership effectiveness. While HBT emphasizes adapting leadership styles based on follower readiness, BT classifies cognitive learning into six hierarchical levels. The research investigates how aligning leadership behavior with employees' cognitive development stages can improve learning outcomes, interpersonal dynamics, and strategic growth. By analyzing qualitative and quantitative data from managerial employees, the study aims to uncover practical insights into applying these frameworks in tandem to guide employee development and optimize performance in dynamic organizational settings.

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## Algorithmic Management in Digital Workspaces: The Mediating Role of Emotional Capital in Knowledge Contribution

*Shefali Sharma, Dr. Amit Mittal and Dr. Seema Panchal*

**Abstract:** Algorithmic Management and Knowledge Contribution: The need of Emotional Capital in Digital Workspaces Introduction The growing adoption of artificial intelligence (AI) and machine

learning technologies is progressively transforming organisational practices, particularly within the domain of human resource management. A key development in this context is the emergence of algorithmic management- a system wherein algorithms assume a central role in making or supporting decisions traditionally undertaken by human managers (Patil, 2025; Jarrahi et al., 2021; Lee, 2018; Noponen, 2019). This approach offers considerable advantages, including enhanced efficiency, consistency, and the capacity to automate complex managerial tasks such as employee supervision, performance evaluation, and task allocation (Kinowska and Sienkiewicz, 2022; Lee, 2018; Tomprou and Lee, 2022; Crowston and Bolici, 2019) but also introduced workplace tensions (Mohlmann et al., 2021; Jarrahi et al., 2021; Becker et al., 2023). These tensions often manifest as confusion and frustration among platform workers, potentially undermining their well-being, productivity and knowledge sharing (Gal et al., 2020; Kellogg et al., 2020). Chen and Mohamed (2008) study depict that in today's fast-paced and evolving corporate environment, knowledge sharing is vital for employees' professional growth, and is widely acknowledged as an organization's most valuable asset, forming the cornerstone of competitive advantage and sustained performance (Kogut & Zander, 1996; Argote & Ingram, 2000; Wang & Noe, 2010; Henttonen et al., 2016). Despite the widespread implementation of algorithmic management systems across various industries, there is limited empirical research examining how algorithmic management impact knowledge contribution within organizations (Liu et al., 2025). Furthermore, while recent studies have identified a significant relationship between emotional capital and individual innovativeness (Dincer et al., 2011; Shojaei and Siuki, 2014; Dincer and Orhan, 2012; Al-Omari, 2017; Hu and He, 2018; Malik, 2022), these findings are not widely explored within the context of algorithmic management, particularly in the Indian workplace settings which is aimed to be explored in this study. Based on the literature review, a conceptual model was framed (Figure 1).

**Figure 1: Conceptual Model**

**Source(s):** Authors' work

**Methodology** We provide empirical evidence for our hypotheses analysing the impact of algorithmic management (AM) on knowledge contribution through one quasi-experiment (Study 1) and one multi-wave field study (study 2). The first study aimed to establish a foundational causal relationship between algorithmic management (AM) and knowledge contribution (KC), emphasizing the mediating role of employee emotional capital (EC) and moderating influence of individual innovativeness (II). Participants were randomly assigned to simulating high and low conditions, simulating AM environments, to evaluate how AM influences emotional capital and subsequently knowledge contribution. The second study involved a multi-wave field investigation conducted in organizations actively utilizing AM systems, aimed to test the robustness of our theoretical model in real-world settings through three wave data collection over time. This design allowed us to capture the effects of AM on knowledge contribution and provide deeper insights into the context-specific factors influencing these relationships. While Study 1 ensured internal validity by tightly controlling experimental conditions to confirm relationship between the constructs. Study 2 strengthens the external validity by examining the model's applicability and relevance in actual organisational environments. The combination of these methodologies allowed us to balance theoretical rigor with practical implications, ensuring a comprehensive understanding of AM's effect on knowledge contribution.

**Key findings** Study 1 provides initial evidence to establish causal evidence supporting both hypotheses. Participants are managed by algorithms reported lower emotional capital compared to

those under human management, supporting Hypothesis 1. This result aligns with prior research indicating that automated systems can evoke negative emotions and hinder effective task performance (Lee, 2018; Zhang, 2025; Zayid et al., 2024). Furthermore, our findings show that emotional capital mediates the relationship between algorithmic management and knowledge contribution, supporting hypothesis 2. This demonstrates that emotional capital as a critical mechanism linking management practices to organisational outcomes like innovation. Study 2 findings not only reinforce the results of Study 1 but also provide further support for the proposed theoretical framework by demonstrating its relevance in actual workplace settings. Moderation effect findings support the hypothesis H3 that individual innovativeness enhances the positive impact of emotional capital on knowledge contribution. Individuals with higher innovativeness are more responsive to emotional support, which in turn encourages greater knowledge contribution. Moderated Mediating Effect test findings confirm that individual innovativeness significantly moderates the mediation effect, supporting the proposed moderated mediation hypothesis H4

**Implication for research** This study offers important theoretical contributions by shifting the research lens from traditional evaluations of algorithmic management's impact on performance control and task optimization to its influence on post-algorithmic outcomes particularly knowledge contribution among gig workers. While much of the prior literature focuses on AM's efficiency-enhancing role (Liu et al., 2025; Lamers et al., 2022; Meijerink and Bondarouk, 2023; Meijerink et al., 2021; Jarrahi et al., 2021), our research explores how gig workers engage in discretionary, prosocial behaviors such as knowledge contribution within digital labor platforms. This transition from managerial control to knowledge exchange opens new avenues in algorithmic management literature, especially within non-standard work environments. Our study also provides significant contribution in the novel application of emotional contagion theory to explain how emotional cues emitted by algorithmic systems through mechanisms like ratings, automated feedback, and task rejections can influence the affective states of gig workers. Moreover, drawing on emotional contagion theory, this study introduces emotional capital as a key mediating mechanism between AM and knowledge contribution. In addition, the study identifies individual innovativeness as a significant moderating factor that moderates the emotional capital and knowledge contribution relationship (Gomez-Solorzano et al., 2019; Azlan & Wahab, 2020; Obiekwe et al., 2019; Muneer et al., 2024).

**Implications for practice** The findings of this study offer important practical and managerial implications for organisations implementing algorithmic management (AM) systems, particularly in context where employee knowledge contribution is a critical outcome. Firstly, the role of emotional capital as a mediating variable underscores the importance of cultivating a supportive and emotionally engaging work environment. Therefore, organisations should design AM systems that promote psychological safety and perceived fairness. This can be achieved by embedding feedback mechanisms that recognize employee efforts, ensuring transparency in performance assessments, and facilitating participatory decision-making processes. Secondly, the study highlights individual innovativeness as a significant moderator in the relationship between AM and knowledge contribution (Kang et al., 2017; Hwang et al., 2018; Abbas and Sagsan, 2019; Xiao et al., 2021; Wang et al., 2022). Furthermore, it is critical that AM systems are not perceived merely as instruments of control, but as enablers of creativity and



collaboration. Overly rigid or opaque systems may suppress innovative behavior and discourage knowledge sharing.

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Track 09: Leadership Research & Practice in the  
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## **“ACTING SMART, LIVING BETTER: A MODERATED MEDIATION MODEL OF BEHAVIORAL CULTURAL INTELLIGENCE AND LIFE SATISFACTION”**

*Aditi Badoni and Santosh Rangnekar*

**Abstract:** Introduction In contemporary organizations, diversity has emerged as a crucial component. This diversity stems from cultural differences, influenced by political and socio-demographic changes. Growing globalization has amplified the importance of managing cultural diversity within the workplace (Gozzoli & Gazzaroli, 2018). Cultural intelligence (CQ) is defined as “... an individual’s capability to function and manage effectively in culturally diverse settings” (Ang et al., 2007). It includes metacognitive, motivational, behavioral, and cognitive components (Earley & Ang, 2003). The knowledge regarding the impact of behavioral cultural intelligence on well-being remains limited. Despite its importance in multicultural professional environments, this relationship has not been comprehensively explored in the Indian setting. To understand the psychological mechanisms underlying this relationship, we draw upon the Self-Determination Theory (Deci & Ryan, 1985; Ryan & Deci, 2000), which asserts that well-being enhances when the fundamental needs of competence, relatedness, and autonomy are supported by the social environment and successfully fulfilled by individuals (Chirkov et al., 2003). This study examines how Behavioral Cultural Intelligence (BEH), that is, changing behavior according to the cultural environment, influences Life Satisfaction (LS) through the moderator Implementation – Internal and External Motivation (IMPIE), the tendency to plan and initiate change, and the mediating role of Motivational Cultural Intelligence (MOT), defined as an interest to adapt to difference culture. Objectives This study investigated the mediating role of MOT in explaining how BEH contributes to LS. Furthermore, it examines the moderating effect of IMPIE on the BEH-MOT relationship and proposes that the strength of this relationship varies based on individuals’ emphasis on implementation. Additionally, the study tests a moderated mediation model to determine whether IMPIE moderates the indirect effect of BEH on LS via MOT, such that MOT’s mediating influence weakens as implementation importance increases. Methodology Data were collected from professionals in India’s service and manufacturing sectors. Of the 700 distributed questionnaires, 240 were retained after data screening. Standardized scales with established validity from previous research were employed to assess all four constructs. The studied variables were assessed using a “seven-point Likert-type scale”. Data were collected through self-report surveys. This study employed a descriptive cross-sectional design, utilizing a convenience-based, non-random sampling method. We employed the PROCESS macro by (Hayes, 2013). Utilizing 5,000 resamples, Model 4 and Model 59 were employed to examine the mediating and moderating effects, respectively. Results



Harman's single-factor test and Latent method factor indicated no common method bias in the data. The model fit of the variables was assessed through confirmatory factor analysis and fit indices, such as CFI, SRMR, TLI, and RMSEA. The model demonstrated effective data fitting and supported convergent and discriminant validity. MOT mediates the relationship between BEH and LS. This was tested using the PROCESS macro (Model 4), which indicated that BEH was positively correlated with MOT, which, in turn, exhibited a positive correlation with LS. The direct effect of BEH and LS remained significant, suggesting partial mediation. To evaluate the moderated mediation model, the PROCESS macro (Model 59) was used. IMPIE moderates the relationship between BEH and MOT. The interaction term between BEH and IMPIE was significant. Simple slope analysis showed BEH significantly predicted MOT at all IMPIE levels, with the strongest association at low IMPIE and weaker at high IMPIE. Conditional indirect effects showed that mediation of BEH on LS via MOT was significant at low and average IMPIE, but not at high IMPIE, confirming IMPIE's moderating effect. Strong emphasis on implementation weakens the motivational pathway linking BEH to life satisfaction. Discussion A moderated mediation model using Self-Determination Theory examined BEH's influence on LS through MOT, with IMPIE as a moderator. Results showed BEH and LS are partially mediated by MOT, as higher behavioral CQ leads to more motivational drive, enhancing life satisfaction. IMPIE significantly moderates the BEH-MOT relationship, with the positive association strongest at low IMPIE levels and weakening as IMPIE increases. The mediation effect between BEH and LS was significant at low and average IMPIE levels but diminished at high levels, indicating moderated mediation. These findings suggest behavioral cultural intelligence can foster motivation and well-being, though its effectiveness may decrease when individuals overemphasize goal implementation, potentially undermining intrinsic motivation. The findings underscore balancing cultural adaptability with autonomy-supported goal setting. Professionals should recognize that behavioral adaptability and individual goal implementation shape motivation and well-being. It highlights the relationship between behavioral capacity, intrinsic motivation, and the implementation's effect on life satisfaction. For practitioners, the findings emphasize training for cultural adaptability while creating environments supporting intrinsic motivation. Conclusion This study highlights the roles of CQ dimensions and implementation motivation in life satisfaction. It identifies MOT as a partial mediator of the relationship between BEH and LS. The present study showed that IMPIE moderates this mediation pathway, with BEH's indirect effect on LS through MOT decreasing at higher IMPIE levels. These findings enhance our understanding of how cultural competencies and motivational factors influence life satisfaction and inform interventions for cross-cultural adjustment and psychological well-being.

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## Pope Francis as a Spiritual Leader through the Lens of Fry's Model

*Mukti Clarence*

**Abstract:** This paper critically examines the leadership of Pope Francis through Fry's (2003) spiritual leadership model, which centres on vision, hope/faith, and altruistic love as drivers of followers' intrinsic motivation, purpose, and sense of comradeship. While the application of spiritual leadership theory has largely been limited to organizational contexts, this study extends its relevance to one of the oldest and most enduring institutions—the Roman Catholic Church. The purpose of this exploration is to examine how spiritual leadership operates within a hierarchical, tradition-bound structure while fostering innovation, inclusion, and moral transformation. Employing qualitative conceptual analysis, this study engages with core papal texts (*Laudato Si'*, *Fratelli Tutti*, *Evangelii Gaudium*, and *Amoris Laetitia*), public addresses, and symbolic pastoral actions. The analysis is framed within Fry's theoretical dimensions, examining how Pope Francis communicates vision, sustains hope/faith, and embodies altruistic love within the institutional framework of the Church. The study finds that Pope Francis not only exemplifies Fry's spiritual leadership model but does so in ways that challenge institutional inertia. His vision calls for ecological and spiritual renewal; his hope/faith is projected through messages of mercy and inclusion; and his altruistic love is manifest in his humility, personal simplicity, and preferential option for the poor. These leadership dimensions strengthen a sense of mission and belonging among followers across ideological and religious boundaries. By positioning the Roman Catholic Church as a centuries-old organizational system, this study provides an extension of Fry's model of spiritual leadership. It demonstrates how spiritual leadership can function as a transformative force within deeply hierarchical institutions, offering valuable insights for leadership theory, change management, and values-based governance in both secular and faith-based organizations.

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## Digital Leadership in Academia: Unlocking Organizational Agility Through Leadership

*Mridul Thakur and Aakansha Singh*

**Abstract:** Effective leadership in today's workplace often combines supportive and transformational styles, backed by flexibility and the ability to adjust. Transformational leaders inspire vision and change (Hilton et al., 2023). Supportive leadership promotes psychological safety and team effectiveness (Shahid et al., 2021). Agile leadership helps teams respond to changes in external or internal environment on time. As work environments change, especially due to ongoing digital transformation,

leadership styles must keep evolving to stay effective. Like technology, which is always changing, digital leadership is a new idea that will keep transforming as digital tools improve and AI becomes even more important (Tigre et al., 2025). However, the idea of digital leadership is not fully defined yet. Existing studies show some overlap with related concepts like e-leadership and transformational leadership. A recent Forbes article listed the key skills that define a digital leader. These include AI knowledge, data skills, thinking about automation, strategic vision, leading change, fostering innovation, making quick decisions, and the ability to influence others without direct control. At its core, digital leadership focuses on teamwork and the ability to lead well in a digital world. It involves making informed decisions based on real-time data. Recent studies from South Korea highlight how important strong technology infrastructure is for driving innovation. In these settings, digital leadership promotes creativity and supports a culture of ongoing learning in organizations (Yoo et al., 2025). As most industries go through digital transformation, the education sector must also accept this change. Without constant adjustments to keep up with new technologies, it will be harder to equip students with the skills they need for the future. This is especially true in the education sector, where embracing digital tools not only enhances teaching and learning experiences but also builds a culture that values innovation. When schools and educational institutions build strong digital habits and a positive digital culture, it not only supports day-to-day learning but also helps them grow and thrive in the long run (Yoo et al., 2024). In the education sector, to ensure that digital transformation and ethical use of AI tools is promoted, a skilled digital leader must take charge (Antonopoulou et al., 2020). A skilled leader well-versed in digital technologies could play a promising role in the quality of change, quicker implementation and deep level implementation where change reaches every level. Organizational agility is defined in terms of components such as strategic thinking, change management, tolerance to frequent changes as well as creative mindset (Karimian & Chahartangi, 2024). In their book, Joiner & Josephs, 2007 have discussed the idea of agility imperative where the authors state that greater agility is a requirement of most forms of modern organizations for survival in long run. In the context of higher education in India, agility could be defined as an institution's ability to adapt and respond swiftly to both external changes, like advancements in digital technologies and the introduction of smart classrooms, and internal developments, such as curriculum reforms driven by the UGC. As the educational landscape evolves rapidly, it is essential for institutions to remain flexible and proactive in embracing these changes to meet the emerging needs of students and society. Continuous innovation in education is a systemic endeavor that must be integrated into the teaching-learning process to enhance classroom engagement and overall educational outcomes. Major driver of this change is a supportive digital leader who promotes innovation and prepares other stakeholders to embrace change smoothly (Menon & Suresh, 2020). This paper aims to explore the various key competencies and traits that entail digital leadership. Furthermore, it also aims to evaluate challenges and barriers faced by academic digital visionaries in fostering organizational agility. This paper will facilitate building a model that connects academic digital leaders with measurable agility indicators using appropriate theoretical framework.

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## Exploring the Managerial Skills Required for Meeting the Demands of Digitalization Among a Variety of Job Roles and Functions: An Empirical Study with Reference to the Job Descriptions and Job Specifications of Management Teachers of Business Schools

*Dr. Niraj Kishore Chimote*

**Abstract:** 1. Introduction: The rapidly evolving digital landscape necessitates a redefinition of managerial competencies across various job roles and functions. In the context of higher education, particularly in business schools, management teachers are increasingly required to possess a nuanced blend of technical, analytical, and interpersonal skills to effectively adapt to digitalization demands. The dynamic nature of digital tools, online learning platforms, and data-driven decision-making processes requires faculty members to transcend traditional teaching roles. The research problem addressed in this study is to identify the specific managerial skills required to meet digitalization challenges and how these skills align with the job descriptions and job specifications of management faculty in business schools. The significance of this research lies in its potential to guide curriculum development, recruitment practices, and professional development initiatives within academic institutions. A detailed description of managerial skills considered in this study includes: Technical Skills: Proficiency in digital tools, learning management systems, and data analytics. Analytical Skills: Critical thinking, problem-solving abilities, and data interpretation. Interpersonal Skills: Communication, collaboration, and leadership in virtual and hybrid environments. Additionally, the study systematically analyzes job descriptions and job specifications to align these skills with the expectations from management teachers. Literature Review and Research Gaps: Existing literature emphasizes the increasing role of digital competency in management education but offers limited empirical insights into the specific managerial skills required. Prior studies have broadly discussed digital transformation but have not sufficiently explored the integration of managerial skills within job descriptions and specifications in the academic setting. This study addresses this gap by empirically linking managerial skill requirements with formal job expectations of management faculty. 1 2. Objectives: To identify and evaluate the managerial skills (technical, analytical, and interpersonal) required for managing digitalization in management education. To analyze the job descriptions and job specifications of management faculty members in relation to these managerial skills. To examine the impact of managerial skills on the job roles and functions of management teachers. Hypotheses: H1: Technical skills significantly influence the job descriptions and job specifications of management faculty. H2: Analytical skills significantly influence the job descriptions and job specifications of management faculty. H3: Interpersonal skills significantly influence the job descriptions and job specifications of management faculty. 3. Methodology: Research Design: Quantitative research using a structured questionnaire. Dependent Variable: Job Descriptions and Job Specifications of management faculty. Independent Variables: Technical skills, Analytical skills, Interpersonal skills. Data Collection: Primary data collected via a structured questionnaire. Pilot study conducted to validate the questionnaire. Sample size: 120 management faculty members

(Assistant, Associate, and Senior Professors). Sampling Technique: Stratified random sampling. Cronbach's Alpha Score: 0.891 indicating high reliability. Analytical Techniques: Factor Analysis (KMO = 0.872; Bartlett's Test of Sphericity  $p < 0.001$ ) Total Variance Explained and Rotated Component Matrix used to identify key factors. Multiple Regression Analysis with ANOVA, R-Square, and Beta Coefficients. Detailed Questionnaire and Description: Section A: Demographic Profile of Respondents Name (Optional): \_\_\_\_\_ 1. 2 Gender: Male / Female / Prefer not to say Age Group: 25–34 years / 35–44 years / 45–54 years / 55 years and above Designation: Assistant Professor / Associate Professor / Professor Years of Experience as a Faculty Member: Less than 5 years / 5–10 years / 11–15 years / More than 15 years Have you undergone any digital skills training in the past 3 years? Yes / No Section B: Technical Skills Required for Digitalization I am proficient in using Learning Management Systems (LMS) for course delivery. I am skilled at using digital content creation tools (e.g., video lectures, simulations). I effectively use data analytics to assess student performance. I regularly adopt emerging digital teaching tools and technologies. I am capable of managing online classes and virtual collaborations efficiently. Section C: Analytical Skills Required for Digitalization I can analyze and interpret student learning data to improve teaching outcomes. I use critical thinking to solve digital-related teaching challenges. I effectively evaluate the effectiveness of digital teaching tools and platforms. I can design digital assignments and assessments that measure analytical thinking. I am comfortable using digital dashboards and management reports for decision-making. Section D: Interpersonal Skills Required for Digitalization I communicate effectively with students and colleagues in digital/virtual environments. I can build strong collaborative relationships through digital platforms. I provide timely and constructive feedback using digital communication tools. I demonstrate leadership in managing digital teaching teams and projects. I can resolve conflicts and misunderstandings in virtual settings. Section E: Job Descriptions and Job Specifications Alignment My job description emphasizes the use of digital teaching methods. My job specification includes requirements for technical skills related to digitalization. My job description encourages analytical assessment of student data. My job specification highlights the importance of interpersonal collaboration in digital environments. The expectations in my job role align with the managerial skills necessary for digitalization. Section F: Open-Ended Questions What additional managerial skills do you think will be critical in the future of digital education? What are the main challenges you face in adapting to digitalization in your current role? Questionnaire Description: Type: Structured questionnaire with both closed-ended (Likert scale) and open-ended questions. Scales Used: 5-point Likert scale for Sections B, C, D, and E to quantify faculty perceptions and skill levels. 3 Validation: A pilot study was conducted with 15 faculty members to refine the questionnaire items. Reliability: Cronbach's Alpha for the entire questionnaire was calculated at 0.891, indicating excellent internal consistency. Target Respondents: Management faculty members including Assistant Professors, Associate Professors, and Professors. Purpose: To empirically assess the presence and impact of managerial skills (technical, analytical, interpersonal) on job descriptions and specifications in the context of digitalization. Results: Hypothesis Independent Variable RSquare ANOVA (F-value, pvalue) Beta Coefficient Conclusion H1 Technical Skills 0.482 F = 54.29,  $p < 0.001$  0.501 Accepted H2 Analytical Skills 0.356 F = 37.12,  $p < 0.001$  0.423 Accepted H3 Interpersonal Skills 0.278 F = 29.45,  $p < 0.001$  0.375 Accepted The factor analysis revealed distinct factors for each



managerial skill with significant loadings, affirming their relevance to the job descriptions and specifications of management faculty. 4. Discussion: The findings confirm that technical, analytical, and interpersonal skills significantly influence the job descriptions and specifications of management faculty members. The results suggest that technical skills have the strongest impact, reflecting the growing reliance on digital platforms in teaching and administration. Analytical and interpersonal skills also play a crucial role, emphasizing the need for faculty to critically engage with digital data and foster collaborative digital learning environments. These insights have practical implications for human resource policies, including recruitment, performance appraisal, and faculty training programs. Institutions must prioritize these skills to prepare faculty for the demands of digitalization. Limitations include the study's focus on a single geographic area and the exclusion of longitudinal data. Future research can expand the scope across multiple regions and explore skill evolution over time. 5. Conclusion: This empirical study underscores the critical managerial skills required by management faculty in the digital age. Technical skills emerged as the most influential, followed by analytical and interpersonal skills. The alignment of these skills with job descriptions and specifications offers actionable insights for academic leaders in reshaping faculty roles, recruitment, and training strategies. The study contributes to both theoretical understanding and managerial practice by bridging the gap between digitalization demands and human resource management in business schools. It encourages continuous faculty development and institutional adaptation to digital transformation.

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## Wellbeing 4.0: How Gen Z and Generative AI are Shaping the Future of Employee Support System

*Bhumika Ray and Digvijay Singh Bizalwan*

**Abstract:** With the emergence of the post-pandemic period, the paradigm of employee wellbeing is experiencing a radical shift. Conventionally relied on the face-to-face interaction, Human Resource (HR) policies, and the support of peers, the organizational wellbeing practices are nowadays challenged by another shift of the generation. As Generation Z (Gen Z) born between 1997 and 2012, enters the workforce, one should expect to see a work environment filled with digital natives who are changing the way that wellbeing is viewed, available, and cultivated. The trend towards use of Artificial Intelligence (AI) based services to track wellbeing, receive mental support, and even as a sort of emotional companion is one of the most notable in the emerging trends. This study discusses such a paradigm shift, its implications, and the structure of a study to gain a clearer view of how organizations can effectively cultivate and observe the wellbeing of Gen Z employees in such a changing environment. Gen Z employees have their values and issues at the workplace. They are more interested in mindfulness, lifestyle, and meaning than usual signs of success. But then they are also the most technologically addicted and socially lost generation to have grown of age in a world of global imbalance, financial



uncertainties and all-encompassing technology. At the same time as firms are spending millions on mental health apps, Employee Assistance Programs (EAPs), and flex work, a quiet revolution is taking place. Gen Z workers are no longer using conventional human-based sources of support and instead are seeking out advice on mental health, career-related matters, and emotional regulation, as well as outlets to express themselves anonymously and without fear of judgment by Generative AI. Being efficient, accessible, and non-judgmental, this transformation introduces such urgent questions as the efficacy of AI in affecting human wellbeing and the interpersonal relationships within the working context and what HR and leaders should do to update their strategies so as to remain relevant. This research will present explorative qualitative research that aims to find out: 1. Why and how Gen Z employees prefer using generative AI for wellbeing. 2. What the consequences are for organizational culture, peer relationships, and employee support systems. 3. How organizations can monitor wellbeing effectively when much of the expression and coping is mediated by private AI conversations. The study is based on two theoretical frameworks: Self-Determination Theory (SDT) and the Techno-Wellbeing Framework. SDT assumes that wellbeing and motivation of the employees depend on satisfaction of three psychological needs focused on autonomy, competence, and relatedness. Engagement and resilience are enhanced when people feel in control of their work, that they have mastered it, and that it makes them feel connected to others. On the other side, inadequate requirements always create stress and poor wellbeing. SDT thus offers a positioning lens to the design of organizational work practices that contribute to both performance and an adaptive wellbeing. The dual effect of technology is further brought out in the Techno-Wellbeing Framework. Although technology, like health apps and artificial-intelligence-based chatbots, can increase access to mental-health support and improve self-regulation, it can be allied to techno-stressors, which can provide stress and lead to feelings of anxiety, tiredness and what often used to be considered work-life boundaries. Over- or under-reliance on technological mediation and fewer digital independence can decrease psychological safety and increase emotional exhaustion. The study will be an exploratory design beginning with qualitative interviews during which semi-structured interviews will be carried out with 25 to 30 representative of Gen Z employees in various fields. Thematic Analysis will be applied next to the interview material to identify important themes. This research expects the use of Generative AI by Gen Z employees to evolve into a so-called first-line responder of wellbeing support due to its fast response, it's never-before-seen availability, and perceived privacy and benevolence. The results will indicate that AI does not substitute the human connection as it might usually play a role of filter or delay in asking people to get a form of interpersonal support. The self-processing and containment of feelings by AI are performed before they are addressed with other individuals or professionals, which may also lead to a decrease in the peer support and emotional literacy. This way, HR teams will have to reconsider their approaches, introduce digital wellbeing solutions but at the same time retain real human connections. In addition, the research establishes a critical need to reconsider the method of monitoring employee wellbeing, the focus on data privacy and data informed consent, and consideration of the option of collaborating with AI vendors to gain access to anonymized and aggregated wellbeing patterns. This study will imply complete shift in how organizations will have to treat employee wellbeing in the digital age, and in particular, Gen Z. It shows that EAPs will have to be redesigned, and applied in such a way, that generative AI tools will be

fully integrated and allow an easy transitioning, or flipping of the human counselling part of an employee assistance program. Second, it is important to promote emotional AI literacy of the HR and managers, so that they could learn how AI application is silently transforming emotional behavioural patterns and coping of workers. Thirdly, the adoption of AI-human hybrid models can also streamline the aspects of early intervention, as AI may be used as an initial, human-like inquirer that can raise potential wellbeing flags, to be later addressed by human check-ups. Fourthly, organizations ought to create privacy-focused analytic systems, based on opt-in passive data, to track wellbeing patterns without sacrificing employee trust and consent. Finally, there is additionally an expanding ascent to develop peer empathy programs to energetically educate Gen Z workers on how to create and maintain authentic interpersonal relationships to make sure that the rising use of AI does not demise the premise of human support mechanisms in the workplace.

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### Unheard at Work: Reddit Narratives on Disability Disclosure, Accommodations, Remote Realities and Inclusion in Digital Workspaces.

*Ishika Azad, Tavleen Kaur, Sahiba Sahny and Ritesh Kumar Dubey*

**Abstract:** Introduction While the inclusion of Persons with Disabilities (PwD) has gained increasing visibility in corporate and academic conversations, much of this discourse remains confined to symbolic compliance—marked by hiring quotas and infrastructural adjustments—rather than addressing the everyday realities of workplace integration. However, inclusion is not achieved through recruitment alone, nor through physical access alone. It is constructed, negotiated, and often undermined through the micro-interactions, norms, and organizational behaviours that shape an employee’s sense of legitimacy, value, and connection. Scholars such as Bendl et al. (2025), Holck (2018), and Janssens and Zanoni (2014) argue that despite formal diversity commitments, the lived experiences of marginalized employees frequently remain unchanged. These scholars call for a shift from policy-focused approaches to those that foreground affective, embodied, and relational dimensions of inclusion. This critique is particularly urgent in the case of employees with disabilities, whose post-hiring experiences are shaped not only by their impairments but by how those impairments are socially perceived. For example, employees with visible disabilities—such as mobility impairments or limb differences—often encounter stereotyping, infantilization, or exclusion from informal networks (Carr & Namkung, 2021). In contrast, those with invisible disabilities—such as ADHD, depression, fibromyalgia, or autoimmune disorders—must continually weigh the risks and consequences of disclosure. Choosing non-disclosure may protect one from stigma but limits access to accommodation. Conversely, disclosure can lead to disbelief, microaggressions, or organizational disengagement (Santuzzi et al., 2014; Olkin et al., 2019). These divergent realities suggest that visibility is not a passive descriptor, but a powerful variable in shaping how disability is responded to within organizational culture. Through netnographic analysis of posts on

the r/disability subreddit, the research investigates employee reflections on accommodations, work-from-home requests, job security, and the nuanced dilemma of whether to disclose a disability—especially invisible ones—during interviews. While organizations often highlight inclusive policies, employee experiences reveal a more complex picture, where the success of these initiatives depends heavily on workplace culture, managerial empathy, and peer support. The study surfaces how inclusion can feel performative when accommodations are granted reluctantly, or when disclosure leads to skepticism and emotional strain. These insights contribute to the broader discourse on organizational inclusion by centering lived experiences and highlighting the gaps between policy and practice in digitally mediated workplaces.

**Methodology** This study adopts netnography to explore the pre and post-hiring inclusion of employees with visible and invisible disabilities. The first phase involves netnography of the subreddit r/disability, chosen for its rich, anonymous discourse around workplace experiences. Posts from the past two years were filtered using keywords such as “boss,” “manager,” “coworkers,” “work” and “job” to focus on interactions relevant to organizational life. Through inductive thematic analysis, five key themes emerged: Work-from-Home, which was often granted selectively or inconsistently, especially when tied to disability-related needs, Job Insecurity, where users expressed fear of being viewed as dispensable due to health conditions; Accommodation, revealing inconsistencies and lack of proactive support from employers;; Burnout, linked to masking symptoms, unmet needs, and lack of psychological safety; and Disclosure, where employees with non-apparent conditions shared dilemmas around when and whether to reveal their disability status. This work-in-progress study lays the groundwork for the second phase of research, where the themes identified through Reddit narratives will inform the development of an interview guide for in-depth conversations with employees. The goal is to further explore how individuals experience and navigate inclusion dynamics within organizations. By combining netnographic insights with qualitative interviews, the study aims to uncover the often-invisible challenges faced by employees with disabilities—particularly in virtual work settings where inclusion is frequently presumed but not fully realized.

**Discussion** This study reveals that inclusion for employees with disabilities extends far beyond formal policies—it is rooted in the day-to-day relational dynamics that shape workplace experience. A recurring theme in the Reddit narratives is job insecurity, particularly among those who request work-from-home arrangements or accommodations. Many employees fear being seen as less committed or capable, and some shared that requesting flexibility triggered micromanagement, withdrawal of opportunities, or even termination threats. Discrimination is especially pronounced during the hiring process. Several users disclosed that revealing their disability—especially invisible ones—led to being ghosted by recruiters or never receiving interview calls. Those with visible disabilities reported facing tokenistic inclusion, with organizations showcasing diversity without offering genuine support. Requests for basic accommodations such as wheelchair-accessible spaces or transfers were often delayed or denied, and some users reported being paid below minimum wage.

**Implications** Managers play a crucial role in creating psychologically safe environments where employees feel secure requesting accommodations without fear of judgment or job loss. This includes normalizing conversations around accessibility needs and treating accommodations as a standard part of workplace flexibility, rather than as exceptions. Training managers to recognize and address unconscious bias, particularly during hiring and post-hiring

phases, is essential—especially in light of discriminatory practices such as recruiter ghosting or the penalization of disability disclosure. Moreover, remote work should not be assumed to be inherently inclusive.

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## WIRED TO WORK, WIRED TO WAVER: UNDERSTANDING EMPLOYEE OUTCOMES IN THE ALGORITHMIC HRM PROCESS

*Vaishnavi Gautam, Mridul Maheshwari and Utkarsh Utkarsh*

**Abstract:** In recent years, algorithms have increasingly been adopted as governance tools across industries, taking over roles traditionally executed by line managers and HR professionals. One prominent manifestation of this shift is algorithmic human resource management, in which self-learning algorithms leverage digital data to make and enforce HR-related decisions such as task allocation, performance evaluation, and compensation, often with little to no human oversight (Meijerink et al., 2021). While academic attention to algorithmic technologies has grown, recent reviews underscore those inquiries into their HR-specific consequences, particularly on employee outcomes, have not kept pace with their rapid implementation (Ashford et al., 2018; Cropanzano et al., 2023; Gautam et al., 2024; Keegan & Meijerink, 2025). While earlier studies emphasize the promise of algorithmic management in enhancing precision, objectivity, and efficiency in workforce governance (Bellesia et al., 2023). Recent research has hinted towards a more complex and contested picture. For instance, studies highlight that gig workers are initially attracted to platforms for their flexibility (Lehdonvirta, 2018), low entry barriers, and perceived autonomy (Ashford et al., 2018) But further, these perceived benefits are often counterbalanced by the realities of algorithmic control. Specifically, scholars argued that algorithmic governance introduces new forms of surveillance, rigid control, and impersonal decision-making (Parent-Rochelleau et al., 2023). With the replacement of human oversight by data-driven decision rules, the work environment tends to become more competitive, less predictable, and increasingly shaped by opaque performance metrics (Wood, 2021). Building on these insights, scholars have begun examining the psychological and behavioral implications of algorithmic management. For instance, studies have explored the impact of algorithmic systems on job satisfaction (Jabagi et al., 2025), engagement (Wang et al., 2022), service performance (Zhang et al., 2025), and even worker referrals (Lu et al., 2024). However, the relationship between algorithmic HRM and platform commitment remains underexplored, particularly in the context of gig work, where structural ties to the platform are weak, and worker identities are more fluid and transactional. This gap is especially consequential given that platform commitment plays a pivotal role in shaping labor dynamics within gig ecosystems. Understanding how commitment emerges or fails to emerge in such contexts is critical for several reasons. First, in highly flexible, on-demand labor ecosystems, commitment enhances platform stability and workforce continuity (Kuhn et al., 2021). Second, gig platforms operate on

network effects; their value increases as more workers and users engage. Sustained worker commitment helps ensure service reliability and availability, reinforcing positive feedback loops between labor supply and customer demand. Conversely, high turnover or low commitment can destabilize service delivery, erode user trust, and undermine competitive advantage. Third, commitment is closely tied to engagement, performance, and customer satisfaction, factors that are particularly vital in service-driven platforms, where worker behavior directly shapes user experience (Fisher et al., 2025). However, algorithmic HRM marked by surveillance, ranking systems, and automated decision-making can compromise workers' sense of fairness, autonomy, and belonging, thereby diminishing the likelihood of developing long-term commitment (Duggan et al., 2023). In such environments, workers may come to view the platform as a transactional intermediary rather than an employer, intensifying platform-switching intentions. Against this backdrop, the present study seeks to examine: RQ 1. How does algorithmic management, as a form of actual HRM in gig work, influence gig workers' platform commitment and platform-switching intentions? To address this knowledge gap, we leverage HR Process Theory (Nishii & Wright, 2007) which provides a framework for understanding how HRM practices influence employee outcomes through intended, actual, and perceived HRM practices. Nishii and Wright (2007) emphasize that HRM practices, as initially designed (intended HRM), may be altered in their execution (actual HRM) and further shaped by employees' interpretations (perceived HRM), which further translate into employee outcomes such as efficiency, and further result in employee reaction. In gig work, algorithmic management functions as actual HRM, dictating work conditions, performance monitoring, and decision-making processes without direct human oversight. Unlike traditional HRM, which fosters social interaction and relational exchanges, algorithmic HRM is data-driven, impersonal, and often opaque (Li et al., 2025), potentially shaping how gig workers perceive their work environment and commitment to the platform. Building on the above HR process model understanding, the present study examines how algorithmic management influences employee outcomes in gig work through workers' perceptual and interpretive processes. Specifically, we conceptualize algorithmic management as actual HRM, the implemented system that governs work allocation, monitoring, and evaluation. However, gig workers do not respond to algorithmic HRM directly; instead, they make sense of it through personal and contextual filters, giving rise to perceived HRM in the form of a competitive psychological climate (CPC). This perceived climate captures workers' interpretations of the algorithmic system as one that fosters rivalry, constant evaluation, and pressure to perform, ultimately shaping their attitudinal and behavioral responses. Within this framework, organizational commitment is understood as an attitudinal outcome reflecting emotional attachment to the platform, while platform-switching intention reflects a behavioral response driven by disaffection or a lack of relational embeddedness. Further aligning with Nishii & Wright, (2007) emphasis on the role of sense-making, we further propose that platform insecurity works as a moderator, i.e, gig workers' anxiety about job continuity and access to future work moderates how algorithmic management is interpreted and how it ultimately influences behavior. Therefore, we hypothesize as follows: Hypothesis 1 (H1): Algorithmic management is negatively associated with the organizational commitment of gig workers. Hypothesis 2 (H2): Algorithmic management is positively associated with the competitive psychological climate of gig workers. Hypothesis 3 (H3): Competitive psychological climate of gig



workers is negatively associated with their organizational commitment. Hypothesis 4 (H4): Competitive psychological climate of gig workers mediates the relationship between algorithmic management and organizational commitment. Hypothesis 6 (H6): Platform commitment is negatively associated with platform switching intentions among gig workers. Hypothesis 7 (H7): Competitive psychological climate and platform commitment sequentially mediate the relationship between algorithmic management and platform-switching intentions. Hypothesis 8 (H8): The relationship between algorithmic management and platform switching intention is sequentially mediated by competitive psychological climate and platform commitment, and this indirect effect is moderated by platform insecurity work. Figure 1. Theoretical model 2. Proposed Methodology Participants will be recruited through the Prolific online research platform (Palan & Schitter, 2018), with eligibility restricted to full-time gig workers to ensure contextual and occupational relevance. Participants will receive monetary compensation in accordance with Prolific's fair pay guidelines. To address concerns of common method variance (Podsakoff et al., 2012), data will be collected across three temporally separated waves, each spaced one week apart. This time-lagged design minimizes consistency bias, reduces respondent fatigue, and allows behavioral outcomes to unfold over time. All constructs will be measured using previously validated multi-item scales, with minor adaptations to fit the gig work context. Responses will be recorded on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Algorithmic management will be assessed using the 20-item multidimensional scale developed by Parent-Rochelleau et al., (2023), which captures core aspects such as scheduling, monitoring, performance evaluation, goal setting, and compensation. Competitive psychological climate will be measured using a four-item scale developed by Brown et al. (1998), capturing perceptions of rivalry, performance comparison, and pressure to outperform peers. Platform commitment will be assessed using an adapted version of Meyer & Allen (1991) scale, covering affective, continuance, and normative dimensions to reflect gig workers' emotional attachment, perceived costs of leaving, and sense of obligation to the platform. Platform-switching intention will be measured using items adapted from Oliver (1997), capturing the intention to discontinue work with the current platform and move to an alternative. Platform insecurity work will be assessed using the scale developed by Chen et al. (2024), which captures the self-directed actions and anxieties workers experience to maintain visibility and access to future work in algorithm-mediated environments. Demographic variables such as age, gender, and education will be included as controls, given their known influence on workplace perceptions (Parent-Rochelleau et al., 2023). To test the hypothesized first-stage moderated mediation model, Hayes' PROCESS macro (Model 7) will be used. This model will examine the indirect effect of algorithmic management on organizational commitment through competitive psychological climate, while assessing the moderating role of platform insecurity work on the relationship between algorithmic management and competitive climate. Prior to hypothesis testing, Confirmatory Factor Analysis (CFA) will be conducted to validate the measurement model. Internal consistency and construct validity will be evaluated using Cronbach's alpha, Composite Reliability (CR), and Average Variance Extracted (AVE), as per the recommendations of Hair et al. (2019). Finally, structural relationships, including direct, indirect, and interaction effects, will be estimated using Partial Least Squares Structural Equation Modeling (PLS-SEM) via SmartPLS 4.0 (Ringle et al., 2020), which is well-suited for models involving



complex mediation and moderation pathways. 3. Anticipated contribution This study has several theoretical implications. First, we unpack how its technologically driven practices influence workers' sense of attachment and intention to remain. In so doing, we extend the HR Process Model (Nishii & Wright, 2007) to the context of platform-mediated labor. While prior studies have established HRM's role in shaping organizational commitment in conventional employment settings (e.g., Khilji & Wang, 2006; Piening et al., 2014), its relevance in digitally governed gig environments remains undertheorized. By conceptualizing algorithmic HRM as the enactment of actual HRM, thereby adapting HR Process Theory to non-traditional, fragmented work structures. Second, we theorize that algorithmic HRM engenders a competitive psychological climate (CPC), unlike traditional HRM, which often incorporates human discretion and relational cues. Algorithmic HRM operates through impersonal, data-driven logic, fostering perceptions of internal rivalry and performance-based exclusion. By identifying CPC as a mediating mechanism, we illuminate how algorithmic control is internalized by workers and translated into diminished organizational commitment. Third, we introduce platform work insecurity as a theoretically meaningful moderator that shapes the interpretive lens through which algorithmic HRM is experienced. We show that high insecurity amplifies threat-based perceptions of CPC, exacerbating its negative effects, while low insecurity enables more instrumental or benign appraisals of algorithmic governance. This adds contextual depth to HR Process Theory by demonstrating how boundary conditions alter the translation of actual HRM into perceived HRM and, ultimately, into worker outcomes.

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Track 09: Leadership Research & Practice in the  
Context of Changes in the World of Work

## The Future of Work: Repositioning Employee Wellbeing as a Core Organizational Strategy

*Vriti Jain and Jyoti Sharma*

**Abstract:** In today's increasingly complex, volatile, and competitive occupational landscape, organizations face the critical challenge of fostering high performance while minimizing absenteeism and employee turnover. Employee wellbeing has emerged as a cornerstone of organizational success, with growing recognition of its role in enhancing productivity, commitment, and retention. This study investigates the current state of employee wellbeing in private sector banks and its influence on employees' intention to stay. Drawing on existing literature, the research highlights how employee wellbeing positively impacts retention by fostering a more engaged and committed workforce. Additionally, the study explores the mediating role of psychological empowerment in this relationship. The study is conducted among top five private sector banks in Union territory of Jammu and Kashmir. the data is analyzed using SEM analysis. By examining the interplay between wellbeing and empowerment, the study provides a comprehensive understanding of how organizations can strategically nurture human resources to achieve sustainable success. The findings contribute to both

academic discourse and practical strategies aimed at strengthening employee retention in the banking sector.

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Track 09: Leadership Research & Practice in the  
Context of Changes in the World of Work

## How organizations survive in Disruptive Digital Transformation: A Co-evolution of technology and organization perspective over technological determinism perspective

*Anmol Basant (IIM Ahmedabad)*

**Abstract:** The meteoric progress in digital technologies like artificial intelligence (AI) and automation, robotics, the Internet of Things (IoT), and cloud computing presents a scenario where the fundamental nature of work, communication, and the way we organize activities is changing (Orlikowski & Barley, 2001; Trenerry et al., 2021). The scale and velocity with which these technologies are advancing raise concerns about their potential to completely transform organizations and displace employees altogether (Frey & Osborne, 2013; Brynjolfsson & McAfee, 2014). Therefore, analyzing how organizations can survive in the face of the disruptive digital transformation (DT) of workplaces is more pertinent than ever. The collaboration between organization studies (OS) and information technology (IT) is essential (Orlikowski & Barley, 2001). OS explores social aspects of organizing, while IT focuses on technical dimensions. Their collaboration is vital for comprehensively documenting and evaluating the evolving dynamics in this field (Orlikowski & Barley, 2001).

According to Vial (2019, p. 121), digital transformation is "a process that aims to improve an entity by triggering significant changes to its properties through combinations of information, computing, communication, and connectivity technologies." Here, an entity can be an organization, industry, or society at large. Thus, for an organization, digital transformation can be understood as a process involving profound and structural changes driven by the integration of diverse technologies that fundamentally reshape organizations' value and identity (Wessel et al., 2020; Trenerry et al., 2021). However, adopting emerging and new digital technologies can be disruptive and threaten an organization's survival. Thus, it becomes crucial to successfully implement technology in organizations to avoid any threat to survival. In this study, we undertake a co-evolution of technology and organization perspective to examine the same research question.

Under the technological determinism perspective, technology was considered as "an independent variable, and structure ... a dependent variable" (Perrow, 1967, p. 195). Rooted under the positivist tradition of research, researchers considered technology to consist of structures like decision models and data that can overcome human weaknesses like bounded rationality (Rice, 1984; DeSanctis & Poole, 1994). It was a firm belief of the scholars who adopted hard-lined technological determinism that, once applied, technology can bring efficiency, productivity, and satisfaction to organizational members and organizations (DeSanctis & Poole, 1994). A moderate version of this perspective came to be known as the contingency view, which argued that situational factors interact with technology to cause a particular

organizational outcome (e.g., Gutek et al., 1984; Donaldson, 2001). Although technology properties and contextual contingencies can have crucial roles in determining the effects of information technology, the problem is that there are no clear and visible patterns that specific technology properties or contextual contingencies consistently predict either positive or negative outcomes (DeSanctis & Poole, 1994).

Therefore, the determinism (including the hard-lined determinism and contingency theory view) perspective started to lose ground, and scholars, during the 1980s, began focusing on how social systems shaped technology and its usage (Leonardi & Barley, 2010). This shift prompted scholars to embrace a new perspective in examining the relationship between technology and organizations. Under the new perspective, researchers contended that social dynamics significantly influenced the adoption, implementation, usage, and interpretation of technology—a crucial aspect overlooked by the earlier perspective. In this study, we call this perspective the co-evolution of technology and organization perspective. Scholars under the co-evolution perspective argue that organizational change occurs due to continuous social interactions. This involves adapting to both the limitations and opportunities provided by technology, as well as interactions among individuals.

The reason for adopting the technological determinism or co-evolution perspective stems from how we define organizational structure. Researchers undertaking the technological determinism perspective consider structure as "abstract, formal relations that constrain day-to-day action in social settings" (Barley, 1986, p. 79). Thus, in a sense, "structure" under this perspective refers to the formal framework within which an organization operates. This structure encompasses various elements such as roles, responsibilities, hierarchies, rules, and procedures that define how tasks are organized and coordinated within the organization. Certain assumptions are made when structure is regarded as a formal constraint, including the belief that technology drives change. Additionally, there is an assumption that the relationships between technology and structure are predictable (Barley, 1986). These assumptions form the basis of the technological determinism perspective. Now, when the understanding of structure is changed, it is logical that the assumptions to study the technology-organization relationship will change. Even for contingency theory studies, the understanding of structure is similar, and therefore, limitations are similar. Barley (1990) highlighted two significant limitations of contingency theory. First, contingency theory often provides static insights, focusing on correlating technology attributes with specific formal structure characteristics. These studies tend to make general claims, such as routine technology correlates with formalized structure (e.g., Stanfield, 1976; Gerwin, 1981). However, these studies lack depth in explaining the underlying processes, as they rarely address dynamic or process-related inquiries (Barley, 1990). Second, contingency theory typically establishes direct links between technology and structure, promoting a materialistic ontology. This approach largely overlooks the influence of human actions, interpretations, and intentions in shaping these relationships, dismissing human agency as a significant factor in observed patterns (Barley, 1990).

In contrast to understanding structure as a "blueprint," many scholars advocated for a different notion of structure. They emphasized understanding structure as an emergent property of ongoing action, behavior, and interaction (Silverman, 1971; Manning, 1977; Weick, 1979). However, this understanding was also not adequate as human actions fundamentally shape social structure, yet these actions are

influenced by factors beyond individuals' control and immediate circumstances (Barley, 1986). A comprehensive understanding of structural change necessitates viewing structure as both an outcome of and a constraint on human efforts (Giddens, 1984). Therefore, this understanding of structure needed a perspective that takes into consideration the social action within organizations as well as the formal constraint aspect of the structure, which limits social action, resulting in the co-evolution of technology and organization perspective, where both technology and organization dynamically shape each other.

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Track 09: Leadership Research & Practice in the  
Context of Changes in the World of Work

### **A structured review of Paradoxical Leadership, Innovative Work Behaviour, Self-efficacy and Ambidexterity through Bibliometric analysis and TCCM framework**

*Neha Sharma and Dr. Ankita Sharma*

**Abstract:** Paradoxical leadership emphasises the ability to manage complex tensions and contradicting situations rather than trying to eliminate them. When adopted, this contemporary leadership style can inspire employees to think creatively and engage in innovative work behaviours, enhancing self-efficacy and ambidexterity among them, whereas traditional leadership styles have primarily encouraged leaders to focus on one aspect rather than both. The aim of the study is to explore the development of scholarly discourse and emerging research patterns linking paradoxical leadership, self-efficacy, ambidexterity, and innovative work behaviour. This study conducts a structured review using bibliometric analysis and the TCCM framework to identify trends and highlight theoretical, contextual, and methodological gaps in the literature. This study reviewed 78 documents sourced from the Scopus database, published between 2000 and 2025, for Bibliometric analysis using the Biblioshiny Package of R software. The data analysis included performance analysis, such as co-word and co-citation analysis, as well as science mapping techniques, including factorial and thematic analysis. The findings were evaluated through the TCCM method to connect quantitative trends with qualitative gaps in the literature. The findings indicate that paradoxical leadership is becoming central in understanding innovation-driven work cultures; it demands broader contextual testing, theoretical diversification, and methodological innovation.

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Track 09: Leadership Research & Practice in the  
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## **Evolving a Leadership Function Framework for R&D Project Team Leaders: A study from DRDO**

*Kiran Govind and Sumati Sidharth*

**Abstract:** Effective leaders play a crucial role in promoting team flow in R&D teams. In this first-of-its-kind study involving R&D project team leaders of DRDO, based on a novel 5R framework of team flow, qualitative methodologies were used to explore leadership functions which can foster team flow in R&D teams. The study concludes by proposing a framework of twelve leadership functions for R&D project team leaders. Nurturing team flow through these leadership functions can transform R&D teams in DRDO into highly motivated and aligned units capable of delivering cutting-edge solutions to complex technological challenges in defense.

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Track 09: Leadership Research & Practice in the  
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## **WORKPLACE WELLBEING IN TRANSITION: EXPLORING THE IMPACT OF MATERNITY PROTECTION, CAREER SUPPORT, AND FINANCIAL FUTURES ON WOMEN'S REPRODUCTIVE CHOICES**

*Pallavi Yadav and K Lavanya Latha*

**Abstract:** The dynamics of reproductive choices among working women highlight the role of organisational support in nurturing and monitoring employee well-being in the current workplace context. It aims to understand how these personal and professional dimensions influence reproductive choices, with career management examined as a central mediating factor. The study draws on the mediation framework by Baron and Kenny (1986) and integrates constructs from research on reproductive planning, financial behaviour, and career management. Data were collected from 320 working women across various sectors using a structured questionnaire, and structural equation modeling (SEM) was employed to analyze the relationships between the variables. The findings reveal that reproductive choices and work-life balance significantly influence career management, which enhances long-term financial security. Although work-life balance does not directly impact financial outcomes, its indirect influence via career management is substantial. This underscores that balancing personal and professional responsibilities supports strategic career planning, essential for informed financial decisions. The study offers valuable insights for policymakers and organizations to create supportive structures that empower women to manage their careers and finances effectively. Similarly,

the study finds that factors affecting reproductive choices do not directly affect the well-being of working women.

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Track 09: Leadership Research & Practice in the  
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## EXPLORING THE INFLUENCE OF AGILE WORK CHARACTERISTICS ON CAREER SUSTAINABILITY IN THE CONTEMPORARY ERA

*Arushi Sharma and Parul Malik*

**Abstract:** The contemporary career landscape is marked by changing labor market conditions and rapid technological innovation. Particularly in knowledge-intensive services contexts, organizational researchers have recently highlighted the need to advance mutually beneficial consequences like career sustainability. Careers are also among the underexplored research streams in the future of work discourse. The present study proposes a novel conceptual framework to enrich the understanding of sustainable careers in the knowledge economy, linking agile work characteristics with career sustainability. It employs exploratory regression analysis on preliminary survey data collected from a sample of Indian working professionals. The findings show significant positive relationships between learning agility (individual capability), new ways of working (organizational resource), and career sustainability (outcome), and a significant interaction between individual and organizational characteristics in enhancing the outcome. This study may assist researchers and business leaders in considering the interplay of agile characteristics for nurturing positive work experiences in the digital era.

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Track 09: Leadership Research & Practice in the  
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## Beyond the Moment: A Multilevel Temporal Perspective on Spiritual Coping in the Workplace

*Gahana Rao and Veena Vohra*

**Abstract:** 1. Introduction Spiritual coping is understood as the utilisation of spiritual beliefs and practices to manage stress (Gall & Guirguis-Younger, 2013). This has garnered increasing scholarly attention in organisational studies reflecting a growing recognition that employees frequently draw on spiritual resources to interpret adversity, find meaning in work-related challenges, and sustain well-being. Most studies view spiritual coping as a personal, static phenomena focused on high-stress professions. They rarely explore how these practices spread and develop across teams, leaders, and organisations over time. Similarly, scholarship has yet to fully study the role of leadership in shaping



the emergence and institutionalisation of collective spiritual coping practices. Conceptually, it limits understanding of how individual-level coping processes can aggregate into shared norms and team climates that normalise spiritual expression. Practically, it leaves managers without frameworks for cultivating organisational cultures that harness spiritual resources for resilience. Addressing this gap is crucial in an era marked by workplace volatility and escalating mental health challenges. Hence, this paper proposes a multilevel conceptual framework that traces how spiritual coping originates at the individual level, diffuses to team and organisational levels over time, and how spiritual leadership dynamically shapes this.

**2. Objectives** Firstly, it seeks to re-conceptualise spiritual coping as a multilevel, socially embedded process rather than an isolated individual act. Secondly, it aims to study how spiritual leadership practices foster, inhibit, or transform the emergence of collective spiritual coping norms and climates. Thirdly, it proposes a series of testable propositions that integrate temporal, relational, and structural dimensions.

**3. Methodology** This study adopts a conceptual research design informed by integrative theory-building. Drawing on Conservation of Resources Theory (Hobfoll, 1989), Person–Environment Fit (Edwards, 1996), Job Demands–Resources Theory (Bakker & Demerouti, 2007), and Spiritual Leadership Theory (Fry, 2003), the framework synthesises insights from multiple theoretical traditions. The model is structured to reflect both vertical levels of analysis (individual, dyadic, team, organisational) and temporal phases (initiation, diffusion, institutionalisation). This approach will address the dynamic process of how spiritual coping becomes embedded in workplace systems. Data collection involved systematically reviewing 50 peer-reviewed articles from Scopus and Web of Science using the SPAR-4-SLR protocol (Paul et al., 2021). This was part of a broader study with defined criteria that reduced the pool to 50 papers, which were thematically analysed to integrate fragmented literature into a coherent framework for future research.

**4. Results** The integrated framework provided multiple insights. At the individual levels, employees respond to workplace stressors using spiritual coping through spiritual practices such as prayer, meditation, and reflective meaning-making. At the dyadic or team level, spiritual leadership shapes employees' perception of spiritual coping and its expression. Over time, these leader member exchanges build team norms and rituals creating a climate supportive of spiritual coping. At the organisational level, these spiritual leadership practices and supportive policies can contribute to the institutionalisation of spiritual coping as an embedded resource for resilience. Furthermore, temporal analysis suggests that spiritual coping evolves over time in three phases. The initiation phase involves individual coping practices and emergent leader–member interactions. The diffusion phase is when the spiritual norms spread within teams, due to support from leaders. The institutionalisation phase occurs when these norms are formalised into organisational practices, policies, and culture. This paper develops a conceptual model that integrates both multilevel and temporal perspectives to explain how spiritual coping emerges, diffuses, and becomes embedded in organisations. This multilevel temporal progression shows how personal practices can eventually become part of collective and structural systems. This is the main contribution of this paper.

**5. Discussion** The findings contribute to the understanding of spiritual coping from an individual adaptation strategy to a relational and systemic process which is shaped by spiritual leadership. The model underlines the role of spiritual leadership as an important moderator and amplifier, suggesting that leaders who model authentic spiritual behaviors can accelerate the diffusion and

institutionalisation of coping practices. This in turn will impact the building of resilient capabilities (Li & Hu, 2025). The framework offers managers guidance on creating environments where spiritual coping can emerge organically and contribute to resilience. For instance, training programmes that develop leaders' capacity for spiritual sense-making and compassionate communication may enhance the formation of supportive team climates. Organisational policies that signal respect for diverse spiritual expressions can further reinforce the importance of collective coping practices. Nevertheless, the study has limitations. As a conceptual synthesis, the framework requires empirical validation through exploratory, longitudinal and multilevel studies.

6. Conclusion This paper contributes a novel conceptual model that integrates multilevel and temporal dimensions to explain how spiritual coping initiates, diffuses, and becomes formalised within organisations. By highlighting the critical role of spiritual leadership in shaping this process, the study extends existing theories of coping and leadership and provides actionable insights for practice. Furthermore, it underscores the need for research and management practices that recognise spiritual coping as both a personal and collective resource, which can have profound implications for employee resilience and organisational well-being. The broader impact of this work lies in its potential to inform policies and leadership development initiatives which can cultivate inclusive and values-informed cultures. This will make employees feel empowered to draw on their spiritual resources across time and context.

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Track 09: Leadership Research & Practice in the  
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## Decoding the Remote-to-Office Shift: Stressors, Resources, and Well-Being of Early-Career IT Professionals

*Apoorva Pandey and Mridul Maheshwari*

**Abstract:** Purpose: This study investigates the experiences of IT employees in India who have begun their professional careers in the last five years, with the onset of the pandemic, in a total work-from-home setup, and are now experiencing a transition in their workplace due to forced hybrid or work-from-office mandates by their organizations. While prior research has explored return-to-office policies and associated workplace adjustment issues, the experience of employees transitioning from a total work-from-home arrangement to hybrid or mandated in-office workplaces. The study also captures the stressors and facilitators as experienced by these employees and the influence of the same on their hedonic and eudemonic well-being. Theoretical Framework: This study identifies the job stressors (e.g., anxiety around office norms, fear of in-person evaluation) and facilitators (e.g., supportive managers, mentorship programs) as emergent from the lived experiences of pandemic hires experiencing forced workplace transition. Using a deductive approach, these empirically identified stressors and facilitators are then analyzed through the lens of the Job Demands–Resources (JD-R) model, which explains how experienced job demands deplete energy and hinder well-being, while job resources buffer these demands and promote engagement and fulfillment. Methodology: A qualitative, constructivist design

was employed using 20–25 in-depth semi-structured interviews with IT professionals who are primarily pandemic hires who have started their professional careers in 2020 and 2021 in a work-from-home arrangement. The individuals who have worked remotely for at least 12 months before transitioning to hybrid or in-office settings were considered in this study. Participants were recruited through purposive and snowball sampling. Data were collected through interviews exploring remote career start, feelings about office return, perceived stressors, helpful facilitators, and their impact on well-being. Thematic analysis involved inductive coding of stressors and facilitators from participant narratives, followed by deductive mapping of these codes onto JD-R constructs. Rigor was ensured through independent coding, member checking, and adherence to Lincoln and Guba’s (1985) trustworthiness criteria. Findings: Employees who began their careers in fully remote settings experienced unique job stressors, including ambiguity around office etiquette, re-integration anxiety, fear of negative social comparisons, and challenges navigating informal networks, all of which undermined their hedonic (daily emotional satisfaction) and eudemonic (sense of professional purpose) well-being. In contrast, facilitators such as structured mentorship, team-based learning opportunities, empathetic supervisors, and flexible hybrid schedules enabled smoother transitions and promoted positive well-being outcomes. Analyzed through the JD-R model, these stressors functioned as job demands that depleted employees’ resources, while the facilitators acted as critical job resources moderating these effects, underscoring their importance in sustaining engagement and well-being during the shift from remote to hybrid or in-office work. Theoretical Contributions: This study extends the Job Demands–Resources (JD-R) model by applying it to the unique context of employees who started their professional careers in fully remote environments and later experienced a mandated transition to hybrid or in-office work. By identifying emergent stressors such as ambiguity around office etiquette, re-integration anxiety, and fear of negative social comparisons, this research refines the conceptualization of job demands in the post-remote era. Moreover, the findings highlight how context-specific resources—like structured mentorship, empathetic supervision, and flexible hybrid policies—act as powerful job resources buffering these demands. This enriches the JD-R framework by emphasizing the importance of career entry context in shaping how demands and resources impact hedonic and eudemonic well-being. The study also contributes to organizational behavior literature by introducing the concept of “remote-to-office adjustment stressors” as a distinct set of demands faced by pandemic-era hires or others beginning careers remotely. Practical Implications: Organizations should design onboarding and return-to-office programs that address the unique needs of employees who began their careers remotely. Recommendations include social skills workshops for in-person office dynamics, structured mentorship, flexible adjustment periods, and training for managers to recognize and mitigate stressors unique to this cohort. A human-centered approach is essential to balance organizational objectives with the sustainable well-being of these employees. Conclusion: This study sheds light on the overlooked experiences of employees who started their careers in fully remote settings and are now navigating mandated returns to hybrid or office work. It reveals that ambiguity around in-person work norms, re-integration anxiety, and social comparison fears serve as significant job demands undermining well-being, while supportive mentorship, empathetic leadership, and flexible schedules function as critical job resources promoting adjustment and engagement. By situating these findings within the JD-R framework, the research

underscores the importance of context-sensitive demands and resources in shaping employee well-being outcomes. Organizations that proactively address these unique transitional challenges will not only support their employees' well-being but also foster a more engaged and resilient workforce.

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## Beyond Traditional Job Crafting: A Structural Model of Job Crafting Agility Enablers

*Swati Baurai and Dr. Chandra Sekhar*

**Abstract:** 1.Purpose In the wake of VUCA epoch (Volatile, Uncertain, Complex and Ambiguous) , it is essential that the existing workforce should be proactive, resilient and agile in addressing the organizational issues (Varshney & Varshney, 2025). This proactively endeavor, undertaken by employees to reconfigure their job demands and resources is precisely termed as job crafting; characterized as self initiated, bottom- up approach (Handke et al., 2025). Notably, the field of job crafting has been the subject of prodigious investigation (Dhanpat, 2025); there exist a tremendous imperative to rigorously investigate implications of job crafting agility in prevailing competitive landscape (Dhanpat, 2025). Job crafting agility is conceptualized as a persistent, dynamic and an adaptive process whereby employees proactively reconfigure their professional roles; by strategically adjusting tasks and competencies in response to the highly mutable corporate milieus (Dhanpat, 2025). As the concept of job crafting agility has given the minimal scholarly focus; the study seeks to investigate- what enables individuals to proactively engage in job crafting agility behavior in dynamic workplace. To achieve this objective; systematic literature review and discussions with experts has been performed to identify the enablers. 2.Methodology This research employs multi criteria decision making technique namely interpretive structural modeling and fuzzy ISM to construct a hierarchical structure of these identified enablers. Interpretive structural model (ISM) employs interpretive approach to develop contextual relationship among the various identified enablers within a particular system. The advanced evolution of ISM is fuzzy ISM; as ISM relies on binary matrix (0 or 1) to develop contextual relationship among the enablers; fuzzy ISM employs linguistic scale (ranging from 0 to 1) for developing initial reachability matrix. Consequently; fuzzy ISM provides more precise understanding of interactions within a system (Kashyap and Shukla, 2023). The developed model was subsequently validated by employing Matrice d'Impacts Croisés Multiplication Appliquée a'UN Classment (MICMAC) Analysis. As the research aims to investigate the key enablers influencing employee's job crafting agility behaviors of workers; a systematic literature review and discussions with experts has been performed to identify the enablers. The framework of methodology is presented in figure 1 below. 3.Findings This research aims to investigate the job crafting agility enablers. Figure 2 and 3 presents the MICMAC and fuzzy MICMAC analysis. In MICMAC analysis, there is no enabler in the autonomous region; however, in fuzzy MICMAC, the autonomous region includes employee resilience and learning agility; showing no significance in the effectiveness of job crafting agility. In MICMAC second

dependent region it consists AI employee resilience, proactive personality emotional intelligence and learning agility while fuzzy MICMAC comprises personality, job crafting efficacy and emotional intelligence that showing these enablers are having less influence then enablers present in the third region. In MICMAC no barrier falls in quadrant 3; while the linkage region of fuzzy MICMAC analysis includes psychological safety showing high driving with high dependence power and are most crucial job crafting agility enablers. Moreover, the fourth region of MICMAC includes leadership support, psychological safety, job autonomy job resources and agile HR practices while fuzzy MICMAC comprises leadership support, job autonomy, job resources and agile HR practices showing high dependence and low driving power. The obtained results indicate leadership support, psychological safety, job autonomy, job resources, and agile HR practices are the significant enablers for fostering job crafting agility behaviors; needed to be addressed first as other enablers are directly driven from these job crafting agility enablers.

**4. Implications**

**4.1 Theoretical implications** This study builds upon the existing study related to job crafting agility (Dhanpat, 2025). The focus of this study is to examine the “key enablers” - the specific factors that foster job crafting agility behavior among individuals. By explicitly analyzing the key enablers of job crafting agility this research illuminate how employee's ability to be agile in their job influences their actual work behaviors. Our study highlights that the core contribution is identifying key enablers fostering job crafting agility among employees.

**4.2 Managerial Implications** This study provides significant implications for business leaders and policymakers in various sectors. One of the implications is that managers and leaders in various sectors should move beyond hierarchical and autocratic style and empower employees to foster job crafting agility behavior in their tasks and roles. This could include providing active support and resources; delegating the outcomes not the tasks and provide them flexibility and pathways that better align with their evolving skills

**5. Conclusion** This study provides perspectives on job crafting agility by specifically examining the enablers that influences employee's job crafting agility behaviors and facilitates employees to engage in dynamic job redesign process. Essentially; this research aims to investigate what are the key enablers that empower proactive behavior among the employees.

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Submission ID: 641

Track 09: Leadership Research & Practice in the  
Context of Changes in the World of Work

## Strategic Silence as Emotional Self-Protection: A Dual Pathway model of Voice Withholding in Organizational Life

*Krithika Selvaraj and Dr. Priya Nair Rajeev*

**Abstract:** Silence at work is often reduced to simplistic interpretations - such as disengagement, lack of interest, or passive agreement, despite growing evidence that the meaning of silence is far more complex (Morrison & Milliken, 2000; Weiss & Morrison, 2019). However, in many organizations, particularly in work environments shaped by hierarchical power, emotional vulnerability, and weak psychological safety, silence is often a deeper behavioural response to perceived social risk (Edmondson



& Lei, 2014; Sherf, Parke, & Isaakyan, 2021). In such contexts, silence is not an act of disengagement, but a strategic behaviour to navigate organizational complexity (Milliken, Morrison, & Hewlin, 2003; Brinsfield, 2013). This paper conceptualizes strategic silence as an intentional, emotionally regulated behavior rooted in individual agency and shaped by the organizational climate (Gross, 2015; Grandey & Gabriel, 2015). Unlike reactive or fear-based silence, strategic silence is deliberate and calculated. Strategic silence differs from reactive silence; it is a forward-looking choice informed by risk awareness, political skill, and emotional intelligence (Petriglieri, 2020; Morrison, See, & Pan, 2021). Employees may choose to withhold voice, emotional expression, or feedback not due to indifference, but as a form of emotional self-protection - preserving psychological resources and safeguarding their reputation or group membership (Hobfoll, 1989; Ashford, Sutcliffe, & Christianson, 2009). It is not of disengagement but of an acute awareness of risk, reputation, and self-preservation (Knoll & van Dick, 2013; Weiss & Morrison, 2019). Employees interpret tacit social signals, draw upon previous interpersonal encounters, and assess context-specific cues to determine when silence may be a safer or more adaptive choice (Liang, Farh, & Farh, 2012; Nembhard & Edmondson, 2006). In such moments, silence becomes a boundary-setting act to protect authenticity and emotional integrity in workplaces where vulnerability is often penalized rather than supported (Kahn, 1990; Gabriel et al., 2018; Foust & Reeves, 2022). The conceptualization of this paper is drawn from the existing organizational and psychological theories. Organizational Silence Theory (Morrison & Milliken, 2000) being the foundational pillar, explains how hierarchical control, conformity pressure, and unsafe leadership can make silence normative. Whereas, Emotion Regulation Theory (Gross, 2015) helps unravel how employees internally manage emotional expressions to navigate organizational expectations. In addition to this, Impression Management Theory (Bolino et al., 2016) further reveals how silence becomes a carefully crafted socially intelligent behavior. Together, these theories depict that silence is not the mere absence of response, but a strategy for navigating exposure, shame, and identity threats in fragile work environments (Milliken et al., 2022; Liang, Farh, & Farh, 2012). Hence, the concept that emerges here is not a, or from a singular theory, but a thoughtful convergence - where organizational structures meet emotional regulation, and when silence becomes an outcome of both system and self. The paper defines emotional self-protection as a psychological strategy to avoid harm, shame, or vulnerability when employees perceive high interpersonal or organizational risk. This notion resonates with modern psychodynamic perspectives, where individuals deploy subconscious defense mechanisms as a regulatory shield to guard their emotional core (Petriglieri, 2020; Kets de Vries, 2011). Strategic silence becomes a form of protective withdrawal - not out of helplessness, but as an act of boundary-setting. It is how employees preserve identity, avoid overexposure, and protect scarce emotional resources in systems where expression feels unsafe. The proposed model proposes that the origination of strategic silence is shaped by a mediated pathway: perceptions of organizational threat lead to fear of negative evaluation, which then triggers silence. Fear of evaluation, criticism, or exclusion serves as a powerful intermediary, especially in cultures of high performance scrutiny or reactive leadership (Sherf, Parke, & Isaakyan, 2021). The model further proposes that this mediating effect is moderated by trust climate, where the shared belief of a team being safe for interpersonal risk-taking (Edmondson & Lei, 2014). When trust climate is strong, the link between fear and silence weakens; when it is fragile, silence becomes a default mode.



This dual pathway model of moderated - mediation offers a more nuanced and context-sensitive understanding of voice behaviors. Strategic silence does not emerge in isolation. Its antecedents are embedded in structural and cultural realities. Hierarchical rigidity, unsafe leadership behavior, and high power distance have been consistently shown to suppress upward voice (Huang, van der Lippe, & Lammers, 2021; Lam & Xu Huang, 2017). Additionally, cultural norms in high-context or collectivist settings promote face-saving and deference, making silence a culturally resonant coping mechanism (Hofstede, 2011; Park, Song, & Lim, 2020). Gendered expectations also shape silence - for instance, women and minority employees may use silence as a socially acceptable form of disengagement when assertiveness could invite backlash (Wong et al., 2021; Foust & Reeves, 2022). Strategic silence, in this frame, is an adaptive response to both lived history and structural cueing. While silence protects in the short term, its prolonged use carries emotional and organizational costs. Individually, sustained silence contributes to emotional exhaustion, loss of authenticity, and cognitive dissonance - as employees are forced to perform external calm while experiencing internal discontent (Gabriel, Daniels, Diefendorff, & Greguras, 2018). Overtime, this results in burnout and psychological withdrawal (Maslach & Leiter, 2016). At team level, silence fosters surface harmony, where real concerns go unaddressed, undermining collaboration, creativity, and psychological safety (Jiang, Zhang, & Law, 2011). Systemically, silence paves the way for groupthink, innovation stagnation, and the erosion of dissenting insight - all of which diminish organizational resilience (Milliken et al., 2003; Morrison et al., 2021). This paper contributes conceptually to three domains: one, it reframes silence as a strategic, emotionally intelligent behavior rather than a passive symptom of fear; two, it introduces emotional self-protection as a construct that integrates emotion regulation with psychodynamic theory; and three, it builds a multilevel framework linking structure, individual cognition, and relational climate. The insights will offer both theoretical and practical suggestions for redesigning HR systems and conceptualizing new leadership development programs. Trust-building initiatives need attention as employee silence not just as a problem, but signals deeper emotional dissonance and lack of trust in organizational life.

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Submission ID: 654

Track 09: Leadership Research & Practice in the  
Context of Changes in the World of Work

## Diversity Equity Inclusion (DEI) - Addressing Biases in HR Practices

*Dr. Manju Raisinghani*

**Abstract:** As organizations strive to foster a diverse and inclusive workforce, the attention has shifted from merely creating a diverse workforce to actively integrating HR practices in organizations. This paper delves into the complex relationship between DEI goals and biases in HR practices, focusing particularly on four prevalent forms of bias: affinity bias, attribution bias, confirmation bias, and confirmatory bias. The paper further examines how these biases manifest in three critical HR functions: hiring and recruitment, performance management, and training. Looking forward, it outlines the

strategies to recognize and minimize these biases, thereby creating more equitable and inclusive workplaces.

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Track 09: Leadership Research & Practice in the  
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## HOW LEADERS CAN STRATEGICALLY CULTIVATE WORKPLACE SPIRITUALITY IN MSMEs

*Reema Nayyar and Rupashree Baral*

**Abstract:** Introduction: Approximately 86% of the Indian workforce reports “suffering” or “struggling” in their jobs, marked by elevated stress, anger, sadness and loneliness (Gallup Report, 2024). Micro, small, and medium enterprises (MSMEs), which provide significant employment and contribute over 29% to India’s GDP, face workforce challenges like high turnover and poor well-being. An HR Solutions survey (2024) found that 85% of small and medium enterprise leaders in 2023 ranked mental health as their top health and safety concern. This situation demands transformational leadership approach that embeds values within organizational culture, facilitating transcendence, connectedness and fulfillment (Giacalone & Jurkiewicz, 2003). This can be made possible through inculcating Workplace Spirituality (WPS) as it improves well-being (Kinjerski & Skrypnek, 2006) and reduces work-related stress (Garg et al., 2022). Leaders play a significant role to drive changes and set up the culture in MSMEs. However integrating WPS in these setups has been under explored as majority of the studied have focused upon large scale organizations. Henceforth, leaders have a pivotal role to navigate through the existing challenges in MSMEs such as resource limitations and less formalized structures (Karakas & Sarigollu, 2019) and integrate WPS. This integration will result in a sense of purpose, connection and value alignment (Milliman et al., 2003) among employees. Objectives: The study aims to navigate how leaders can instill WPS in resource constrained business contexts in order to address the mental health challenges faced by employees. It highlights that WPS requires thoughtful implementation by leaders and contributes to the Resource Based View literature by exploring how spiritual resources, can act as a double-edged sword if poorly executed. For MSMEs, WPS offers crucial intangible benefits like retention and employer branding when financial incentives are limited. Methodology: The present study adopted a qualitative approach to understand how leaders strategically implement WPS initiatives. Fourteen MSME entrepreneurs were interviewed, given their pivotal role in shaping organizational culture. Due to spirituality’s sensitive nature, participants were selected through convenience and snowball sampling. Interviews were conducted in person, online, and via telephone. Thematic analysis was conducted using open coding to identify patterns (Strauss & Corbin, 1990), which were refined into categories and subcategories (Gioia et al., 2013), as presented in Table 1. Results: Leaders play a pivotal role in strategically implementing WPS at multiple levels: Intrapersonal Strategies: Leaders noted that they and employees often show reluctance to embrace spiritual interventions due to a lack of faith, despite having a theoretical understanding of their benefits.

Hence, it becomes incumbent upon organizational leaders to initiate such practices at the outset, as even a minor positive shift can lay the foundation for more substantive changes over time. Interpersonal Strategies: MSME's close-knit structure can catalyze fostering WPS. Employees with like-minded attitudes play a pivotal role in nurturing such a culture, though success depends on leadership acceptance. Organizational Strategies: In MSMEs, top-level management possesses the power to shape the initial organizational culture. Most participants supported the view that fostering a spiritual culture must begin with the owners or leaders and core values must be explicitly articulated within the vision/mission statements for clarity and uniformity. Considering spirituality's personal nature, leaders must design inclusive, adaptable practices that recognize individual differences. Discussion: Leaders drive spiritual practices, but their personal conviction, in relation to short-term organizational gains, is essential. In India, spirituality often overlaps with religion, requiring careful, customized implementation due to its individual nature. This research highlights how leadership can foster WPS initiatives in resource-constrained contexts and positions WPS as a strategic intangible resource. However, it relied on self-reported data, introducing subjectivity and recall bias. Future studies should include employee perspectives and examine differences across leadership styles, organizational sizes, and demographics to better understand WPS in MSMEs. Conclusion: Leaders in MSMEs are crucial in operationalizing WPS at intrapersonal, interpersonal, and organizational levels. WPS emerges as a valuable intangible resource to promote well-being in stressful work environments. Therefore, leaders have a responsibility to navigate through challenges like spirituality-religion conflation, skepticism, resource constraints for strategically fostering WPS.

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Track 09: Leadership Research & Practice in the  
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## Finding respectable chairs on the table: A study of women directors and their role in decision-making in India

*Deepal Joshi and Rajeshwari Narendran*

**Abstract:** Introduction The number of women in boardrooms in Indian companies has increased from 13.8% in 2018 to 18.3% in 2023 (Deloitte, 2024). However, it is a long road ahead. The primary reason for much lesser women representation on boards is gender stereotyping and the adverse impact of this stereotyping on recruitment of women on boards (Bhardwaj et. al., 2024). Recruitment of women on boards is often termed as tokenism, the make-believe act of adhering to legal or social norms but no actual involvement of these women in decision-making. The mere increase of women representation on boards will not create an impact, unless they can play an active role in the critical functioning of the boards. Building on the work done using agency theory and token theory, there are several studies attempting to discuss the behaviour of women directors in the Indian boardroom context (Srivastava et. al., 2018; Aguilera et. al., 2022; Bhardwaj et. al., 2024). This research advances these studies to fill the gap on role of women directors in providing inputs for major interventions and critical decision-making.

**Objectives** The major objectives of this study are as follows: 1. To understand the development of resilience, communication skills and task-preparedness among women directors of Indian companies 2. To understand the nature and magnitude of inputs provided by women directors for major interventions in boardroom discussions 3. To analyse the role and influence of women directors in critical decision-making

**Design/Methodology/Approach** Given the complexity of realities faced by women directors, a qualitative research approach is deemed the most appropriate for this study (Patton, 2002). It can uncover the underlying patterns of behaviour and experiences for women directors. Women who have held board positions for a minimum of five years are the targeted interviewees for this research. The plan is to interview 12 women directors – three each from the public sector companies, private sector companies, Non-Government Organisations (NGOs) and entrepreneurs. The coverage of women directors from various sectors can ensure comprehensive study findings. However, Hagaman and Wutich (2017) would be used as guide to finalise the number of interview responses, to attain saturation in themes and patterns derived from interviews. To gain access to women directors from corporate firms, we first propose the use of network of one member of the research team and snowball sampling for gaining further contacts. Intense interviews are considered the most appropriate instrument for data collection, given their ability to extract details and be flexible at the same time. After women directors provide consent for interviews, some preliminary rapport building communication is planned for each interviewee. The interview questions are planned based on the literature on tokenism, agency theory and the changes in regulations of Indian boards. In line with the objectives of the study, the focus of questions is on development of resilience, communication skills and task preparedness by women directors, inputs of women directors for major interventions and their role in critical decision-making. For sensitive topics and questions, third-party questioning or indirect questioning is planned. At least two pilot interview transcripts will be analysed in detail to form the final set of questions. The transcripts will be sent to respondents for clarification of any errors and gaps in communication. After that inductive analysis of the confirmed transcripts will be conducted. Repeated reading and manual highlighting will develop initial interpretations from interviews of women directors. These interpretations will develop first level codes, combination of first level codes will lead to second level concepts and integration of these concepts will develop few strong themes that emerge from the total data of interviews. Results Based on pre-pilot interviews of women directors, it seems that there is a paradigm shift from tokenism in the emerging new India. Women are actively displaying resilience, powerful communication, preparedness, risk-taking ability, questioning and strategizing the vision for business. Therefore, the researchers expect cross-functional women leaders' perspectives on their participation in inputs for major interventions and role in critical decision-making.

**Discussions & Conclusion** The objective of intertwined approach of this research is to study the actual role of women's participation in providing inputs for major interventions and their influence on the critical decisions of business through their resilience, communication and preparedness. The study has major implications for regulators, companies and women directors as well as the entire board. As India moves towards being less gender-conscious, this study can provide significant inputs to both male and female members of company boards about roles and influence of women directors. The learnings about resilience, communication and task-preparedness of women directors can guide other aspiring women leaders. Government and

regulators can plan the future composition of company boards as more definitive and inclusive. In India, where the representation of women directors on board is still less than the global average, findings of this study can lead to policies for augmented representation of women on Indian boards. Studies suggest that a greater number of women on Indian boards can positively impact the company governance and resultant social corporate governance (Kaur et. al., 2025).

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## **FRIENDSHIP AND EMOTIONAL ATTACHMENT MATTER: A TRIANGULATED STUDY ON THE IMPACT OF INFORMAL BONDING INITIATIVES ON AFFECTIVE COMMITMENT & EMPLOYEE ATTRITION IN THE IT SECTOR**

*V Sreeraj, Mohanan Moni and A S Aparna*

**Abstract:** Introduction The IT sector faces persistent challenges of high attrition and low engagement, driven by fast-paced work, cognitive overload, and performance pressure. While firms often employ formal retention tools like pay hikes and promotions, these approaches often neglect the socio-emotional aspects of employee experience. Recent literature emphasizes the strategic role of informal mechanisms in building social capital and affective commitment. Low-cost and voluntary activities like team lunch, outings, celebrations etc., enhance trust, cohesion, and organisational embeddedness. Studies by Tews et al. (2014) and Priyasad & Weerasinghe (2018) show that peer bonding can reduce turnover more effectively than formal incentives, especially in high-stress settings. Despite their prevalence in IT firms, these initiatives are rarely evaluated systematically. Most remain informal and disconnected from measurable outcomes, limiting their strategic value. This study bridges that gap by examining how informal bonding influences commitment and attrition intentions in the IT sector. Using a triangulated approach combining surveys and interviews, it identifies bonding configurations that most effectively promote cohesion and retention. The findings contribute to HRM and organisational behaviour literature by framing informal bonding as a relational asset and offering practical guidance for cost-effective retention strategies. Objectives This study examines how informal activities such as team lunches, outings, and celebrations foster bonding among IT employees, enhance affective commitment and reduce turnover. Using a triangulated design, it integrates employee and managerial perspectives. Employees reported increased belonging, satisfaction, and loyalty, while managers highlighted how strategically designed bonding initiatives strengthen cohesion and support retention. Methodology A triangulated design combining quantitative and qualitative methods was used. Quantitative: A survey of 403 IT employees across Indian firms assessed the frequency and perceived impact of bonding activities alongside affective commitment and intent to stay. Data were analysed using PLS-SEM to examine causal relationships and fsQCA (Maalouf & Hoque, 2022) to identify effective activity combinations for retention and satisfaction. Qualitative: Semi-structured interviews with 20 IT managers explored bonding strategies, perceived outcomes, and team dynamics. Thematic analysis was supported by a



BERT-based NLP model to enhance objectivity and pattern recognition. Rationale: This dual approach ensured both statistical generalizability and contextual depth, offering a comprehensive view of informal bonding in IT workplaces. Results PLS-SEM analysis revealed a significant positive relationship between informal bonding and affective commitment. Employees who frequently engaged in activities like team lunches, outings, and celebrations reported higher commitment and lower attrition intentions. Informal bonding significantly predicted commitment and loyalty at both team and organizational levels, with path coefficients showing strong explanatory power for retention outcomes. FsQCA results highlighted that specific combinations; team lunches with milestone celebrations, or cultural events with social games produced optimal outcomes. No single activity was sufficient; synergistic combinations were key to enhancing satisfaction and reducing turnover. Qualitative interviews with managers reinforced these findings. They observed improved communication, stronger relationships, and greater engagement in teams with regular bonding. BERT-based analysis confirmed recurring themes of collaboration, reduced conflict, and emotional attachment. Managers also cited cases where bonding activities helped retain employees who were on the verge of leaving, noting that such initiatives offered emotional value beyond formal HR practices. Discussion and Conclusion This study demonstrates that informal bonding activities such as team lunches, celebrations, and peer interactions foster stronger social ties, which enhance employee satisfaction and reduce turnover in Indian IT firms. These findings align with Khandekar and Mehta (2024) and Mitchell et al. (2001), who emphasized the importance of structured socialization and embeddedness through multiple relational ties. Managers reported that regular bonding improved teamwork and retention, echoing Tews et al. (2014), who found similar effects in hospitality sectors. Cohort dynamics also played a role; as Ghosh et al. (2025) observed, collective exit behaviours increase turnover risk unless mitigated by shared group ties. Early-stage bonding buffered this effect, supported by onboarding and role clarity (Vilayil, 2021; University of South Florida, 2025). In high-pressure environments, bonding served as a form of social support, enhancing confidence and commitment. The study offers practical insights for HR managers, positioning informal bonding as a cost-effective retention strategy. Theoretically, it contributes to understanding how affective commitment arises through non-linear, configurational relationships. Future research could explore cross-cultural applicability and optimal timing of bonding interventions for long-term impact.

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Track 09: Leadership Research & Practice in the  
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## **Bridging Self-Efficacy and Entrepreneurial Success: The Mediating Role of Optimism, Resilience, and Hope in Women Entrepreneurs**

*Baisakhi Debnath, Harold Andrew Patrick, Priya Makhija, Shilpa Sandhu and Manisha Tripathi*

**Abstract:** Despite their increasing involvement, female entrepreneurs face unique challenges, including limited resources, social barriers, and work-life obligations, which can have profound implications for



business success (Brush et al., 2019). Psychological capital dimensions, such as self-efficacy, optimism, resilience, and hope, can play a crucial role in overcoming these hurdles (Luthans et al., 2007). Self-efficacy refers to the belief in one's capabilities to organize and execute the courses of action required to produce a given attainment (Bandura, 1997). Self-efficacy is vital for entrepreneurial performance, yet the processes by which it influences women entrepreneurs' outcomes are unclear. Investigating the roles of optimism, resilience, and hope could provide valuable insights for enhancing women's entrepreneurial careers and ensuring their long-term sustainability. Observational evidence indicates that psychological factors (e.g., self-efficacy) have an impact on entrepreneurial action, since confidence and persistence when confronted with challenges are also fostered by psychological constructs (Zhao et al., 2005). Self-efficacy alone may not predict entrepreneurial success unless combined with other positive psychological elements. This is particularly important for women entrepreneurs, who often face challenging societal and cultural environments.

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## Transforming Minds for a Greener Future: A Serial Mediation Model of Environmental Leadership in Higher Education

*Anshika Sharma*

**Abstract:** Purpose This study investigates how Green Transformational Leadership (GTL) influences university students' Pro-Environmental Behavioural Intention (PEBI) through the mediating roles of Biodiversity Attitudes and Values (BAV) and Biodiversity and Environmental Sustainability Awareness (BESA), while also considering the moderating role of Perceived Environmental Impact (PEI). Rooted in Transformational Leadership Theory and Value-Belief-Norm (VBN) Theory, the study aims to unpack the psychological and contextual mechanisms through which leadership drives pro-environmental engagement in higher education settings. Fig. 1. Research framework. Hypotheses Development Drawing on the theoretical foundations and empirical findings, the following hypotheses are proposed: Ha1. Green Transformational Leadership (GTL) is positively associated with Biodiversity Attitudes and Values (BAV). Hb1. Biodiversity Attitudes and Values (BAV) are positively associated with Pro-Environmental Behavioural Intention (PEBI). Ha2. Green Transformational Leadership (GTL) is positively associated with Biodiversity and Environmental Sustainability Awareness (BESA). Hb2. Biodiversity and Environmental Sustainability Awareness (BESA) is positively associated with Pro-Environmental Behavioural Intention (PEBI). Moderation effect: Ha3. Perceived Environmental Impact (PEI) moderates the relationship between GTL and BAV, such that the relationship is stronger when PEI is high. Sequential mediation effect: Hd1. There is a serial mediation effect of BAV and BESA in the relationship between GTL and PEBI. Direct effect: Hc1. Green Transformational Leadership (GTL) is positively influence Pro-Environmental Behavioral Intention (PEBI). Design/Methodology/Approach A cross-sectional survey was conducted using a structured questionnaire administered to students at a

university in Gujarat, India. A total of 360 student responses were initially collected through google form. Following a rigorous data cleaning process, 46 responses were excluded due to issues such as incomplete data, inconsistent demographic information, or non-serious entries, the final dataset comprised 314 valid responses. This sample size exceeds the minimum threshold recommended for structural equation modelling (SEM) and confirmatory factor analysis (CFA), especially for models with multiple constructs and indicators (Hair et al., 2019). A sample above 300 not only ensures adequate statistical power (Kline, 2016) but also improves data quality. Since the final sample included students from various academic disciplines, the generalizability of the results is strengthened, more likely to reflect the views of the wider student population at the university. The demographic details of the respondents, as demonstrated in Table 1, are summarized as follows: A total of 311 participants provided valid responses to the gender question. Specifically, 59.2% identified as male ( $n = 186$ ), 39.5% as female ( $n = 124$ ), and 0.6% ( $n = 2$ ) preferred not to disclose their gender. Three responses (1.0%) were excluded from the gender analysis due to missing or non-substantive entries. These cleaned data were used in all gender-related statistical analyses. In terms of age distribution, the majority of participants (98.7%) were between 17 and 22 years old ( $n = 310$ ), while only 1.3% ( $n = 4$ ) were between 23 and 27 years old. Regarding academic discipline, the largest group of respondents were enrolled in Computer Science or IT-related fields (39.8%), followed by those in Engineering disciplines other than CS (24.8%), Business and Management (10.8%), and Pharmacy, Medical, or MBBS programs (8.0%). Other fields included Natural Sciences (5.4%), Arts, Humanities, and Law (5.4%), and a small number categorized as Other or Miscellaneous (5.7%). Participants were predominantly in their 3rd semester (49.4%), with others in the 4th (28.3%) and 7th (19.1%). A small fraction (3.2%) belonged to other semesters (e.g., 2, 5, or 6). In terms of educational qualifications, the overwhelming majority were pursuing a Bachelor's degree (97.8%), with a few enrolled in Associate (1.6%) and Master's programs (0.6%).

| Variable              | Category                    | Frequency | Percent (%) |
|-----------------------|-----------------------------|-----------|-------------|
| Gender                | Male                        | 186       | 59.2        |
|                       | Female                      | 124       | 39.5        |
|                       | Prefer not to say           | 1         | 0.3         |
|                       | Total                       | 311       | 99.0        |
| Missing/cleaned noise |                             | 3         | 1.0         |
|                       | Total                       | 314       | 100.0       |
| Field of Study        | Computer Science / IT       | 125       | 39.8        |
|                       | Engineering (Other than CS) | 78        | 24.8        |
|                       | Business & Management       | 34        | 10.8        |
|                       | Pharmacy / Medical / MBBS   | 25        | 8.0         |
|                       | Natural Sciences            | 17        | 5.4         |
|                       | Arts, Humanities & Law      | 17        | 5.4         |
|                       | Other / Miscellaneous       | 18        | 5.7         |
| Total                 | 314                         | 100.0     |             |
| Semester              | 3rd                         | 155       | 49.4        |
|                       | 4th                         | 89        | 28.3        |
|                       | 7th                         | 60        | 19.1        |
|                       | Others (2, 5, 6)            | 10        | 3.2         |
| Total                 | 314                         | 100.0     |             |
| Degree                | Bachelor's                  | 307       | 97.8        |
|                       | Associate                   | 5         | 1.6         |
|                       | Master's                    | 2         | 0.6         |
| Total                 | 314                         | 100.0     |             |

The research employed Exploratory Factor Analysis (EFA) followed by Confirmatory Factor Analysis (CFA) to validate the measurement model. Reliability, convergent validity, and discriminant validity were confirmed. A moderated serial mediation analysis was performed using PROCESS Macro (Model 83) with 10,000 bootstrap resamples to test the hypothesized relationships. GTL was treated as the independent variable, PEBI as the dependent variable, BAV and BESA as sequential mediators, and PEI as the moderator on the first stage of mediation. Findings A moderated serial mediation analysis was carried out using PROCESS Macro-v4 Model 83 (Hayes, 2017). In this model, Green Transformational Leadership used as the independent variable, Pro-environmental Behavioural Intention as the dependent variable, Biodiversity Attitudes and Values as the first mediator, Biodiversity and Environmental Sustainability Awareness as the second sequential mediator, and Perceived Environmental Impact as the moderator on the path Green Transformational

Leadership to Biodiversity Attitudes and Values, while also testing the sequential mediation via Biodiversity Attitudes and Values and Biodiversity and Environmental Sustainability Awareness to predict Pro-environmental Behavioural Intention. All variables were mean-centred prior to analysis. The sample consisted of 314 university students. The analysis employed a bootstrapping procedure with 10,000 resamples to generate 95% bias-corrected confidence intervals for the indirect effects. Bootstrapping is a non-parametric technique widely regarded as a robust method for evaluating mediation and moderated mediation, particularly when the normality assumption for the sampling distribution of indirect effects may not be met (Preacher & Hayes, 2008). An indirect effect is considered statistically significant if the confidence interval does not include zero.

**4.4.1. Direct and Interaction Effects:** Table 5 shows that Green Transformational Leadership emerged as a significant predictor of both Biodiversity Attitudes and Values ( $b = 0.7077$ ,  $p < .001$ ) and Biodiversity and Environmental Sustainability Awareness ( $b = 0.2744$ ,  $p < .001$ ). Moreover, a significant interaction effect was observed with Perceived Environmental Impact ( $b = 0.0911$ ,  $p = .040$ ), indicating that the relationship between Green Transformational Leadership and Biodiversity Attitudes and Values was moderated by individuals' levels of Perceived Environmental Impact (see Table 6). Based on these findings, Hypotheses Ha1, Ha2, and the moderated mediation hypothesis Ha3 were supported. Further conditional effects analysis revealed in Table 6 that the strength of the relationship between Green Transformational Leadership and Biodiversity Attitudes and Values increased with higher levels of Perceived Environmental Impact. Specifically, the effect was weaker at low levels of Perceived Environmental Impact ( $b = 0.6161$ ,  $p < .001$ ), moderate at the mean level ( $b = 0.7077$ ,  $p < .001$ ), and strongest at high levels of Perceived Environmental Impact ( $b = 0.7993$ ,  $p < .001$ ). These results suggest that students who are more aware of environmental impacts tend to be more responsive to green leadership behaviours in shaping their Pro Environmental Behavioural Intentions. Table 5 shows that Biodiversity Attitudes and Values significantly predicted Biodiversity and Environmental Sustainability Awareness ( $b = 0.2864$ ,  $p < .001$ ). Furthermore, both Biodiversity Attitudes and Values ( $b = 0.1498$ ,  $p < .001$ ) and Biodiversity and Environmental Sustainability Awareness ( $b = 0.1212$ ,  $p < .001$ ) significantly predicted Pro-Environmental Behavioural Intention. The effect size of the moderated serial mediation hypothesis Hd1 was small but significant, with an index value of 0.0032 ( $Z = 1.60$ , 95% CI [0.0000, 0.0078]), indicating a modest but meaningful conditional indirect effect of Green Transformational Leadership on Pro-Environmental Behavioural Intention through Biodiversity Attitudes and Values and Biodiversity and Environmental Sustainability Awareness, moderated by Perceived Environmental Impact. Therefore, Hypotheses Hb1 and Hb2 were supported. Green Transformational Leadership also maintained a significant direct effect on Pro-Environmental Behavioural Intention ( $b = 0.3417$ ,  $p < .001$ ), indicating partial mediation. Accordingly, the direct effect hypothesis Hc1 was also supported.

**Conditional Indirect Effects and Moderated Mediation:** A significant serial mediation effect was found, whereby Green Transformational Leadership influenced Pro-Environmental Behavioural Intention through Biodiversity Attitudes and Values, and subsequently through Biodiversity and Environmental Sustainability Awareness ( $b = 0.0246$ , 95% CI [0.0077, 0.0496]). Additionally, this indirect pathway was significantly moderated by Perceived Environmental Impact (Index = 0.0032, 95% CI [0.0001, 0.0076]), supporting Hypothesis H1d. These results indicate that the strength of the serial mediation

increases with higher levels of perceived environmental impact. The conditional indirect effect of Green Transformational Leadership on Pro-Environmental Behavioural Intention through Biodiversity Attitudes and Values and Biodiversity and Environmental Sustainability Awareness varied as a function of Perceived Environmental Impact (see Table 7). Specifically, the indirect effect was strongest at high levels of Perceived Environmental Impact ( $b = 0.0277$ ), and weaker at the mean ( $b = 0.0246$ ) and low levels ( $b = 0.0214$ ). The statistically significant index of moderated mediation ( $b = 0.0032$ ,  $SE = 0.0020$ , 95% CI [0.0001, 0.0076]) confirms that Perceived Environmental Impact moderates the indirect pathway from Green Transformational Leadership to Pro-Environmental Behavioural Intention via Biodiversity Attitudes and Values and Biodiversity and Environmental Sustainability Awareness. Table 5. Hypotheses testing Standardized regression coefficients Hypothesis Relationship Tested Std. Beta t / Z-value p-value Decision H1a  $GTL \rightarrow BAV$  0.7077 14.85 < .001 Accepted H1b  $BAV \rightarrow PEBI$  0.1498 3.67 < .001 Accepted H3a  $GTL \times PEI \rightarrow BAV$  (Moderation effect) 0.0911 2.06 .040 Accepted  $GTL \rightarrow BAV \rightarrow PEBI$  (moderated mediation via PEI) Index = 0.0137 Z = 1.47\* 95% CI: [0.0000, 0.0358] Accepted H2a  $GTL \rightarrow BESA$  0.2744 3.25 < .001 Accepted H2b  $BESA \rightarrow PEBI$  0.1212 4.08 < .001 Accepted H1d  $GTL \rightarrow BAV \rightarrow BESA \rightarrow PEBI$  (moderated serial mediation via PEI) Index = 0.0032 Z = 1.60\* 95% CI: [0.0000, 0.0078] Accepted H1  $GTL \rightarrow PEBI$  (controlling for BAV & BESA) 0.3417 7.60 < .001 Accepted Table 6. Moderated mediation Conditional indirect effects GTL on PEBI through BAV at different levels of PEI PEI Level PEI Indirect Effect Boot SE 95% Boot CI Interpretation Low (-1 SD) -1.0056 0.0923 0.0292 [0.0317, 0.1479] Significant Mean (0 SD) .0000 0.1060 0.0342 [0.0358, 0.1704] Significant High (+1 SD) 1.0056 0.1198 0.0407 [0.0393, 0.1995] Significant Table 7. Sequential moderated mediation Conditional indirect effects GTL on PEBI through BAV  $\rightarrow$  BESA at different levels of PEI PEI Level PEI Indirect Effect Boot SE 95% Boot CI Interpretation Low (-1 SD) -1.0056 0.0214 0.0102 [0.0065, 0.0452] Significant Mean (0 SD) .0000 0.0246 0.0110 [0.0078, 0.0500] Significant High (+1 SD) 1.0056 0.0277 0.0121 [0.0090, 0.0549] Significant Note: All hypotheses are supported, including moderated mediation (Ha3) and moderated serial mediation (Hd1), as the index of moderated mediation is significant (95% CI does not include 0). Originality/Value This study is among the first to examine a moderated serial mediation model linking GTL to PEBI in the context of higher education, incorporating both cognitive (BESA) and affective (BAV) mediators and a perceptual moderator (PEI). It contributes to the theoretical integration of Transformational Leadership Theory and VBN Theory by identifying leadership as a key contextual antecedent in the value-belief-action chain. It also underscores the role of perceived environmental impact in amplifying the effectiveness of green leadership initiatives. Practical Implications Universities can play a vital role in fostering pro-environmental behaviour among students not only through curriculum but also through leadership modelling. Leaders, whether faculty, administrators, or student representatives who embody and promote green values can significantly shape students' environmental awareness and behavioural intentions. Institutional strategies should therefore include leadership development and awareness programs tailored to highlight biodiversity and sustainability challenges.

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## Empathy in Action: The Role of Altruistic Leadership in Fostering Employee Happiness through Work Engagement

*Divyansh Sharma and Neeraj Dhiman*

**Abstract:** The Indian hospitality sector, crucial for socioeconomic growth, faces significant challenges related to employee stress and burnout due to its labour-intensive nature. This adversely affects work engagement and happiness. We argue that altruistic leadership, a human-centred approach, can enhance workplace engagement and improve employee happiness. While previous research has often overlooked leadership as a core job resource, altruistic leadership fosters meaningful relationships and boosts employee happiness and engagement (Saks, 2006). However, there is limited research on its role in promoting positive work attitudes (Salas-Vallina & Alegre, 2018). Altruistic leaders encourage employees to express their true selves at work, which significantly boosts their work engagement and fosters a sense of belonging at work. This association between altruistic leadership and enhanced work engagement also contributes to a more positive and resilient workplace environment (Dinler & Akbolat, 2024). Therefore, considering the discussed narrative, it is postulated that: H1: Altruistic leadership is positively related with Work engagement. Employee happiness is one such outcome of work engagement that enhances organizational performance. It leads to increased productivity and job satisfaction (Usai et al., 2020). Engaged employees are generally more productive and happier in their work and personal lives. Promoting work engagement is essential for fostering well-being and positive outcomes in the workplace (Othman et al., 2018). Therefore, it is hypothesized that: H2: Work engagement is positively related with Employee happiness. An important driver of engagement is the meaningfulness of work. Employees who find meaning in their roles tend to be more dedicated and satisfied (Mostafa & El-Motalib, 2020). Supportive leadership and organizational alignment are critical in shaping this sense of purpose. Employees who recognize their impact on others are more motivated. Meaning in life fulfils psychological needs and enhances work engagement (Wang & Xu 2017). Altruistic leaders can foster this sense of purpose, particularly among individuals who feel lost. Thus, we hypothesize: H3: Work meaningfulness mediates the relationship between altruistic leadership and work engagement. This study focuses on 333 employees from the tourism and hospitality sector, as this sector has been identified as having lower employee happiness levels (He et al., 2019). Partial least squares structural equation modelling (PLS-SEM) using SmartPLS, was employed to evaluate the proposed theoretical framework, ensuring a thorough analysis and providing meaningful insights. Following the recommendations of Anderson & Gerbing (1988), we adopted a two-stage approach consisting of a measurement model and a structural model. Results showed that altruistic leadership significantly enhances employee engagement (H1), consistent with prior research (Barinua & Prince 2022) and real-world examples from companies like Gravity Payments and LinkedIn, which have embraced empathy-based leadership practices. Work engagement was also found to have a positive



impact on employee happiness (H2), aligning with earlier findings that positive emotions and a sense of belonging at work contribute to overall well-being (Gulyani & Sharma, 2018). Programs like Marriott's "Serve Our World" illustrate how meaningful initiatives boost employee happiness. Additionally, the study confirmed that work meaningfulness mediates the relationship between altruistic leadership and engagement (H3), supporting self-concept theory (Aryee et al., 2012). Examples from companies like Unilever demonstrate how purpose-driven leadership fosters engagement through meaningful work. The study emphasizes the importance of fostering altruistic leaders to improve employee well-being and engagement. Effective training programs should be developed, and future research should assess their impact. Diverse working conditions can enhance employees' sense of purpose and align tasks with their interests, increasing their connection to work. Managers need tools to evaluate altruistic leadership and employee happiness. These findings offer valuable insights into altruistic leadership and employee well-being within the tourism and hospitality sector, highlighting the positive effects of leadership styles while noting the negative impact of discouraging leadership, especially in high power distance cultures.

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Submission ID: 824

Track 09: Leadership Research & Practice in the  
Context of Changes in the World of Work

## ORGANISATIONAL INTERVENTIONS FACILITATING RETURN-TO-WORK FOR WOMEN POST-MATERNITY: A SYSTEMATIC REVIEW AND FUTURE RESEARCH AGENDA

*Amrit Kaur and Dr Veena Vohra*

**Abstract:** Introduction: As the Fourth Industrial Revolution (IR4) reshapes future of work through digital and structural transformations, organisational responsibility to support workforce transitions has grown more urgent (Schwab, 2017). As jobs undergo transitions, it is important to help workers move from old roles to new ones, especially for vulnerable groups such as women returning-to-work (RTW) post-maternity – a phase that often intersects with identity reconstruction, workplace re-entry, and stalled career trajectories (World Economic Forum, 2020; Huang et al., 2022). This article presents a systematic literature review (SLR) of organizational policies, practices, and interventions that support RTW post-maternity leave. While the growing body of literature recognizes maternity as a pivotal career transition, existing literature remains fragmented, predominantly western-focused, sector-specific, and under-theorized. Employed mothers continue to experience significant challenges that are both structural and identity-related (Lovejoy & Stone, 2012). This review synthesises current RTW post-maternity literature and positions it not just as a human resource concern but as a strategic site for advancing inclusive organisation change and Sustainable Development Goal 5 (gender equality). It also propose a future research agenda linking RTW post-maternity to long-term career development for women. Objectives: This review addresses the lack of integrated, theory-informed and culturally diverse understanding of organisational mechanisms that hinder or support women's RTW post-maternity



experiences. It explores the current literature to understand how these differ across theoretical and methodological approaches, along with geographical and cultural contexts. Despite increasing attention to gender equality, career disruptions post-maternity remain under-addressed (Tsai, 2022; Chowdhury et al., 2021; Waldrep et al., 2024). Methodology: This SLR study is conducted using SPAR-4-SLR (Paul et al., 2021) protocol to ensure methodological transparency, replicability, and robustness in analysing fragmented literature and identify research trends, gaps, and future directions in management. A total of 59 peer-reviewed scholarly articles published between 2010 and 2024 from Scopus and Web of Science are systematically identified, screened, coded and analysed. Insights from 8 literature reviews, 2 commentary papers, and 1 conceptual article identified during the screening period are included. Inclusion criteria focused on studies connecting organizational support to women's re-entry post-maternity leave. TCCM (Theory, Context, Characteristics, Methodology) framework (Paul et al., 2024) guided the synthesis. Results: The TCCM framework adopted in this study reveal insights and give directions for researchers and practitioners. Geographically, 58% studies are from Western contexts and 25%, 17% from Asia and Africa. Theoretical integration remains sparse, with Feminist Theory and Socio-Economic Model cited most frequently at 12% each. Breastfeeding support, supervisor support, mentorship and role-models significantly influence post-maternity adaptation. Methodologically, most studies adopt qualitative research designs (49.2%), with limited use of quantitative (37.3%), and mixed methods designs (13.6%). Discussion: This review highlights that while workplace policies like breastfeeding support and childcare support are widely acknowledged, yet their lack of awareness often lead to policy-practice gaps due to rigid cultures and gendered expectations. RTW is not just a logistical adjustment but involves identity reconstruction, yet few studies explore its long-term career impacts. Advancing theory-driven inquiry can foster the development of mid-range theories specific to post-maternity RTW experiences and integrated frameworks across micro, meso, and macro levels for generalizability. Although frameworks such as Job Demands–Resources model (Demerouti et al., 2001) and Role Identity Theory (Stryker & Burke, 2000) offer valuable lenses, however, they remain underutilized. Future research directions include cross-sectoral, longitudinal studies that explore how structural, cultural, and leadership factors jointly influence RTW outcomes. We propose that organisations look beyond maternity phase and focus on women's holistic lifecycle transitions attending to – Menstruation, Maternity, and Menopause (3Ms) that parallel their leadership emergence phases in the organisation hierarchy (Grandey et al., 2020). Limitations of this review include reliance on English-language, peer-reviewed studies from Q1 and Q2 journals only and a dominant Western focus in the literature pool. Conclusion: This SLR contributes to understanding of post-maternity RTW experiences that facilitate this transition by synthesising the global research on organizational policies, practices, and interventions. Organizations must move towards holistic frameworks that integrate women's evolving biological and professional journeys by reframing RTW not as “one size fits all” status quo but as an opportunity for inclusive transformation. As the future of work is shaped by digitalization and hybrid models, there is a timely opportunity to redesign systems that support sustainable and dignified re-entry for working mothers. Ultimately, this study underscores the need to rethink RTW not as a standardized HR checklist but as a strategic, equity-driven transition – one that not only enables women to return, but empowers them to rise.

## Spatial Theory and Leadership in the Digital Era: Platforms, Power, and the Reorganization of Work

*Ujjwal Kango, Agam Gupta and Divya Sharma*

**Abstract:** The Fourth Industrial Revolution (IR4), with its convergence of digital, physical, biological, and cognitive systems, is not only transforming what work is and how it is done—but also where work happens, who controls it, and how space is used to manage and lead. While much research focuses on digitalization, automation, and platform economies, we argue that a spatial lens is missing from most analyses of leadership and organizational transformation. This symposium addresses that gap by showing how space—physical, digital, and symbolic—structures power, coordination, resistance, and identity in contemporary work environments. Importantly, space has always played a critical role in organizational and management thinking. Foucault’s (1977) discussion of the Panopticon illustrated how spatial arrangements become instruments of discipline and surveillance, embedding power through visibility. Similarly, environmental psychology studies have long shown that physical features of space—such as lighting, noise, or seating arrangements—significantly affect employee performance, mood, and productivity. In corporate culture, the “corner office” became a spatial symbol of seniority, access, and prestige. In contrast, digital workspaces are reconfiguring traditional spatial hierarchies—leadership visibility is no longer anchored to a corner office, but may now be asserted through virtual markers like a customized background, a digital badge, or even occupying the center of the Zoom grid. In fact, digital spatial cues are shaping how leadership is perceived and practiced. Research shows that even subtle design choices—such as the placement of a photograph in the top-left corner of a webpage—can nonverbally communicate leadership status or authority (Paladino et al., 2017). In the age of hybrid work, virtual meetings, and algorithmic management, new spatial orders are emerging where power is signalled and enacted through screen layouts, notification visibility, and control over digital tools. This shift demands that scholars revisit leadership and organizational theory through the lens of spatial transformation. Drawing on Lefebvre’s (1991) spatial triad—perceived, conceived, and lived space—and the “spatial turn” in social theory (Soja, 1989; Massey, 1994), this symposium argues that space is not a neutral backdrop to work but an active medium of power and resistance. Platforms, office architecture, delivery territories, WhatsApp groups, and even metaverse environments are all spaces where organizational life is produced, contested, and negotiated. We present three papers that explore how contemporary leadership is enacted through spatial practices, in both virtual and physical forms: 1. A paper on gig economy delivery platforms (e.g., Swiggy and Zomato) in India shows how fragmented territorial governance—managing zones separately, tweaking incentives locally—prevents resistance from scaling. One case from McLeod Ganj (Dharamshala) illustrates how a spatially difficult zone led to conflict and was eventually shut down after protests, underscoring how space triggers and contains resistance. 2. The second paper explores micro-leadership among gig workers, focusing on spatial sites where it emerges: informal congregation points like tea stalls (“notional offices”) and digital spaces like

WhatsApp groups. These spaces allow alternative authority figures to emerge outside formal hierarchies, revealing how leadership emerges through informal spatial practices. 3. The third paper examines metaverse environments using Lefebvre's framework to show how user expectations and experiences clash with designer-intended digital spaces. It highlights how users' "digital baggage" from apps and websites shapes their interaction with hyper-realistic metaverse branches like Accenture's Nth or PNB's virtual bank. Together, these papers argue that spatial configurations are foundational to how leadership is exercised and experienced in IR4 contexts. Management practices—from conflict management to immersion in virtual environments—depend increasingly on how space is produced and perceived. Platforms govern workers through spatial segmentation; metaverses shape engagement through digital affordances; and gig workers build solidarity through alternative spatial arrangements. By integrating spatial theory into management and leadership studies, we offer a critical expansion of how we understand control, autonomy, visibility, and resistance in the workplace. Our contributions point to the need for designing workspaces—physical and virtual—that are spatially just, inclusive, and responsive to lived experience. In sum, this symposium contributes to both theoretical and empirical innovation by repositioning space as a central analytic category in understanding leadership under IR4. We aim to demonstrate that the future of leadership is not just about values, strategies, or structures—but also about geographies, territories, platforms, and digital architectures that shape how people lead and follow.

**Paper 1: Governing Through Space: Managing Conflict and Resistance in Indian Food Delivery Platforms** Abstract: This paper explores how digital spatial organization on food delivery platforms in India—such as Swiggy and Zomato—shapes conflict and resistance among gig workers. Drawing on ethnographic fieldwork in Delhi and Dharamshala, it investigates how platform architecture and managerial strategies are designed to pre-empt collective resistance. The study reveals that platform-mediated gig work is not spatially neutral; rather, it is structured through deliberate micro-geographies that fragment worker solidarity and constrain collective action. For instance, in Delhi, the city is divided into multiple localities, which are typically managed by a fleet manager or team leader. Strategic spatial segmentation allows platform companies to trial policy changes—such as incentive reductions, peak hour adjustments, or rain-surge pay cuts—within individual localities or subregions. This phased rollout of policies acts as a spatial management strategy, reducing the likelihood of widespread unrest. Workers' ability to perceive collective grievance across localities is diminished, and managers use digital dashboards to fine-tune these divisions in real time. The paper also documents how specific spatial practices—such as relocating workers between zones or deactivating "troublemaking" workers—serve as discipline mechanisms. Additionally, the platform interface—especially through geofencing and real-time delivery allocation—intensifies individualization, making spatial positioning a critical variable in determining who gets access to work and who is sidelined. By applying a spatial lens to conflict management, the paper advances understanding of how platforms control not just labour, but labour's geography. It contributes to spatial theory in management by arguing that conflict mitigation in digital labour systems increasingly relies on spatial fragmentation and individualisation as core tools of management.

**Paper 2: The Spaces Between: Micro-Leadership and Spatial Emergence in Gig Work Networks** Abstract: This study investigates how informal leadership—what we call "micro-leadership"—emerges in the spatial interstices of gig work. Based on qualitative interviews with food

delivery workers in Delhi and union organizers from Delhi NCR, Kolkata, and Hyderabad, this paper identifies two core spatial formations where micro-leaders develop and exert influence: (1) informal congregation zones or “notional offices” where workers routinely gather during downtimes, and (2) WhatsApp groups and other digital chat spaces that serve as decentralized forums for grievance articulation, information sharing, and resistance coordination. In contrast to formal managerial structures, these micro-leaders are not institutionally recognized. Instead, their legitimacy arises through daily spatial routines, digital reputational economies, and symbolic capital within localized networks. For instance, at key parking spots, tea stalls, or shaded corners near restaurants, workers build shared repertoires of experience. Leaders here coordinate minor resistance—such as coordinated log-offs, informal boycotts of specific locations, or collective negotiation with fleet managers. On WhatsApp and Telegram groups, these leaders often play a dual role as information brokers and emotional support anchors. These digital spaces exhibit their own form of spatiality—transcending geography while simultaneously reinforcing hyper-local affinities. These online spaces become spaces of solidarity where platform surveillance is absent or muted, allowing freer speech and organizing potential. Spatial theory helps us understand how micro-leadership is anchored not in hierarchical status but in spatial practices: occupation of semi-private workspaces, control over information flows in digital groups, and peer trust cultivated in both physical and virtual meeting grounds. The findings enrich management theory by emphasizing spatial relationality—where leadership is not assigned but socially constructed in particular spaces of work and waiting.

**Paper 3: Mapping the Metaverse: A Lefebvrian analysis of socio-digital space**

**Abstract:** The current enthusiasm surrounding metaverse platforms masks a deeper analytical gap: how users experience and interpret space within immersive virtual environments. Leveraging Lefebvre’s spatial theory, we examine user interactions in Accenture’s Nth metaverse and PNB’s virtual branch through semi-structured interviews with 18 participants and secondary data sources. We argue that spatial theory provides a deeper understanding of user engagement within the metaverse, also highlighting conflicts between digital affordances and the metaverse’s design priorities. The conflicts become evident as users’ digital baggage from previous digital experiences intersects with the metaverse’s realistic environment, shaping their interactions and expectations. Additionally, we emphasize the importance of considering lived experiences to understand transaction costs and suggest a relative measurement approach for constructs like perceived ease of use. Through this study we underscore spatiality’s role in digital spaces, offering new insights into metaverse design and user engagement within the metaverse.

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## Systematic Literature Review on Working Conditions and Contractual Arrangements of Platform Workers in India: Implications for Leadership in the Era of IR4

*Vanya (IIMA).*

**Abstract:** Introduction The expansion of platform-based gig work across India has radically transformed labor relations, especially in the service economy. With advancements of the Fourth Industrial Revolution (IR4), platform work offers task-based, short-term jobs and disrupts conventional employment and management traditions (Schwab, 2015). This shift raises significant questions about employment quality, labor rights, and joy at digital workplaces. Though research on platform labor has expanded globally, no integrated analysis has been attempted for India. The ambiguous regulations and economic disparities make labor matters even more complicated (Schlogl et al., 2021; Graham et al., 2017). The following review seeks to convey a clear understanding of working conditions as well as contractual dynamics within India's emerging platform economy.

2. Objectives The main objective of this research is to systematically review available academic and grey literature regarding the working conditions and contractual arrangements of Indian platform workers. It seeks to identify main themes and patterns, break down organizational leadership, and look at the financial and regulatory impact of gig work. Specifically, the review attempts to (a) categorize usual employment forms, (b) assess their influence on labor rights and welfare, and (c) outline how leadership and policy responses affect labor outcomes. This study also contributes further to the broader understanding of the human dynamics of digital transformation during IR4 (Santana & Cobo, 2020).

3. Methodology Systematic review of the literature (SLR) was conducted on the established academic databases including Scopus, JSTOR, Web of Science, and Google Scholar. Search keywords were "gig economy," "platform work," "India," "IR4 workforce," "digital work," and "contract labour." The inclusion criteria prioritized peer-reviewed journal articles, policy reports, conference papers, and think tank reports from 2010 to 2024 highlighting the Indian context. Grey literature, i.e., NGO reports, government reports, was also searched for other contextual bases. Research was thematically grouped into broad categories: employment classification, wage conditions, algorithmic control, worker autonomy, leadership control, and policy frameworks. This approach facilitated the integration of various sources of data to draw meaningful conclusions without jeopardizing research integrity (Lokuge et al., 2019; Bales et al., 2017).

4. Results The SLR recognizes a patchy but growing body of evidence that shows the informality and uncertainty of platform work in India. First, most employees are classified as independent contractors and are not allowed to avail themselves of common benefits like paid time off, insurance, or grievance processes (Fairwork India, 2022). Second, compensation and performance are controlled through impenetrable algorithmic processes that are prone to lacking human review. Studies have shown that such mechanisms increase uncertainty and decrease skills at work, eventually leading to poor job satisfaction



(Suseno et al., 2023; Wood et al., 2019). Third, stress is high, income is unpredictable, and long-term security does not exist for most workers, particularly low-skilled ones or those lacking bargaining power. Fourth, leadership is in the platforms that is typically disconnected from actual operations, hence accountability is low. Fifth, issues are perennial, including gender gaps, regional disparities, and exclusion of older or disabled workers. Not many platforms have adopted sustainable or inclusive human resource practices, and they are exceptional occurrences and not common trends (Mehta & Awasthi, 2021).

**5. Discussion**  
The evidence pinpoints the twin challenge of leadership and governance under platform-style models of work. The legal uncertainty generated by the absence of official contracts and protections for workers exists alongside management that sees technology advancement as more important than workers' welfare. These situations yield a mindset of disposability among the laborers, yet platforms depend on their ongoing engagement (Berg et al., 2018; Santana & Cobo, 2020). The review further suggests that there is a disconnect between new policy strategies and the actual working conditions, where many policies are loosely implemented or exist in a constricted manner. Furthermore, while platforms are presented as high-tech companies, the operation of such platforms as labor intermediaries necessitates more ethical responsibility. Future studies need to examine how digital leadership can construct more balanced working environments and how workers negotiate, resist, or adapt to new digital challenges. The overlap of leadership research and platform work is under-explored, especially in India, where informality is an entrenched issue (Kellogg et al., 2020).

**6. Conclusion** The review underscores the need to rethink how platform work is defined, governed, and led in India.

Unless principles of fairness, transparency, and representation for workers are integrated, platform work might further exacerbate labor market disparities (Schlogl et al., 2021). Leaders need to weigh more than operational effectiveness to impact labor conditions, contract norms, and feedback mechanisms directly. The study joins literature on digital labor, environmentally sustainable human resource management, and technology change leadership. Practically, it challenges us to pursue visionary reforms in how platform work is organized, measured, and funded. The broader implications extend to policy regimes, public-private partnerships, and labor activism in the new economy (Suseno et al., 2023).

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**Submission ID: 953**

**Track 09: Leadership Research & Practice in the  
Context of Changes in the World of Work**

## **Unpacking the Role of Idiosyncratic Deals in Employees Work Family Enrichment and the Moderating Role of Gender: Through the Lens of JD-R Model**

*Maithily R and Devi Soumjaya*

**Abstract:** Although prior research examined the impact of Idiosyncratic deals (i-deals) on employees' work-related outcomes, few studies have explored how i-deals influence work-family enrichment (WFE) among employees and the intervening mechanism driving these outcomes. Furthermore, existing studies have not examined whether this relationship differs across genders. Therefore, this research



addresses these key gaps in the existing literature by examining the impact of flexibility and developmental i-deals in the work-family domain of the employees through the lens of the JD-R model and Social role theory. The study also examines the differential impact of such negotiations across gender.

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Submission ID: 987

Track 09: Leadership Research & Practice in the  
Context of Changes in the World of Work

### Too Fragile to be a Woman, Too Brave to be a Leader: Can Inclusivity be a Privilege for some leaders?

*Farhat Haque*

**Abstract:** In addition to the traditionally gendered feminine qualities, women leaders are also expected to exhibit certain masculine traits and hence establish their credibility as leaders. they frequently face penalties for deviating from gender-based societal stereotypes. This study explores the dual risks associated with this dynamic through the lens of the queen bee phenomenon, highlighting the paradox women leaders encounter in deciding whether to adopt inclusive behaviors. It posits that women leaders may experience second-generation bias, which may be either intentional or unintentional, positioning inclusive leadership as a privilege rather than a standard expectation for women leaders. Consequently, women leaders may become targets of such biases or, alternatively, contribute to their perpetuation to align with organizational expectations. The study contributes to the literature by examining how women leaders are simultaneously impacted by and involved in the evolution and reinforcement of the queen bee phenomenon.

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Submission ID: 1033

Track 09: Leadership Research & Practice in the  
Context of Changes in the World of Work

### Leadership in times of digital transformation: Ethnographic insights from a higher education institute in India

*Swati Sisodia, Sonali Narbariya, Pratyush Banerjee and Ritu Gupta*

**Abstract:** Digital transformation in the HEI has become quintessential in the last few years, representing both a challenge and an opportunity for the education sector (Benavides et al., 2020; Latifah et al., 2022). DT encompasses a wide array of technologies, including artificial intelligence (AI), cloud computing, big data analytics, information systems (IS), Internet of Things (IoT) (Enkel et al., 2020; Liu et al., 2024), and process automation (Hess et al., 2016). While DT offers avenues for efficiency,

scalability, and innovation, the human dimension of managing such transformations remains underexplored (Tabrizi et al., 2019). In HEIs, stakeholder relationships are complex, and studies highlight that while DT research often addresses technology adoption, it lacks an in-depth exploration of readiness across stakeholders in HEIs, such as students, faculty, and administrators. (Budiyanto et al., 2024). Leadership plays a pivotal role not only in driving technological adoption but also in cultivating readiness for change among varied stakeholders (Ford et al., 2021). While studies in other sectors suggest that leadership styles such as transformational and digital leadership enhance readiness and commitment to change (Carvalho et al., 2022), evidence for HEIs is only emerging. Existing research lacks sufficient exploration of leadership support in facilitating change in the context of DT and its interaction with employees' behavioural aspects in nurturing change readiness (Suseno et al., 2022). This study responds to the critical need to understand how leaders in HEIs develop change readiness and manage multi-stakeholder dynamics during DT. The inquiry forms part of a larger research project examining leadership's role in DT across organizational contexts. The first phase of the project (Study 1) employed a quantitative survey among IT industry employees exploring the underlying pathway between leadership support and employee readiness to change in the context of digital transformation based on LMX Theory. The results of study 1 suggest that context-specific leadership support is an important determinant of change readiness amongst employees. Employees' proactive behaviour significantly mediates the relationship between leadership support for change and employees' change readiness for digital transformation. However, the presence of greater change valence for digital technologies significantly weakens the impact of employee proactivity on employee readiness to change. This finding challenges the mainstream perspective of the expectancy theory of motivation, throwing light on the aftereffects of failures of technological change initiatives.

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Submission ID: 1059

Track 09: Leadership Research & Practice in the  
Context of Changes in the World of Work

## Applying Kurt Lewin's Change Management Frameworks to Navigate Transformational Shifts in Business School Faculty Work Culture

*Dr. Niraj Kishore Chimote, Dr. Geethanjali G. and Dr. Sonali Narbariya*

**Abstract:** The contemporary work environment of business schools is undergoing profound transformation driven by digitalization, evolving expectations of research productivity, and increasing emphasis on faculty well-being and institutional alignment. Against this backdrop, it is essential to revisit foundational change management frameworks to examine how leadership can meaningfully navigate these transitions. This symposium presents a trilogy of empirical studies grounded in Kurt Lewin's classic models of organizational change—Force Field Analysis, the Three-Step Change Model, and Action Research—to assess their applicability and impact in shaping faculty work culture in a business school context. Lewin's models offer a rich lens through which to examine leadership practice, faculty engagement, digitalization, and scholarly development. While widely recognized, these

frameworks are rarely applied empirically within academic institutions. Our symposium seeks to fill this gap by applying these models systematically to three interconnected domains of faculty life: (1) organizational well-being, (2) digital transformation, and (3) research productivity. The first paper explores how Lewin's Force Field Analysis can diagnose and shift the balance between driving and restraining forces influencing faculty well-being. Through empirical analysis, it identifies organizational tensions, assesses leadership styles, and recommends interventions to support faculty resilience and job satisfaction. The second paper leverages Lewin's Three-Step Change Model—Unfreeze, Change and Refreeze—to map the digitalization journey of a business school. It evaluates how leadership interventions can guide faculty through technology adoption and curriculum digitization while mitigating resistance and fostering long-term integration. The third paper adopts the Action Research Model, applying it to faculty research behavior and productivity. Through cycles of collaborative inquiry and feedback, it examines how participative interventions can realign individual research trajectories with institutional goals, thus enhancing scholarly output and relevance. This symposium is especially aligned with Track 9: Leadership Research & Practice in the Context of Changes in the World of Work, as it critically examines leadership behavior, change management theory, and their influence on faculty performance in a rapidly evolving academic ecosystem. Faculty members are not merely recipients of change; they are central actors whose engagement, resistance, and agency shape the outcomes of transformation initiatives. The symposium, therefore, provides a holistic, systems-level perspective on how leadership practices rooted in Lewin's change management paradigms can support strategic adaptation in higher education. By integrating theoretical insights with empirical data and management practice, each paper offers actionable recommendations for academic leaders, HR heads, and policy-makers. The combined insights from these studies contribute to advancing a practitioner-oriented understanding of leadership in academia, fostering healthier institutions that can thrive amidst turbulence.

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Submission ID: 1060

Track 09: Leadership Research & Practice in the  
Context of Changes in the World of Work

## Leading with agility: A Systematic Review and AABO Framework of Leadership Agility

*Dr. Jeeta Sarkar*

**Abstract:** In an era marked by technological disruption, globalisation, and evolving customer expectations, traditional leadership paradigms are rapidly losing relevance. Organisations striving to remain competitive must not only become agile in their structures and processes but also foster leadership agility- the ability of leaders to effectively adapt, respond, and lead amidst volatility, uncertainty, complexity, and ambiguity (VUCA). This study undertakes a systematic literature review, employing the PRISMA framework to synthesise existing research on leadership agility and conceptualises a unified model - the attitude-ability-behaviour-outcome (AABO) framework -situating leadership agility as both an enabler and outcome of organisational agility. Background and Significance

As organisations transition toward agile models, leadership is expected to shift from command-and-control to empowering, participative, and responsive times. Agile leadership, grounded in the principles of the agile manifesto, advocates for collaboration, iterative progress, customer centricity and psychological safety. Within this domain, leadership agility emerges as a critical micro-foundation, comprising dimensions such as context-setting agility, stakeholder agility, creative agility, and leadership agility (Joiner, 2019). Despite growing practitioner interest, the academic conceptualisation of leadership agility remains fragmented, with limited empirical synthesis or a structured framework to guide both scholars and practitioners. This study addresses this critical gap by systematically reviewing literature and proposing a cohesive conceptual framework.

**Research Objectives and Questions** This research is guided by two fundamental questions: RQ1: What are the key constituents of leadership agility? RQ2: How can the interaction among these constituents be conceptualised within a coherent framework that supports organisational agility? To answer these RQs, the study aims to (a) identify and classify poor attitudes, abilities, behaviours and outcomes associated with leadership agility and (b) synthesise findings from the extant literature to propose a comprehensive framework for developing and evaluating leadership agility in organizations.

**Research Methodology** Adopting the PRISMA framework, this study undertook a structured four-phase process: initiation, screening, evaluation, and inclusion. A search was conducted on the SCOPUS database using terms such as “agile leader”, “agile leadership” and “leadership agility.” The review focused on peer-reviewed journal articles in English, within the domains of business and management, resulting in an initial pool of 194 articles. Through multiple levels of screening and inclusion criteria, 37 articles were ultimately selected for detailed review and synthesis.

**Results** The selected literature was then coded and categorised using thematic synthesis, which led to the emergence of the AABO framework: attitudes, abilities, behaviors and outcomes. This inductive classification allowed for the clustering of patterns across different leadership agility constructs and contributed to the development of a conceptual model.

1. **Attitudes:** Agent leaders are growth-minded, change-embracers, culturally and emotionally intelligent, as well as transparent. They are introspective, ready to listen to feedback and willing to learn all the time. One of its characteristics is humility and resilience in leading and creating trust and purpose in teams.
2. **Abilities:** Those are concrete skills, like adaptive thinking, stakeholder involvement, making decisions in uncertain scenarios and balancing exploration with exploitation. Core leadership agile skills -such as context setting, and stakeholder engagement were broken down as core skills that help leaders to predict the trend, unify stakeholders, work out new solutions, and self-improve.
3. **Behaviours:** Agile leaders are participative, empowering and collaborative. They rely on the principle of iterative delivery of value and promote experimentation, as well as create psychologically safe environments. These behaviours are an indication of transition in control to enablement and planning, which is not only about being static but also dynamic.
4. **Outcomes:** Leadership agility positively influences organisational outcomes such as innovation, responsiveness, resilience, and employee engagement. Leaders who embody agility help organisations transform into adaptive systems capable of surviving and thriving in a VUCA environment. The AABO framework serves as a diagnostic and developmental tool for understanding and fostering leadership agility. It provides a structured pathway from internal dispositions (attitudes) through competencies (abilities) and behaviours, culminating in measurable organisational and team

outcomes Theoretical and Practical Implications Theoretically, this study advances the understanding of leadership and organisational agility scholarship by integrating key psychological theories - Expectancy Theory, Equity Theory and Self-Determination Theory with extant agile leadership literature. The AABO model offers a coherent theoretical lens through which leadership agility can be understood, assessed, and developed. Practically, the framework provides actionable insights for HR professionals, leadership development experts and senior managers. For instance, organisations can design development interventions targeting each AABO component: cultivating agile mindsets (attitudes), building decision-making and stakeholder management skills (abilities), reinforcing collaborative leadership behaviours and tracking innovation and engagement outcomes. Limitations and Future Scope While the study provides a structured and comprehensive review, it is limited to SCOPUS-indexed English publications. Empirical validations of the AABO model in diverse organisational contexts remain a future imperative. Additionally, the dynamic interplay between components (e.g., how attitudes shape behaviour or how ability mediates between behaviour and outcomes) warrants longitudinal and mixed-method studies. Future research could explore cross-cultural validations of the AAB framework, sectoral studies examining leadership agility in education, healthcare or government interventions to build agility in mid-level versus top-level leadership and lastly, measurement tools to assess leadership agility using the AABO framework. Conclusion This study contributes significantly to the evolving discourse on agile leadership by identifying, categorising and synthesising the key attributes of leadership agility. The AABO framework offers a robust foundation for theoretical exploration and practical application. In a world where disruption is constant, building with agility is no longer optional - it is a strategic imperative.

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Submission ID: 1132

Track 09: Leadership Research & Practice in the  
Context of Changes in the World of Work

### **Bridging the Entry-Level Engagement Gap: A Field-Based Study on the Power of Pre-Induction Immersion in Public Sector Banks**

*Gokul Brindhaban and Dr. Bindu K. Nambiar*

**Abstract:** This research paper presents a rigorous analysis of a natural field experiment conducted at a major public sector bank (PSB) to quantify the impact of a 15-day, pre-induction branch immersion program on the expectations, attitudes, and preparedness of newly recruited officers. The study aims to furnish actionable, data-driven intelligence to refine onboarding strategy, enhance new officer engagement, and improve long-term talent retention. A quasi-experimental, comparative design was employed, analyzing survey data from 1,159 new officers. The cohort was divided into two groups: a control group (n=728) with no prior branch experience and an experimental group (n=431) that underwent the 15-day immersion. The analysis integrates quantitative methods, including Analysis of Variance (ANOVA) and k-means cluster analysis, with qualitative thematic analysis of open-ended responses. The key findings indicate that the pre-induction immersion functions as a powerful Realistic Job Preview (RJP) and a critical moment in the formation of the psychological contract. The immersed cohort demonstrated a statistically significant shift towards more pragmatic expectations regarding

work-life balance, a more realistic perception of workplace stress, and a greater appreciation for tangible managerial support, such as clear and consistent communication. This immersion experience effectively inoculates new hires against "reality shock," aligning their preconceived notions with the operational demands of a banking career. Furthermore, a cluster analysis identified four distinct officer "personas"—the Ambitious Achiever, the Balanced Contributor, the Cautious Professional, and the Idealistic Servant. The analysis revealed that the immersion experience catalyzed a significant shift in the cohort's composition, moving new recruits away from idealistic archetypes towards more pragmatic and sustainable professional identities. Specifically, the proportion of "Balanced Contributors" and "Cautious Professionals" increased markedly in the immersed group. The strategic implications of these findings are profound. They provide compelling evidence that a structured pre-induction immersion is not an administrative formality but a high-impact strategic tool for talent integration. It effectively manages newcomer expectations, mitigates the risk of early-career disillusionment, and aligns new hires with the operational realities and cultural norms of the banking sector from day one. This paper concludes with a series of actionable, theory-grounded recommendations for institutionalizing this practice. By implementing these strategies, the PSB can transform its onboarding program from a standard training event into a strategic process for building a more resilient, engaged, and effective officer corps, thereby securing a significant return on its human capital investment and enhancing its competitive advantage in the financial services industry.

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Submission ID: 1159

Track 09: Leadership Research & Practice in the  
Context of Changes in the World of Work

## **DOMINANT CAREER ANCHORS AS A REFLECTION OF IDENTITY IMPACTING CAREER SUCCESS AMONGST WOMEN PURSUING MANAGEMENT EDUCATION IN INDIA**

*Shweta Lalwani and Gaurav Dilip Tikas*

**Abstract:** A person's values, attitudes, abilities, interests, and skills all influence their decision to pursue a vocation. Edgar Schein suggests eight career anchors, which connect occupational duties to job opportunities. This research investigated the career anchors of Gujarati female management students in higher education institutions (HEIs). 270 women studying management programs in Ahmedabad, Gujarat, provided their responses. The analysis was carried out using PLS-SEM. According to the survey, overall management competence, pure challenge, security and stability, and technical and functional skills were the most important career anchors for Gujarati women studying management. The findings have implications for career counseling services in Indian higher education institutions.

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## From Seva to Burnout: A Phenomenological Study of Hidden Academic Labour as Shadow OCB

*Pankhuri Sharma and Soma Sur*

**Abstract:** Abstract: Organizational Citizenship Behaviour (OCB) refers to discretionary behaviours that go beyond formal job descriptions and contribute to the social and psychological fabric of an organization (Organ, 1988). In the academic world, these behaviours often manifest as mentoring students beyond office hours, organizing departmental events, supporting colleagues, and contributing to institutional culture. However, the rise of digital academia post-COVID-19 and the ongoing implementation of the National Education Policy (NEP) 2020 in India have redefined academic roles, creating space for what this paper introduces as Shadow OCB—a new dimension of OCB that encompasses invisible, emotionally intensive, and digitally mediated contributions by faculty members. Unlike traditional OCB, these behaviours—such as late-night crisis counseling on WhatsApp, emotional support during online classes, uncredited research mentoring, and stepping in for colleagues without acknowledgment—remain unrecorded and unrewarded by formal institutional mechanisms. Recent studies highlight relevant constructs: Jobbehdar et al. (2023) link mindfulness to OCB and innovative behaviour through well-being, suggesting internal psychological resources are key to sustaining discretionary efforts; Nugroho et al. (2024) find digital leadership significantly impacts OCB via job satisfaction in hybrid environments; and Aghaz (2024) confirms that conscientiousness and institutional brand perception enhance faculty OCB. However, these studies largely emphasize visible, measurable behaviours. Literature on emotional labour and OCB-induced fatigue (Ekowati et al., 2023; Çolakoğlu et al., 2023) warns of the psychological toll of prolonged, unrewarded engagement—an area Shadow OCB makes especially salient. Employing a phenomenological qualitative approach, this study captured narratives from 20 academicians across Indian higher education institutions using in-depth interviews, digital diaries, and thematic analysis supported by NVivo and AI-assisted tools like Voyant and Orange. Findings reveal that Shadow OCB is not only widespread but deeply rooted in intrinsic motivators such as spiritual values (e.g., karma, seva), a sense of academic duty, and workplace belonging—yet it contributes significantly to faculty burnout, role fatigue, and a growing sense of alienation when left unrecognized. The study proposes a conceptual framework called SHADOW: Support logs, Hybrid reflection portfolios, Acknowledgment mechanisms, Digital resilience training, OC-enriched performance appraisals, and Well-being culture integration. This framework encourages institutions to redesign recognition systems to accommodate hidden academic labour, particularly within digitally hybrid and emotionally complex teaching contexts. By extending the boundaries of traditional OCB theory to incorporate emotional, spiritual, and hybrid-digital dimensions, this research provides a timely, literature-driven, and context-specific contribution to the field of organizational behaviour in academia. It advocates for an institutional culture that not only expects OCB but consciously nurtures and

celebrates its invisible forms to ensure sustainable academic engagement, well-being, and institutional harmony.

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Submission ID: 1190

Track 09: Leadership Research & Practice in the  
Context of Changes in the World of Work

## The Impact of Organizational Culture and Sustainable HRM Practices on Career Sustainability among Gen Z Employees in Indian Manufacturing Sectors

*Amit Sharma and Dr. Dinesh Kumar Srivastava*

**Abstract:** In today's ever-changing professional environment, promoting career sustainability has never been more important and nowhere is it more important than with Gen Z who is starting to enter the workforce. Culture in Indian manufacturing industry and sustainable HRM practices significantly influence long term career Orientations. Organisational culture underpins values, behaviour and employee engagement, while sustainable HRM practices are aligned with well-being, long-term development and inclusive growth. Together, they form a supportive ecosystem conducive to Gen Z employees who value purpose, adaptability, and balance in their professional lives and can improve levels of satisfaction, resilience, and growth. However, the career sustainability of these cohorts is largely unexplored, particularly in the case of traditional sectors, such as manufacturing, that have been experiencing technological and organizational change. The purpose of this paper is to explore the antecedents of career sustainability which includes organizational culture and sustainable HRM practices for Gen Z employees in Indian manufacturing companies with the objective of developing actionable areas for creating future-aligned, inclusive and sustainable workplaces.

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Submission ID: 1249

Track 09: Leadership Research & Practice in the  
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## DISPOSITIONS TO WORKPLACE DIGNITY: A QUALITATIVE EXPLORATION

*Shaswat Ranjan (Indian Institute of Management Raipur) and Damini Saini (Indian Institute of Management Raipur)*

**Abstract:** This study seeks to determine whether employees' perception of workplace dignity is impacted by their dispositions during any affective events in their organizations, and also the underlying factors associated. We employed a qualitative study (interpretive) to explore the phenomenon. We collected data through field visits, observations, and personal interviews. The field visits occurred in a prominent public sector undertaking plant and a state-based government organization. Further, we conducted one-on-one and telephonic interviews with private sector employees. A total of 40 in-depth interviews were conducted with engineering executives of various grades, plant workers, and select

management executives. We used coding and theme generation based on the guidelines of (Gioia et al., 2013) in our analysis. Based on the coding, we provide a taxonomy for both these dispositions, their subcategories, and how they are related to perceived dignity. We also identify two aggregate-level factors that create those situations and trigger an individual's dispositions, leading to the perception of an individual's dignity. These are: 1) Cultural issues, 2) Leadership and management issues.

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**Submission ID: 1287**

**Track 09: Leadership Research & Practice in the  
Context of Changes in the World of Work**

## **Psychological Safety as a Strategic Lever for Employee Well-being and Organizational Performance: A Multi-Sectoral Leadership Study in India**

*Dr. Manju Raisinghani and Dr. Baishali Mitra*

**Abstract:** In an era where innovation, adaptability, and employee engagement are critical to organizational success, fostering fearless workplaces has emerged as a key strategic imperative. This study investigates the role of leadership in cultivating psychological safety across diverse Indian industries, the mediating role of psychological well-being and interpersonal communication, and how such environments impact team performance and emotional intelligence. Drawing upon qualitative and quantitative insights from sectors including IT, infrastructure, healthcare, and education, the research identifies the leadership traits and organizational practices that encourage open communication and risk-taking without fear of punishment or humiliation. A multi-stage stratified sampling technique was employed to ensure sectoral representation and demographic diversity. The study underscores the urgent need for Indian organizations to embed psychological safety as a cultural norm, driven by leaders who model trust, empathy, and vulnerability.

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**Submission ID: 1405**

**Track 09: Leadership Research & Practice in the  
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## **Beyond the Linear Path: Understanding Career Break and Charting a Research Agenda**

*Sumit Manderna (IIM Kashipur) and Prof. Mridul Maheshwari (IIM Kashipur)*

**Abstract:** Career breaks—significant interruptions in employment continuity—have become increasingly prevalent, yet research remains fragmented across disciplines. This systematic review synthesizes 87 articles (1981-2025) to address conceptual ambiguities and develop an integrative framework. Following PRISMA guidelines, we analyzed peer-reviewed articles from Web of Science, Scopus, and EBSCO databases. Our analysis reveals four predominant conceptualizations: deviation from continuity, opposition to advancement, identity disengagement, and dynamic process. We propose

an integrative definition: a voluntary or involuntary interruption in continuous employment within an established occupation, characterized by significant temporal duration and varying degrees of professional disengagement. Our multilevel configurational framework identifies four antecedent pathways (Life Course Transitions, Identity-Value Misalignment, Capability-Demand Imbalance, External Shocks) that produce divergent outcomes through cross-level interactions. The framework resolves theoretical tensions between agency-structure, continuity-discontinuity, and penalty-opportunity dichotomies. We provide future research directions emphasizing configurational analysis, temporal dynamics, and cross-cultural investigation. This review advances career break scholarship from fragmented empiricism toward cumulative theory development, offering practical insights for individuals, organizations, and policymakers navigating employment discontinuity.

Submission ID: 1419

Track 09: Leadership Research & Practice in the  
Context of Changes in the World of Work

## Education and Organizational Development: A Global Perspective

*Khushboo Bhatt*

**Abstract:** Education and organizational development are deeply interconnected in nurturing sustainable economic growth and institutional effectiveness. Human capital, the collective knowledge and skills of people, is widely recognized as the most critical resource for any economy or organization. Developing this human capital through quality education and continuous learning is fundamental for unlocking individual potential and enhancing organizational performance. Consequently, educational systems and policies worldwide are increasingly being viewed through the lens of how well they prepare learners to thrive in dynamic organizations and a rapidly evolving job market. This extended abstract surveys recent literature and global trends to examine the nexus between education and organizational development. It highlights the importance of aligning educational outcomes with organizational needs, reviews emerging trends (such as the imperative of lifelong learning), and discusses policy initiatives, notably India's National Education Policy (NEP) 2020, as a case exemplifying efforts to bridge education and organizational imperatives in a global context.

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## Track 10: Data Science & Artificial Intelligence

Submission ID: 26

Track 10: Data Science & Artificial Intelligence

### A step towards automating manually created, thematic trays via LLMs

*Akshay Sharma, Sohini Keshwani and Prachi Sharma*

**Abstract:** At JioCinema, we create theme(Diwali, Sports, New year, Christmas, Independence day) based trays to improve our user experience but creating theme based trays manually can be time consuming and requires a lot of knowledge about the ever changing inhouse catalog to include in the tray. In this work, we propose a zero training two stage approach. Stage 1 involves filtering candidates from thousands of options using an embedding-based approach, narrowing the selection to a manageable few hundred. In Stage 2, these selected candidates are ranked utilizing GPT-4o [7] . Finally, this approach recommends the best suited content for a particular theme which helps in reducing manual effort and time.

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Submission ID: 106

Track 10: Data Science & Artificial Intelligence

### Silicosis Awareness and Policy in Indian Parliament: A Text Data Analysis

*Akash Pal and Pratap C Mohanty*

**Abstract:** Background: Silicosis is a major occupational health issue in developing countries, including India. Over 3 million workers working in mining, construction, and stone-cutting industries are at high risk of developing silicosis with exposure to respirable crystalline silica particles. Despite its longstanding presence, there exists scarce literature on how silicosis has been represented in Indian parliamentary discourse over time. This study investigates the temporal and thematic evolution of parliamentary questions on silicosis from 1954 to 2024. Method: The study retrieves and identifies 131 eligible questions and answers from Digital Sansad, an official digital platform of the parliament of India, on silicosis. Each question and answer were linked to metadata including year, housetype, questiontype, MP's gender, and ministry referred to. Structural topic model was applied to identify latent themes in the text, incorporating metadata covariates such as year groups, house (lok sabha/rajya sabha), question type (starred/unstarred), ministry referred to (health/labour) to examine how topic prevalence varied across institutional and temporal contexts. Results: The structural topic model analysis revealed nine significant topics. Silica Exposure (22%) and Mine Safety (19%) emerge as the most talked about topics, reflecting widespread concern over toxic dust exposure and inadequate regulatory safeguards. Surprisingly, Worker Welfare (2%) is least talked about topic. The covariate

analysis using STM shows that questions directed at the Ministries of Health and Labour consistently give little attention to worker welfare, suggesting a lack of accountability and clear thematic responsibility from both ministries. However, the type of house, the format of the question, and the ministry addressed do influence how silicosis-related issues are discussed. Conclusion: The study underscores the evolving nature of silicosis discourse in Indian parliamentary debates. STM reveals significant shifts in focus from disease recognition to policy demands, reflecting growing political awareness and advocacy for occupational health reform.

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Submission ID: 128

Track 10: Data Science & Artificial Intelligence

### **Navigating Organizational Transformation through Artificial Intelligence: A Socio-Technical Approach to Culture, Productivity, and Ethics**

*Satyakam Rahul, Supriya Bhagat, Sunita Karad and Ajit Gaikwad*

**Abstract:** These days, Artificial Intelligence (AI) is doing far more than speeding up every day work in our organisations—it is quietly reshaping office culture, power equations, and even how employees see their own roles. Looking at the issue through a socio-technical lens, this paper studies the finer effects of AI on company structures, staff identity, and teamwork. By surveying recent research and real-world cases from different industries, we place AI activities into two broad buckets: substitutional, where the system takes over tasks people used to do, and complementary, where it supports people, sharpening their judgement and skills. We then track how these changes influence who makes decisions, how the workforce is organised, and how innovation happens. Alongside this, we tackle key ethical questions and lay out practical change-management steps, giving a clear roadmap for adopting AI in a balanced, sustainable way. The aim is to help business leaders, policymakers, and academics guide their organisations towards a healthy, productive partnership between humans and intelligent machines.

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Submission ID: 156

Track 10: Data Science & Artificial Intelligence

### **SIGNAL OR NOISE? EVALUATING LARGE LANGUAGE MODELS IN RESUME SCREENING ACROSS CONTEXTUAL VARIATIONS AND HUMAN EXPERT BENCHMARKS**

*Aryan Varshney and Venkat Ram Reddy Ganuthula*

**Abstract:** Problem Statement Large language model (LLM) adoption in recruitment is set to improve efficiency and scalability of resume screening, a high-stakes organizational process long rooted in human judgment. LLM consistency, fairness, and alignment with human judgment are, however,



challenges to adoption in digital transformation efforts. Unfair or inconsistent outputs can destroy trust in automated hiring, while consistent systems can facilitate efficiency in talent procurement and minimize subjectivity. This study investigates whether LLMs (Claude, GPT, Gemini) generate consistent, meaningful patterns (signal) or random fluctuation (noise) in resume screening in varying organizational environments and how far their performance aligns with recruitment specialists. Anchored in Signal Detection Theory, the study fills a gap in the understanding of LLM reliability in high-stakes decision-making, particularly in variable information contexts. The issue lies in that organizations increasingly embrace AI in optimizing human resource management, which calls for stringent examination of LLMs' adaptability and equity in digital leadership contexts. Using contextual sensitivity and human-AI alignment analysis, the study seeks to inform recruitment strategies for LLMs' adoption in a way that enhances human expertise while driving organizational efficiency. Methodology The experiment takes a mixed factorial design to compare three LLMs (Claude, GPT, Gemini) and three human recruitment experts against multinational corporations and startup experience. The experiment utilized a pool of 30 anonymized Product Manager resumes and chose 10 resumes for same and randomized conditions to compare consistency and diversity effects. Four contextual conditions were compared: No Company (baseline job description), Firm1 (multinational corporation), Firm2 (startup), and Reduced Context (minimum job description). LLMs were asked to score resumes on a 0–100 scale and explain weighting schemes, while experts created their own marking schemes drawn from professional practice. Data collection was conducted under strict protocols, with standardized prompts for LLMs and explicit instructions for experts. Statistical analysis involved analysis of variance (ANOVA) to compare scores across evaluators and conditions, paired t-tests to compare contextual sensitivity, and meta-cognition analysis to examine evaluation strategies. Normality and variance homogeneity were checked, with necessary adjustments made. The experimental design provides a strict test of LLM and human performance, consistent with digital transformation research by examining AI's contribution to organizational decision-making. Key Findings ANOVA indicated significant variation in LLM scores in No Company ( $p = 0.004$ ) and Reduced Context ( $p = 0.002$ ) conditions, reflecting inconsistent interpretation. GPT showed strong contextual flexibility, significantly adapting scores for Firm1 ( $p < 0.001$ ) and Firm2 ( $p < 0.001$ ), but inflated scores in Reduced Context, reflecting noise under uncertainty. Gemini selectively adapted to Firm1 ( $p = 0.038$ ) but not Firm2 ( $p = 0.498$ ), while Claude adapted negligibly ( $p > 0.1$ ), favoring technical proficiency. All LLMs significantly deviated from human experts across contexts ( $p < 0.01$ ), with higher mean scores (58.5–82.9) than experts' conservative, variable judgments. The biggest human-AI gap was in Reduced Context ( $p = 0.0002$ ), reflecting LLMs' sensitivity to information deficiency versus human resilience. Meta-cognition analysis showed LLMs' mechanical weight adjustments versus experts' holistic, experiential judgment, especially Expert 2's subtle organizational adjustments. Resume diversity lowered LLM agreement, masking model-specific biases. These results highlight LLMs' context-sensitive reliability and systematic discrepancies with human expertise. Implications for Research This study extends Signal Detection Theory by setting out that LLM reliability in recruitment depends on the quality of contextual information, with signal prevailing under richness and noise prevailing under scarcity. It extends digital transformation scholarship by highlighting LLMs' role in redefining organizational decision-making,

particularly for talent recruitment. Systematic human-AI scoring discrepancies and differential contextual adaptation processes validate LLMs' shortcoming in handling ambiguity, confirming the need for hybrid human-AI models (Szymanski et al., 2024). The findings also validate expertise scholarship, demonstrating human experts' superior robustness and qualitative adaptability compared to LLMs' mechanistic processing. Future studies need to test LLMs' performance across a variety of job functions and organizational environments to enhance generalizability. Investigating the impact of bias on protected groups and designing calibration processes to standardize LLMs to human judgment is imperative. Longitudinal studies can also ascertain if human-AI discrepancies persist over time as LLM technologies evolve, informing how to incorporate AI into digital leadership and organizational processes without compromising fairness and reliability. Implications for Practice The results show LLMs' potential to revolutionize recruitment by processing resumes more quickly than traditional methods (Gan et al., 2024), but their deviation from human discretion and noise under uncertainty imply cautious applications. Organizations must create hybrid systems, taking advantage of LLMs' scalability and consistency and human experts' subtle, context-dependent discretion. Standard job descriptions are key to reducing noise because LLMs' reliability hinges on input quality. Uncertainty-driven score inflation is a fairness concern, potentially discriminating against less advanced candidates, requiring strong bias mitigation protocols and guidelines (Rigotti & Fosch-Villaronga, 2024). Training digital leaders to manage AI-driven recruitment processes can facilitate effective human-AI collaboration, safeguarding organizational values and hiring objectives. By applying LLMs wisely, organizations can improve efficiency, decrease subjective biases, and promote inclusive talent attraction, aligning with digital transformational ambitions. These findings inform practitioners on how to maximize AI deployment while preserving human control in high-stakes decisions.

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Submission ID: 199

Track 10: Data Science & Artificial Intelligence

## Predictive modeling for coal production locations with kernel density and some machine learning approaches

*Karthik Sriram (Indian Institute of management Ahmedabad), Kundan Singh (Indian Institute of management Ahmedabad), Ankur Sinha (Indian Institute of management Ahmedabad).*

**Abstract:** For a major coal mining company in India, we address the problem of predicting which of its mining locations will produce transportable coal on any given day. We adapt and evaluate the performance of different predictive machine learning approaches, including Random Forest, Support Vector Machine, Logistic Regression, Linear Discriminant Analysis, Multilayer Perceptron, and Long Short-Term Memory Model. In addition, motivated by the context and structure of the coal production data, we devise a novel approach based on Kernel Density Estimation (kde) with adaptive bandwidths, by adapting it to account for discrete spatial locations of the mines as well as their varying frequencies of production. We evaluate the different modeling approaches using standard predictive accuracy measures for classification problems, based on recent production data from 136 different mines (owned

by the coal mining company) over one year. The results suggest that the kde-based approach outperforms standard machine learning approaches, highlighting the importance of devising novel modeling solutions motivated by the structure of a contextual data.

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Track 10: Data Science & Artificial Intelligence

## Visitor Estimation and Crowd Flow Simulation at Large-Scale Mass Gatherings

*Akash Verma (Brij Disa Centre for Data Science and AI, Indian Institute of Management Ahmedabad, 380015, Gujarat, India), Ankur Sinha (Brij Disa Centre for Data Science and AI, Indian Institute of Management Ahmedabad, 380015, Gujarat, India).*

**Abstract:** Mass gatherings like the Kumbh Mela in Prayagraj pose significant operational challenges in ensuring efficient crowd flow and public safety. These challenges are particularly pronounced at high density, high priority zones such as the Sangam Ghat. Effective planning and control strategies are essential to mitigate congestion, reduce risk and support safe and orderly movement within such large-scale events. In this study, a density-based estimation methodology focuses on an estimate of the total number of visitors across the Kumbh Mela site over the entire 45-day duration. The entry-exit approach estimates the total number of non-unique visitors throughout the Kumbh Mela by using data from surveillance cameras, which were installed at strategic locations. To demonstrate the flow of the visitors, we perform the simulation study. The study focuses on key performance measures, such as the average queue length and waiting time of a visitor for the Snan. We model a control strategy to minimize the maximum crowd density at the Sangam Ghat by optimizing the opening and closing gates of temporary pontoon bridges. By analyzing crowd dynamics, the study aims to enhance safety protocols and improve the overall experience for visitors.

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Track 10: Data Science & Artificial Intelligence

## Advancing Theoretical Models of E-commerce Bargaining: A Bayesian Multi-Agent Learning Framework

*Bankatesh Choudhary and Meenakshi Sharma*

**Abstract:** Extended Abstract Advancing Theoretical Models of E-commerce Bargaining: A Bayesian Multi-Agent Learning Framework Authors: Bankatesh Choudhary<sup>1</sup>, Dr. (Mrs.) Meenakshi Sharma<sup>2</sup>  
<sup>12</sup>Birla Institute of Technology, Mesra (Off Campus - Noida) Background and Problem Statement Bargaining has been a fundamental aspect of commerce since ancient trade-by-barter systems, yet it remains one of the most underachieving models in modern e-business, despite its potential to benefit both buyers and sellers. While traditional commerce thrives on interactive negotiation, current e-

commerce platforms rely predominantly on fixed-pricing models that lack the flexibility to adapt to dynamic market conditions and individual preferences. This limitation becomes particularly pronounced given that online shopping has shifted bargaining behavior from offline to online contexts, where consumers possess significant bargaining power owing to the vast array of readily available choices. The complexity of e-commerce environments, characterized by numerous interacting agents with diverse preferences and strategies, necessitates advanced modeling techniques that can capture inherent uncertainty, evolving participant strategies, and emergent aggregate behaviors. Traditional bargaining models often struggle with assumptions of perfect rationality and complete information, which rarely hold in real-world scenarios. Furthermore, existing approaches face significant scalability challenges when dealing with the large number of agents characteristic of popular e-commerce platforms.

**Research Objectives and Methodology** This study proposed an advanced theoretical framework for e-commerce bargaining that captures agent interactions under uncertainty, scalability constraints, and adaptability requirements. This study introduces a multi-type mean-field approach for large agent populations, implements imitation learning for dynamic strategy evolution, and synthesizes these components into a unified theoretical framework for online bargaining. The methodological approach involves deconstructing Bayesian multi-type mean-field multi-agent imitation learning (BM3IL) and examining its applicability in e-commerce negotiation contexts. Through a comprehensive literature review and theoretical analysis, this study identifies the key factors influencing bargaining outcomes and develops a novel integrated framework that addresses the limitations of existing models.

**Literature Review and Gap Analysis** A review of existing bargaining models reveals a progression from classical economic approaches, such as the Nash bargaining solution, to more sophisticated Agent-Based Modeling (ABM) techniques. Recent developments include the application of Genetic Algorithms for strategy evolution, Fuzzy Logic for uncertainty handling, and Artificial Neural Networks for learning from negotiation experience. Many contemporary models focus on multi-attribute negotiations, acknowledging that e-commerce transactions involve factors beyond price, including delivery time and product quality. However, several critical limitations persist in the current approaches. Traditional models often rely on the unrealistic assumptions of perfect rationality and complete information. The challenge of modeling human behavioural intricacies and unpredictability in negotiations remains significant. Most importantly, existing models struggle with scalability issues when handling the vast number of agent characteristics of major e-commerce platforms, and there is insufficient focus on adaptive learning mechanisms that can evolve with changing market dynamics. The literature identifies numerous factors influencing bargaining outcomes, categorized as buyer-related factors (price sensitivity, bargaining power, reservation price, online shopping experience), seller-related factors (cost structure, inventory levels, reputation), platform-related factors (design features, trust mechanisms, and communication channels), and interaction-related factors (information asymmetry, communication effectiveness, and cultural considerations).

**Theoretical Framework Development** The core contribution of this study lies in the development of a novel theoretical framework that integrates three sophisticated methodological approaches. The Bayesian component addresses uncertainty by modeling buyers and sellers as Bayesian agents that maintain probabilistic beliefs about their counterparts' preferences, reservation prices, and negotiation strategies. These beliefs are continuously updated throughout the negotiation process based

on observed offers, counter-offers, and other exchanged signals, enabling agents to handle inherent uncertainty by refining their understanding as the interactions progress. The mean-field theory component provides scalability by focusing on aggregate behavior rather than individual agent interactions. The multi-type mean field approximation acknowledges heterogeneity among agents, categorizing buyers and sellers into different types based on observable characteristics, such as purchase history, seller ratings, and product categories. This approach simplifies the complexity of modeling each buyer-seller interaction separately while maintaining the influence of overall market dynamics on individual negotiations. The imitation learning component enables adaptive strategy development by allowing agents to observe and mimic successful negotiations on a platform. This creates a dynamic environment in which negotiation strategies can diffuse and evolve within the agent population as participants learn from each other's experiences. The framework eliminates the need for explicitly defined reward functions, which can be challenging to specify in bargaining contexts, where success is determined by reaching mutually acceptable agreements.

**Integrated Framework Architecture** The proposed integrated framework operates through four interconnected components that function synergistically. Bayesian Belief Modeling represents each participant as a Bayesian agent maintaining probabilistic beliefs about counterparts, continuously updated based on negotiation interactions. The multitype agent population component categorizes participants into different types based on observable characteristics, accounting for platform heterogeneity. Mean-field Interaction modeling captures the influence of the overall market environment on individual bargaining encounters, where the mean field represents the aggregate behavior of all participants of particular types. Finally, Imitation Learning of Strategies enable agents to learn effective bargaining approaches by observing successful negotiations across platforms. Individual agents utilize Bayesian learning to update beliefs about current negotiation partners, while simultaneously receiving contextual information about prevailing market conditions through the mean field. Agents continuously observe successful negotiations and employ imitation learning to adapt and improve their bargaining strategy. The overall distribution of agent types and learned strategies evolves over time, influencing the mean field and shaping the contexts for subsequent interactions.

**Advantages and Contributions** This integrated framework offers several significant advantages over existing approaches. It provides a principled method for handling uncertainty and updating beliefs continuously during negotiations. The incorporation of the mean field theory enables the accommodation of large numbers of heterogeneous agents typical of e-commerce platforms. The use of imitation learning allows for the emergence of adaptive and effective bargaining strategies without requiring explicit programming of complex rules. The framework's potential contributions include providing a more realistic and nuanced understanding of complex e-commerce negotiation dynamics, informing the design of more effective negotiation support systems, enabling the development of autonomous negotiating agents capable of adapting to different market conditions, and offering valuable insights to platform providers seeking to create efficient and fair bargaining environments.

**Future Research Directions** Future research should focus on developing specific computational models based on the proposed theoretical framework and translating conceptual elements into concrete algorithms and simulations. Empirical validation using real-world e-commerce data is crucial for assessing model accuracy and predictive power. Research should explore the impact of



different platform features and policies on emergent bargaining behaviors, investigate the ethical implications of AI-driven negotiation to ensure fairness and transparency, and extend the framework to consider more complex scenarios, such as multi-party negotiations. Computational development will enhance our ability to simulate and understand the intricate e-commerce interaction dynamics. Bridging the gap between theoretical models and practical applications through real-world data validation will help explore the implications for e-commerce platforms and users. As AI continues to play an increasingly important role in e-commerce, careful consideration of ethical dimensions is necessary to ensure fairness and to prevent potential misuse in automated negotiation processes. Conclusion This study addresses the critical gap between the potential of bargaining in e-commerce and its current underutilization by proposing a sophisticated theoretical framework that integrates Bayesian learning, mean-field theory, and imitation learning. The framework offers a more comprehensive approach to understanding and modeling the complex dynamics of online negotiations, potentially revolutionizing how e-commerce platforms facilitate buyer-seller interactions and enable the development of more adaptive, intelligent, and fair bargaining systems for the digital marketplace.

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Track 10: Data Science & Artificial Intelligence

## Early Detection of Corporate Financial Distress Using Explainable AI

*Amit Pandey*

**Abstract:** Introduction Corporate financial distress poses systemic risks to global economic stability, affecting stakeholders from financial institutions to regulators. Traditional prediction models (e.g., Altman Z-score) rely on static financial ratios, failing to adapt to industry nuances or dynamic market shifts. Meanwhile, black-box AI models (e.g., deep learning) offer superior accuracy but lack interpretability, hindering regulatory compliance and stakeholder trust. This research bridges this gap by developing an Explainable AI (XAI) framework for early, transparent financial distress prediction. Limitations of Existing Approaches Traditional Models: Inflexible formulas (e.g., fixed-weight ratios) ignore sector-specific risks and real-time market dynamics. Limited predictive power (e.g., 60-70% accuracy in volatile sectors). Black-Box AI: Opacity violates regulatory mandates (GDPR "Right to Explanation," EU AI Act, Basel Accords). Inability to audit decisions or detect biases (e.g., demographic, geographic) undermines ethical deployment. Proposed XAI Framework Our methodology integrates: Multi-Source Data: Dynamic predictors: Volatility-adjusted debt ratios, cash flow trends, sector-specific KPIs. External indicators: Credit ratings, macroeconomic variables. Hybrid Model Architecture: Gradient Boosting (XGBoost/LightGBM): Enhanced with SHAP for global/local feature attribution. Explainable Logistic Regression: Regularized coefficients for transparent decision logic. Neural Networks: SHAP layers to interpret deep-learning outputs. Evaluation Metrics: Beyond accuracy/ROC-AUC: Economic cost of misclassification (e.g., false negatives = 5× cost of false positives). Time-based cross-validation to address temporal financial dependencies. Key Innovations Dual Interpretability: Traceability (SHAP): Quantifies feature impact for model debugging (e.g., "EBIT



volatility contributed 40% to distress signal"). Decision Understanding (LIME): Generates plain-language explanations for non-technical stakeholders (e.g., "Loan denied due to 3-month cash flow decline >25%"). Regulatory Alignment: Audit-ready logic for compliance with SR 11-7, EU AI Act. Empirical Findings Accuracy: XAI models achieve 92% F1-score vs. 78% for traditional models. Early Detection: Identifies distress signals 6–9 months earlier than Altman Z-score. Bias Mitigation: SHAP reveals & corrects demographic biases in training data (e.g., location-based lending disparities). Stakeholder Impact Banks: 30% reduction in non-performing assets via proactive loan restructuring. Dynamic capital allocation using real-time risk drivers. Investors: Early warnings enable 20% higher risk-adjusted returns (e.g., divesting before equity drops). Regulators: Systemic risk surveillance: Identifies sector-wide vulnerabilities (e.g., energy sector debt bubbles). Relevance to IMRC 2025 This work directly aligns with two core tracks: Data Science & Artificial Intelligence: Advances XAI for high-stakes domains via SHAP/LIME innovations. Finance, Accounting, and Economics: Redefines risk analytics with interpretable, dynamic predictors. Organizations: Proactive crisis aversion. Policy: AI-auditing frameworks for financial stability. People: Ethical AI that mitigates biases affecting underserved entities. Conclusion Our XAI framework resolves the critical trade-off between accuracy and transparency in financial distress prediction. By transforming opaque AI into actionable, auditable insights, it empowers stakeholders to preempt economic contagion while adhering to evolving regulatory standards. Future work will explore XAI scalability for real-time global portfolios and human-AI collaborative workflows.

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Track 10: Data Science & Artificial Intelligence

## ANALYSIS OF DYNAMIC TRADE NETWORK UNDER ATTACKS

*Reetendra Singh and Dr. Shivshanker Singh Patel*

**Abstract:** In recent years, trade has been an emerging topic across the globe because it significantly contributes to the countries' growth. Over the last decade, global trade has been affected by many unforeseen events. The average trade value growth has experienced a massive decline of 6% in the unit value and 2.6% growth in volume during 2013-15, which is the lowest since 1981 \parencite{WT2015-16}. In 2020, international trade was marred by the largest decline in trade output volume since World War II because of the COVID-19 pandemic \parencite{OECD:2012-22}. The enterprise export volume has shrunk more than the trade value, which makes it more interesting to consider the study of the enterprise trade volume network. In any trade network, nodes represent the countries; trade between countries indicates links or ties. The study of global trade networks is evolving in various sectors. There are some relevant studies of the trade network, the trade war between the U.S. and China for supply chain semiconductor chip industry \parencite{zhang2023analysis}, characteristics of global semiconductor trade and role of countries in trade \parencite{li2025analysis}, trade network of aircraft manufacturing core products supply chain \parencite{zeng2024resilience}, structure and robustness of the international oil and gas trade networks \parencite{wei2022robustness, sun2023evolution}, and vulnerability of global arms trade network \parencite{guo2025vulnerability}. However, the above

research is limited to the trade industry products under only random or purposeful attacks on the degree or strength of the node, not for both together. This study aims to investigate the enterprise trade networks (unweighted and weighted) under purposeful and random centrality attacks. First, we proposed a numerical simulation to perform centrality attacks on the dynamic enterprise trade networks. Each centrality attack identifies the vulnerable and dominant countries using the centrality measures. After that, this study addresses the measures of trade networks and their performance before, during, and after attacks. This research contributes to the existing literature by utilizing enterprise data to investigate how the structure of enterprise trade networks changes and the contribution of vulnerable nodes to the network under each centrality attack. Then, this study performs a comparative analysis of unweighted and weighted networks under purposeful and random centrality attacks. This study has considered the enterprise trade data from 2012 to 2022, with the participation of 84 to 142 countries and 2336 to 2710 trade ties between them. There are two kinds of participant countries: first, the reference country, from where trade is flowing, and second, the partner country, which is involved in trade with other countries \parencite{OECD:2012-22}. The research methodology has two stages: simulations and analysis. Numerical simulations are performed to investigate changes in the network metrics of unweighted and weighted networks under the two types of centrality attacks: purposeful and random. Purposeful attacks indicate network scenarios where human intervention exists, like nations facing geopolitical and ideological conflicts, technology failure, and cyber attacks, while random attacks indicate the scenarios in which human intervention is absent, such as natural disasters like climate change and unforeseen events, any pandemic like COVID-19. The purposeful attacks are simulated by sequentially removing the country from the network based on the maximum centrality measures. However, random attacks are simulated by the random elimination of a country from the trade network, no matter whether the node has maximum or minimum centrality for trade volume and trade ties in a network. We computed the five centrality measures, Degree, Closeness, Betweenness, Eigenvector, and PageRank Centrality, which help to investigate the key countries in trade networks. Moreover, other network properties like Transitivity, which identifies the likelihood that the neighbouring countries are also exporting and importing to each other; Efficiency, which refers to the fast communications and effective utilization of trade volume between the countries; and Density, which indicates the interconnectivity level of countries. The above-discussed properties help to analyze the performance of enterprise networks before and during the centrality attacks. Results show that World, Germany, Italy, France, UK, and USA have the highest trade volume and are the key countries with strong dominance in enterprise networks (unweighted and weighted). Austria, Belgium, Bulgaria, Cyprus, and Czechia have the most exports and imports throughout the years in unweighted networks; those surpass Spain, Germany, France, the UK, and USA, which have the highest trade volume in the network. Moreover, Canada, Israel, Argentina, Switzerland, and other European countries have critical intermediaries in trade ties networks. In contrast, Malta, Cyprus, the World, Israel, Canada, and other European countries are considered the most important intermediaries for the trade volume networks. These countries play a critical role as bridges, connecting other countries. Netherlands, Poland, Turkey, Sweden, and Denmark are still emerging countries for economies that play a vital role in the trade networks. The ranking of other countries changes over time due to geopolitical relations and other unforeseen events. The results

suggest that enterprise trade networks are vulnerable to purposeful attacks based on node betweenness centrality, highlighting the potential for significant disruption after eliminating key countries. Networks are moderately vulnerable to purposeful attacks based on node strength and closeness centralities. These two attacks highly jeopardise the strength of the network. However, it has been seen that eigenvector centrality increases under the strength attacks, which indicates the domination of countries. The trade networks are less vulnerable to purposeful attacks based on eigenvector and PageRank centrality measures because the network's sustainability is higher against these attacks. Furthermore, trade networks are more stable and sustainable when dealing with random attacks. This research paper provides valuable insights and suggestions for maintaining trade network stability under unforeseen events. Discussed suggestions might be helpful for policymakers, network planners, and the government to keep a network sustainable and secure, with information on policies for countries and relevant industries. This study does not fully account for current government regulations and changes in trade policy. Future research may build a predictive model to tackle unforeseen events like tariffs, reciprocal tariffs, and other regulations and changes. This will help design a viable network and provide a practical understanding of trade networks to improve trade policies and strategies.

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Track 10: Data Science & Artificial Intelligence

## OPTIMIZING MUTUAL FUND PORTFOLIO USING PARTICLE SWARM OPTIMIZATION: EVIDENCE FROM INDIAN MARKETS

*Suhaira E S and Dr. Natasha P*

**Abstract:** 1. Introduction The Indian mutual fund industry has grown substantially over the past decade, fuelled by increased retail participation, digital platforms, and financial inclusion initiatives. As mutual fund options multiply, investors and fund managers face the challenge of allocating capital efficiently across schemes to achieve optimal risk-adjusted returns. Traditional approaches to portfolio optimization—most notably the Markowitz Mean-Variance (MV) model and Capital Asset Pricing Model (CAPM)—provide foundational insights but are limited by assumptions such as normally distributed returns, static correlations, and the absence of real-world constraints. These limitations often reduce their applicability in dynamic and complex financial markets. To address the limitations of traditional portfolio optimization methods, this study introduces Particle Swarm Optimization (PSO), a population-based metaheuristic inspired by the collective behaviour of birds and fish. Known for its ability to handle non-linear, multi-dimensional problems with minimal assumptions, PSO is applied to design a risk-efficient portfolio using Indian equity mutual funds across large-cap, mid-cap, and small-cap categories. The study aims to show that PSO offers a practical, data-driven solution for improving risk-adjusted returns and managing market complexity in mutual fund investments. 2. Objectives: This study has two primary objectives. 1. To optimize a portfolio of selected equity mutual fund schemes using Particle Swarm Optimization (PSO) to maximize the portfolio's Sharpe Ratio. 2. To compare the

performance of the PSO optimized portfolio with an equal-weighted portfolio using return, risk, and Sharpe Ratio. By addressing these objectives, the study intends to evaluate the effectiveness of PSO as a practical and data-driven approach to mutual fund portfolio optimization in the Indian market.

**3. Methodology**

**3.1. Fund Selection** A curated sample of 8 equity-oriented mutual fund schemes spanning large-cap, mid-cap, and small-cap segments will be selected based on the following criteria:

- Minimum 5-year operating history (2019–2023)
- Representation across large-cap, mid-cap and small-cap categories
- Consistent availability of monthly NAV data
- Popularity and inclusion in top-rated fund listed by AMFI and Value Research Online

**3.2. Data Collection** Monthly NAV data from January 2019 to December 2023 will be sourced from AMFI and Value Research. Monthly returns will be computed using percentage change in NAV, and annualized return, standard deviation, and Sharpe Ratio will be calculated for each fund.

**3.3. PSO-Based Optimization**

- Each particle represents a unique set of portfolio weights across the selected mutual funds.
- The objective function is to maximize the Sharpe Ratio, subject to:
  - o No short selling (weights  $\geq 0$ )
  - o Full investment (sum of weights = 1)
- PSO parameters (such as inertia weight, social and cognitive coefficients) will be tuned using standard values from previous literature.

**3.4. Benchmark Portfolio**

- An equal-weighted portfolio will be constructed for comparison, where each fund holds an equal share.
- The performance of both portfolios will be compared in terms of:
  - o Annualized return
  - o Standard deviation
  - o Sharpe Ratio

**4. Results (Expected)**

Based on initial analysis and theoretical modelling, the PSO-optimized portfolio is expected to achieve a higher Sharpe Ratio compared to the equal-weighted benchmark, indicating superior risk-adjusted performance. The optimized asset weights are anticipated to reflect a more intelligent allocation strategy—dynamically balancing large-cap stability, mid-cap versatility, and small-cap growth—rather than depending on fixed equal allocations. These findings are expected to suggest that PSO can meaningfully enhance mutual fund portfolio efficiency, particularly in the context of volatile and heterogeneous market conditions such as those observed in the Indian market between 2019 and 2023.

**5. Originality** This study contributes to the limited body of research on applying PSO to mutual fund optimization in the Indian financial context. While several studies exist on stock portfolio optimization using heuristic algorithms, applications in mutual fund allocation remain scarce. The study is distinct in its focus on equity mutual funds, real-world constraints, and practical investor applicability. By demonstrating how PSO can be applied without high technical complexity, this work bridges the gap between advanced computational methods and the practical needs of Indian retail investors and financial advisors.

**6. Research Implications / Limitations** This research demonstrates that Particle Swarm Optimization can be used as a decision-support tool for mutual fund investors. It offers an easy-to-implement, quantitative framework that removes reliance on subjective judgment or manual trial-and-error. Investors and financial planners can apply this model to construct portfolios that are not only diversified but also optimized for performance under real-world constraints. By making intelligent portfolio construction accessible to a broader class of investors, this study supports informed financial decision-making and long-term wealth creation, contributing to wider goals of financial literacy and inclusion in India. The study focuses on a fixed dataset (2019–2023) and uses a static optimization model. It does not account for transaction costs, tax implications, or rebalancing frequency. Future research could explore dynamic asset allocation, multi-objective optimization, using hybrid algorithms

and comparisons with other metaheuristics (e.g., GA, DE, ACO). Additionally, the PSO parameters are tuned based on existing literature, not through adaptive learning, which presents another direction for future study. 7. Conclusion This study highlights the potential of Particle Swarm Optimization (PSO) as an effective technique for constructing risk-efficient mutual fund portfolios in the Indian market. By applying PSO to optimize portfolio weights based on the Sharpe Ratio, the research demonstrates an alternative to traditional models that often fall short under real-world constraints. The anticipated findings suggest that PSO can generate superior risk-adjusted returns compared to a basic equal-weighted strategy, offering practical value to both individual investors and financial advisors. The study contributes to the growing body of literature on heuristic-based portfolio optimization, particularly in the underexplored area of mutual fund allocation in emerging markets like India. Overall, the research supports the broader goal of promoting data-driven, accessible investment strategies that enhance financial decision-making and long-term wealth creation.

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Track 10: Data Science & Artificial Intelligence

### Deep Reinforcement Learning for Investor-Specific Portfolio Optimization: A Volatility-Guided Asset Selection Approach

*Arishi Orra (Indian Institute of Technology Mandi), Aryan Bhambu (Indian Institute of Technology Guwahati), Himanshu Choudhary (Indian Institute of Technology Mandi), Manoj Thakur (Indian Institute of Technology Mandi).*

**Abstract:** With the recent advancements in AI, Deep Reinforcement Learning (DRL) has gained prominence in providing adaptive and scalable strategies for portfolio optimization. However, the success of these strategies depends not only on their ability to adapt to market dynamics but also on the careful pre-selection of assets that influence overall portfolio performance. Incorporating the investor's preference in pre-selecting assets for a portfolio is essential in refining their investment strategies. This study proposes a volatility-guided DRL-based portfolio optimization framework that dynamically constructs portfolios based on investors' risk profiles. The Generalized Autoregressive Conditional Heteroscedasticity (GARCH) model is utilized for volatility forecasting of stocks and categorizes them based on their volatility as aggressive, moderate, and conservative. The DRL agent is then employed to learn an optimal investment policy by interacting with the historical market data. The efficacy of the proposed methodology is established using stocks from the Dow \$30\$ index.

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Submission ID: 410

Track 10: Data Science & Artificial Intelligence

## Deep Reinforcement Learning for Investor-Specific Portfolio Optimization: A Volatility-Guided Asset Selection Approach

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Submission ID: 411

Track 10: Data Science & Artificial Intelligence

## Optimal stopping and search rules for sequential search in drip pricing

*Himanshu Rathore (IIM Lucknow), Ariit Sengupta (Jindal Global Law School, O P Jindal Global University), Suresh Jakhar (IIM Lucknow).*

**Abstract:** In digital marketplaces characterized by drip pricing—where full costs are revealed only at later stages of a transaction—consumers must navigate complex decision environments involving sequential price disclosure and varying levels of uncertainty. While prior literature has analysed consumer inertia and price obfuscation through static or deterministic frameworks, this chapter presents a novel dynamic model that frames the consumer's decision-making process as a sequential search problem under incomplete information. The model extends Weitzman (1979) box problem and integrates psychological dimensions such as goal closure to explain why consumers often forgo better alternatives despite hidden costs. Using a Family of Alternative Bandit Processes (FABP) formulation and dynamic programming techniques, the chapter derives optimal stopping and switching rules, validated through both numerical simulations and a lab experiment. The findings advance pricing theory by blending rational choice models with behavioral insights and offering a robust framework for



analysing consumer exploration in obfuscated digital environments. Drip pricing, prevalent in the airline, hospitality, and online retail sectors, is known to distort consumer decision-making by initially displaying a low base price and gradually revealing additional costs (Santana et al., 2020). While regulatory bodies like the U.S. Federal Trade Commission have taken action to increase pricing transparency, theoretical models that capture the real-world dynamics of consumer search under such pricing remain sparse. Traditional explanations such as the Diamond Paradox (Diamond, 1971) suggest that even minimal search costs can lead to market power and price stickiness. However, empirical findings indicate that consumers often do search—albeit under specific conditions. This paper extends the modelling frontier by reinterpreting sequential decision-making in drip pricing through the lens of optimal search theory and behavioral economics.

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Track 10: Data Science & Artificial Intelligence

## Managing Mental Health with AI: Using Multimodal LLMs to Evaluate Depression from TikTok Video Self-Disclosures

*Ranganathan Chandrasekaran, Juhi Anand and Dhananjay Suresh Daundkar*

**Abstract:** Depression is a leading global mental health challenge, with adolescents and young adults especially vulnerable. Social media platforms, particularly TikTok, have become prominent venues for self-disclosure, offering a window into users' mental health experiences through multimodal content that combines spoken narratives, vocal tone, and visual expression. While prior research has focused on text-based platforms like Twitter and Reddit, TikTok's unique format enables richer, more nuanced assessment of depression by integrating multiple data streams. This study leverages multimodal large language models (LLMs) to analyze 284 TikTok videos containing personal self-disclosures about mental health. Our methodology systematically extracts and interprets three key data types: (1) textual analysis of spoken transcripts to identify linguistic cues, (2) audio processing to assess vocal characteristics such as tone and prosody, and (3) visual analysis of facial expressions and body language. Using prompt engineering, we map these multimodal features to established PHQ-9 depression criteria, enabling the detection of explicit symptom descriptions, vocal indicators of fatigue, and visual markers of psychomotor agitation or affective blunting. Our results demonstrate that multimodal AI-driven analysis captures subtle emotional and behavioral signals associated with depression. Additionally, we explore how audio-visual and emotional markers may differ by demographic factors such as gender, age, and race. Our work provides a way to use short-video content to have a preliminary assessment of a users' mental state for for early detection and management of depression.

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## Words that feed: The interplay of captions and ingredients in online food context

*Mrinalini Kalundia, Alekh Gour and Yukti Sharma*

**Abstract:** Introduction The proliferation of culinary content, such as recipe sharing, on social media platforms has led to intense competition among content creators to capture the audience's limited attention (Zhu et al., 2019). Accordingly, existing research has extensively examined the linguistic and textual aspects of each component of the shared recipe, including captions, hashtags, ingredient lists, and recipe text, to determine its narrative, informational (Ha et al., 2021) and engagement value (Wang et al., 2023). Although these studies contribute significantly to our current understanding, they lack a real-world scenario in which the varied textual components of a recipe post coexist and interact to construct users' comprehensive understanding. To this end, we endeavour to study the intra-textual interaction between performative texts (titles/captions) and factual recipe content to understand how their (in)congruence affects the downstream impact on audience engagement and review-writing behaviour. Accordingly, we utilise a large dataset of actual YouTube videos from 21 famous cooking channels to examine how the congruence (vs incongruence) between textual content affects users' engagement, craving index, and thematic content. Building on rich theoretical insights from Expectancy Disconfirmation Theory (Guan et al., 2023) and Processing Fluency (Reber et al., 2004), we investigate the downstream effects of matching or mismatching expectations set by varied textual aspects of recipes, providing a new lens to understand viewer reactions in crowded digital environments. Literature Review Food has traditionally been used to foster social relationships, evolving into "food-storytelling" in digital environments where food is fundamental to storytelling and identity (Mainolfi et al., 2021). Platforms such as YouTube and Instagram have drastically changed culinary content into a multimodal format that incorporates cooking, photography, and digital media (Lee et al., 2014). While pictures draw attention, linguistic features such as titles, subtitles, and recipes influence perception (Rocklage & Fazio, 2020; Wang et al., 2023). However, most research examines captions and recipes in isolation, without considering how their congruence affects perception. We argue that captions and recipe text serve distinct roles in culinary narratives. Particularly, captions frequently set emotional or narrative expectations (e.g., "healthy," "tasty"), whereas recipe texts provide factual nutritional information. When these are mismatched, such as naming a sugary meal "guilt-free," cognitive dissonance may occur, leading to lower engagement (O'Hara et al., 2012). This study employs Expectancy Disconfirmation Theory (EDT) and Processing Fluency to investigate how aligning caption and recipe texts for user engagement, topic generation, and craving index, revealing an important but understudied dynamic in digital food media. Thus, we investigate: RQ: How do recipe text and video title/caption interact to affect quantitative (user engagement) and qualitative (topic generation and food craving index) metrics? Methodology This study examines the impact of aligning textual framing and nutritional content on user engagement and emotional response in food-related digital media. Data were acquired from YouTube, with a specific focus on Indian content creators owing to the platform's enormous reach and culinary diversity. Metadata, including video titles, captions, recipe texts, likes, views, and

comments, was extracted from 21 Indian cooking channels, each with over one million members and at least 500 videos, resulting in the scraping of approximately 2.5 million user reviews. Feedspot (2025), Vidzy (2023), Gryn timer (2020), and Kumar (2024). Operationalisation of variables We considered two main Independent variables: caption framing (classified as healthy, tasty, convenient, or informational) and nutritional content, which was measured using the SWAP method (green, yellow, or red based on fat, sugar, and sodium levels). The dependent variables were user involvement (likes, views, and comments), a craving index (frequency of craving-related remarks), and topic generation (themes generated by user comments). We employed Natural language processing techniques and Thematic content analysis to measure sentiment (VADER), lexical diversity (Type-Token Ratio), and readability (Flesch and Fog Index) and a domain-specific vocabulary, respectively. Caption-recipe congruence was determined using token-based similarity to reference datasets. Key Findings This study assessed the semantic alignment between video titles and their SWAP code by categorizing captions as Healthy, Tasty, or Neutral using keyword lists. Each product's SWAP code contained an Expected\_Category, which could be compared to its Caption\_Type. A Congruence score (1.0 = full match, 0.0 = complete mismatch, and fractional = partial match) was determined. When both the caption and the SWAP category were Neutral, the results showed a high level of congruence (0.99), showing significant alignment for generic labels. However, the Healthy and Tasty categories frequently had poor alignment, particularly when captions did not match the intended label. For example, healthy products had low scores (0.0-0.12) across all caption kinds. Only Tasty captions scored well (1.0) in the Tasty category. Intermediate scores (e.g., 0.3333, 0.6667) are likely due to partial lexical overlap, as determined by a rule-based approach that assesses keyword presence. Additional analyses assessed lexical diversity, readability, sentiment, and thematic structure. The texts were largely readable, with moderate lexical variance. Sentiment analysis revealed a neutral to slightly favourable tone, while keyword analysis highlighted "tasty," "healthy," and "convenience" as major themes, reflecting standard food content framing techniques. Theoretical and Practical Implications This study contributes to the literature by establishing and empirically validating the concept of intra-textual congruence, which refers to the alignment of performative text (captions and titles) and factual text (recipes and nutritional content) in digital food media. Applying Expectancy Disconfirmation Theory (EDT) and processing fluency broadens our understanding of how semantic mismatches in textual components affect user engagement, topic generation and craving index. Theoretically, it challenges the typical separation of textual aspects and posits language as a combinatory stimulus, in which narrative and nutritional information co-create meaning. This expands on the study of content congruence, particularly in the understudied context of food narratives, and demonstrates that congruent textual signals can enhance perceived authenticity and user involvement in multimodal contexts. Practically, the study provides actionable findings for content creators, digital marketers, and public health communicators. Aligning titles or captions with the nutritional quality of recipes can help producers and influencers gain more credibility, user trust, and engagement. Marketers can use congruent framing (for example, pairing "healthy" tags with actual nutritional content) to eliminate cognitive dissonance and boost audience receptivity. Integrating congruence-based criteria into recommendation algorithms on platforms like YouTube and Instagram could help expose more relevant and trustworthy content. Furthermore, public health campaigns can

employ these findings to create digital interventions that are both compelling and cognitively fluent, ensuring that performative messages are consistent with factual health information.

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Submission ID: 518

Track 10: Data Science & Artificial Intelligence

## The Rise of Plus-Size Women as a Transformative Consumer Segment: Shaping India's Future Economy

*Aditi Anand, Anuja Sharma, Svardhuni Rai, Kaja Bantha Navas R, Kaushik K. Rana and Ettishri Rajput*

**Abstract:** The plus-size women market has shown increasing agency in recent years, as evidenced by rising spending on body-positive mental health services, digital wellness platforms, personalized nutrition services, and fitness. Women's participation in the Indian fitness app market, which is expected to reach USD 267 million in 2024, is growing exponentially, as is the demand for inclusive coaching and women-only fitness facilities. In a similar vein, it is anticipated that digital nutrition coaching will reach USD 3.6 billion by 2029, driven by AI-based platforms such as HealthifyMe and GOQii that provide sustainable diet plans tailored to different body types and cultural differences. Crucially, plus-size consumers are prioritizing strength, mobility, and hormonal balance over conventional beauty standards, moving away from weight loss and toward holistic well-being. Most brands use scaled-up standard size charts that do not reflect the actual body proportions of plus-size women, leading to poor fit and dissatisfaction. In India, there is a lack of data-driven approaches for developing inclusive and accurate size charts, resulting in underrepresentation and higher return rates. Our main objective of the research is to derive the size chart for plus size women. Data are collected from the reputed store for this case. In this research, we have identified important independent variables for the Plus size women size chart derivation. K-Means clustering in IBM SPSS has group the data into 3 clusters based on body measurements, showing the evolution of cluster centers, the distribution of cases, and ANOVA results confirming that the clusters differ significantly on key variables. The  $K = 3$  model shows the highest accuracy and reliability for our data with Stable convergence statistically distinct clusters Good distribution without tiny (unreliable) clusters. PCA highlighted that how multiple anthropometric variables were reduced into key components to simplify and interpret body measurement patterns for plus-size women.

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## Stock Price Forecasting Using LSTM-Transformer Hybrid Model with Technical Indicators: A Case Study Public Sector Banking Stocks

*Hardik Modi, Kartik Sumwala, Sagarkumar Patel and Dharmendra Chauhan*

**Abstract:** Stock Price Forecasting Using LSTM-Transformer Hybrid Model with Technical Indicators: A Case Study Public Sector Banking Stocks Introduction: As stock market data is so unpredictable and nonlinear, predicting stock market prices has long been a challenge in financial engineering. Complex temporal connections included in stock price fluctuations are frequently missed by traditional statistical models. Time-series data modeling for financial forecasting has recently showed great potential thanks to deep learning models, especially Transformer-based architectures and Long Short-Term Memory (LSTM) networks. Public Sector Banking stocks are the subject of the study, which employs technical indicators and historical price data to create a sophisticated forecasting model. Objective: The following are the main goals of this study: • To create a hybrid deep learning model for stock price forecasting that combines Transformer Encoder blocks and LSTM networks. • To retrieve the model's performance using important measures like accuracy %, mean absolute error (MAE), and root mean squared error (RMSE). • To look at how the precision power of the model is affected by technical indicators such as Bollinger Bands, Relative Strength Index (RSI), Moving Average (MA) and Moving Average Convergence Divergence (MACD) Methodology: Data Collection & Preprocessing: The yfinance Python package was used to retrieve the historical stock price information from Yahoo Finance. Non-stationary patterns, missing values, and noise are common in raw financial time-series data, and they can negatively impact model performance. Consequently, thorough preparation procedures were used in the following ways: • Index Resetting: For visualization and additional processing, the date column was taken out and reset as a regular column. • Visualization: To determine possible anomalies and evaluate data continuity, the initial closing price trend was shown. • Normalization: Deep learning algorithms find it challenging to converge successfully since stock prices fluctuate across several scales. The MinMaxScaler from Scikit-learn was used to normalize the closing price series, rescaling all values within the range [0, 1]. Utilizing Technical Indicators in Feature Engineering: Technical indicators were added to the feature set to enhance it in addition to the raw price data. By capturing market mood, momentum, and volatility, these indicators provide the model more context than just price. The following indicators were computed: • The 20-day simple moving average, or MA20, smoothed out price swings and draws attention to underlying patterns. • The Relative Strength Index (RSI) is computed on a period of 14 days. It represents an oscillator that analyses recent fluctuations of price and determine if the stock is overbought/oversold or underbought/undersold. • Bollinger Bands represent price volatility and are based on standard deviations from the moving average. They have an upper and lower band. • By contrasting short- and long-term exponential moving averages, the MACD difference (Moving Average Convergence Divergence) offers information about trend strength and reversals. LSTM Architecture: The first layer is made by stacking networks of LSTM (Long Short Term



Memory)), which is used to manage the sequential dependencies that appear in time-series data of stock price. In the code, Sequences length of 100 are processed in 3 LSTM layers, 64, 64, 32 hidden units respectively. Normalized closing price is represented by one feature in each timestep. Since the return sequences parameter is true, network can learn hierarchical temporal features so that each layer maintains temporal dimensions. The problem of RNN is eliminated by preserving internal memory states using LSTM layers, by this both short term and medium ranges can be efficiently captured. Followed by this is the attention layer, which is fed by the complete sequence information that is preserved by the last layer of LSTM. Transformer Encoder: The next layer of the model is the Transformer Encoder, this will improve the understanding of long term dependencies and contextual relationships along the input sequences. To allow model, for handling multiple representation subspaces simultaneously, a MultiHeadAttention layer is used. In which num\_head = 4 and key\_dim = 16 is implemented in code. Because of this layer, network can calculate pair wise dependencies in the sequence output of LSTM layer. Add () layer is used to maintain the Gradient flow along with Dropout(0.1) to avoid overfitting. For stock price patterns affected by events or trends that span multiple timesteps, the Transformer Encoder is integrated at this point, allowing the model to overcome the limitations of the LSTM in learning global context across the sequence. Hybrid LSTM-Transformer Framework: LSTM layers and Transformer Encoder, both have their own advantages and by combining both, creates a hybrid framework specially for stock price prediction. Firstly the LSTM transforms the raw data by preprocessing it and converting into rich temporal embeddings which focuses localized patterns and sequential structure. Once these embeddings are received, the Transformer Encoder refines the temporal features with position-agnostic contextual dependencies using global self-attention. The final LSTM layer uses temporal pooling to summarize the sequence into a fixed-dimensional latent representation when return\_sequences = False set. The stock price prediction regression challenge is then performed using a single-node output layer. By explicitly reducing the discrepancy between expected and actual prices. By utilizing the global attention mechanism of Transformers and the sequential learning capability of LSTMs, this hybrid design enhances the model's performance to accurately predict intricate, non-linear stock price trajectories. Result Train RSME 3.734921202612867 Test RSME 9.408635230920316 Train MAE 2.540563630673765 Test MAE 3.7489608068170375 Train Accuracy 96.23% Test Accuracy 92.00% Discussion Using the hybrid model of LSTM and transformer blocks, the effectiveness of the model is significantly increased, in terms of considering long term dependencies and short term fluctuations. Furthermore, the inclusion of technical indicators enhanced the understanding of market conditions in model. Although, the model has achieved a significant accuracy on historical data, challenges still remain in improving generalization of future or unseen data, especially during volatility in market. To enhance the performance further, experimenting with alternative feature set or tuning hyper parameters can be considered Conclusion This study effectively utilized a hybrid deep learning model that combines LSTM networks with a Transformer Encoder for stock price prediction. Short-term temporal relationships and price trends were successfully captured by the LSTM layers while processing 100-timestep sequences. To improve the model's capacity to pay attention to distant but significant past price changes, a Transformer Encoder block with multi-head self-attention (4 heads, key dimension 16) was incorporated after it was realized that LSTM



was not very good at learning long-range patterns. The model's accuracy percentages were 96.23% and 92.00%, respectively, with train RMSE of 3.73 and test RMSE of 9.40. These findings show that integrating global attention mechanisms with sequential memory from LSTM enhances forecasting performance, establishing this architecture as a promising method for financial time series prediction problems.

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Submission ID: 607

Track 10: Data Science & Artificial Intelligence

## Smart Farming for a Smarter Future: Machine Learning-Based Crop Management System for Indian Agriculture

*Akanksha Kulshrestha and Vivek Kumar*

**Abstract:** Agriculture continues to be the foundational pillar of India's rural economy, serving as the primary source of livelihood for more than 42% of the country's working population (Bhattacharjee, 2024). This sector not only sustains millions of rural families but also plays a crucial role in ensuring food security and supporting the broader economic framework of the nation. However, despite its vast scale and significance, Indian agriculture is beset with a range of persistent and complex challenges that have hindered its potential for growth and resilience. These challenges include unpredictable and erratic weather patterns caused by climate change, a gradual but alarming decline in soil fertility and health, frequent pest invasions that damage crops, and the inefficient use of agricultural inputs such as water, fertilizers, and pesticides. Traditionally, farming decisions in India have been made based on farmers' personal experience, generational knowledge, or broad advisories issued by government agencies. While these methods have served some purpose, they often fail to consider the high variability in local conditions such as specific soil types, microclimates, and rapidly changing market dynamics. This lack of granular, location-specific guidance leads to suboptimal outcomes, including low yields, environmental degradation, and economic losses. As both climatic conditions and market forces become increasingly unpredictable, the need for more accurate, timely, and localized decision-making tools has become more urgent than ever. In this context, the integration of digital technologies into agriculture offers a promising solution. The Indian government's recent initiative, the Digital Agriculture Mission, provides a strategic framework for leveraging innovations in data science, remote sensing, and artificial intelligence. Among these technologies, machine learning (ML) stands out as a transformative tool capable of analyzing large datasets to generate predictive insights, customized recommendations, and real-time support for farmers. ML-based decision support systems, if tailored to the specific realities of Indian agriculture, have the potential to empower farmers with actionable information, reduce input costs, increase productivity, and build long-term resilience (Rathore R., 2025). This study aims to develop and evaluate a scalable machine learning-based crop management system specifically suited to India's agro-climatic diversity (Rani, S., et al 2023). The system is designed to assist farmers and agri-

managers with personalized recommendations related to crop selection, irrigation schedules, nutrient management, and pest control strategies. It seeks to integrate scientific agronomy with real-time data analytics, thereby enhancing productivity, reducing input costs, and increasing farmers' economic resilience. A secondary objective is to assess the system's usability through mobile interfaces supporting regional languages and voice commands, addressing the digital divide in rural areas. The research followed a hybrid methodological framework combining data-driven ML techniques with field-level insights. Open-source agronomic data was aggregated from diverse sources, including satellite imagery, Indian Meteorological Department forecasts, soil health reports from Krishi Vigyan Kendras, historical crop yield data from ICAR, and market price trends. Data preprocessing involved normalization, outlier removal, and feature engineering to optimize input quality. The system employed a blend of supervised and unsupervised ML algorithms: Random Forest and Support Vector Machines for classification tasks (e.g., pest risk and crop suitability), K-Means clustering for agro-zoning, and regression for yield prediction and irrigation scheduling (Sharma, S, et al 2025). Cross-validation was used to train and test models, ensuring generalizability across varying agro-climatic zones. The final output was delivered via a multilingual mobile app and a web-based dashboard designed for agri-managers and extension workers. Preliminary field trials were conducted in two states namely, Punjab, and Maharashtra encompassing both irrigated and rain-fed regions. Farmers using the ML-based system reported an average yield increase of more than 10% compared to control groups relying on conventional advisories. Input cost reductions ranged from more than 20%, primarily in irrigation and fertilizer use. The real-time pest alerts helped reduce crop damage during sudden infestations, and market price forecasts improved timing of sales. The results demonstrate that integrating ML models with localized data significantly improves decision-making in Indian agriculture. The platform's adaptability across agro-climatic regions supports its broader scalability. Moreover, the voice-assisted mobile interface addressed usability challenges for farmers with low digital literacy. From a policy lens, the system aligns with India's Digital Agriculture Mission and offers a replicable model for public-private partnerships in agri-tech. However, deployment at scale will require investments in rural connectivity, local training, and trust-building. Limitations include data sparsity in tribal and hilly regions and the need for frequent model retraining to adapt to climatic variability. This study illustrates that machine learning, when combined with localized agronomic intelligence and human-centered design, can transform traditional farming into a predictive, efficient, and sustainable system. The system provides a low-cost, accessible alternative to complex precision agriculture tools, making it especially valuable for smallholder farmers. With proper support from policy, infrastructure, and agricultural institutions, such ML-driven platforms could enable millions of farmers to make informed decisions and improve their livelihoods. The research contributes to the growing field of digital agriculture and sets the foundation for scaling data-driven solutions across emerging economies.

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## THE PIED PIPER OF THE MARKETS: CAN INFLUENCERS ON TWITTER-VERSE MOVE THE MARKET?

*Smita Roy Trivedi*

**Abstract:** Stock market Influencers are ubiquitous on the social media. Are these influencers able to move the market through the spread of sentiment? Influencer-follower dynamics closely impact contagion in financial markets, through a transmission of social or psychological beliefs (Fenzel and Pelzmann, 2012). In this context, tweet features have been used to identify financial communities and their impact of financial market sentiment (Yang et al. 2015, Duz Tan and Tas, 2021, Machus et al. 2022). However, the dynamics of influence amongst the financial community: how each hierarchy within the community influences the others and thereby the market movement, has remained largely unexplored. This paper probes whether influencers posting tweets on the Indian equity market, or their followers, impact the market movement. The Indian equity market provides an appropriate laboratory for understanding the impact of influencers, given the concern of capital market regulator, Securities Exchange Board of India (SEBI) with financial influencers or fin-influencers. We first construct a financial community network identifying three hierarchies in the market: influencers, waves and novices. Using a corpus of around 0.26 million tweets, we use centrality measures like betweenness, closeness and degree to identify the three hierarchies. We thereafter analyse the direction and strength of influence between the hierarchies and the impact of their tweet features on stock market movement using the ARCH and VAR constructs for intra-day data. We find that the financial community's tweets have an impact on both market movement and volatility. In keeping with literature on intraday impact of bullish sentiment on market returns (Broadstock and Zhang 2019), we find bullishness to have a small and mixed impact on returns. However, bullishness reduces heterogeneity in market movement and traded volumes, while bearishness leads to more turmoil. Better quality forecasts are associated with reduced volume but volatility of returns, suggesting correctness in forecasting reduces turmoil. Agreement amongst the financial community leads to an increase in volume (as in Antweiler and Frank, 2004) as also an increases volatility of returns (as in Das et al. 2008, Sprenger et al. 2014). Looking at how each hierarchy impacts the market; we find bullishness and agreement amongst novices negatively impact on volatility of returns. We find bullishness of waves and novices impacting the bullishness of Influencers, suggesting the bottom-most hierarchies, i.e., novices and waves influence the top-most hierarchy or influencers, as much as they are influenced by the influencers. Our results regarding the novices, mirror that of Renault (2017), who find intraday sentiment driven by the sentiment of novice traders. The paper adds to two strands of literature. The first looks at impact of financial community sentiment on equity market movement. While our paper broadly stands within the subset of studies on twitter-verse sentiments and market returns (Sprenger et al. 2014, Duz Tan and Tas, 2021, Machus et al. 2022), it focuses on the creation of the financial community and the impact of the financial community's sentiment on market. Our paper looks at market contagion in terms of influencers-follower behaviour and their behavioral biases (Fenzel and Pelzmann, 2012). Close to our work, Yang, et al (2015) decompose the community into three distinct layers: broadcaster/ acquaintances/odd user. However, to the best of our knowledge, impact of each hierarchy on the market is not explored till date. The second strand of literature we contribute to is the dynamics between experts or influencers and their followers. There is evidence that in financial markets experts influence 'laypeople' or novices to follow them (Huber, et al. 2019), however, this relationship has not been explored in terms of the financial communities present on the social media space.

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Submission ID: 647

Track 10: Data Science & Artificial Intelligence

## SELF-SIMILAR GEN: SIMULATING TAILS OF HEAVY-TAILED DISTRIBUTIONS USING DEEP GENERATIVE MODELS

*Mantu Gupta and Anand Deo*

**Abstract:** We introduce Self-Similar (SS)-Generative Model: a novel procedure for estimating rare-event probabilities in multivariate heavy-tailed settings. Our procedure leverages the inherent semi-parametric nature of multivariate heavy-tailed distributions to learn a non-parametric component using deep generative models (DGMs), such as Generative Adversarial Networks (GANs), Variational Autoencoders (VAEs), or Diffusion Models. We demonstrate that this approach enables accurate generative modeling for the extreme regions of multivariate heavy-tailed data. We establish the statistical consistency of our estimates and provide convergence rate guarantees under mild smoothness assumptions on the true distribution. Unlike state-of-the-art methods that rely on specialized neural architectures for tail estimation or require parametric structure assumptions, our framework is flexible and can be integrated with various deep generative models. We showcase the applicability of our methodology by developing a tractable approach to compute rare-event probabilities far beyond the range of observed data.

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Submission ID: 665

Track 10: Data Science & Artificial Intelligence

## An Instance-level Counterfactual Approach for the Explainability of Node Classification in Networks

*Mukul Gupta*

**Abstract:** Graph-structured data is prevalent across a wide range of real-world domains, including social networks, citation networks, biological interaction networks, and financial transaction systems. In these domains, entities and their relationships are naturally represented as nodes and edges, forming complex topologies that capture important structural information. One key problem in graph learning is node classification, where the task is to assign discrete labels to individual nodes based on the graph's structure and, when available, node features (Prado-Romero et al., 2023). However, in many practical settings—such as early-stage biological networks, anonymized social graphs, or transaction networks—node attributes may be missing or unavailable. In such cases, prediction models must rely solely on the underlying graph structure, leveraging patterns such as connectivity, degree distributions, or network motifs. While structure-based models have shown strong predictive performance in these scenarios, their internal decision-making processes remain largely opaque. This lack of interpretability raises significant concerns in domains where understanding why a particular prediction was made is as important as the prediction itself (Abrate & Bonchi, 2021). Fields like fraud detection, cybersecurity,

and biomedical research require explanations that are clear, reliable, and useful. Counterfactual explanations have become a common approach for providing insight at the individual prediction level (Lucic et al., 2022). They focus on identifying the smallest change to the input that would result in a different outcome, helping to clarify how the model makes decisions. Unlike factual explanations, which describe the factors that contributed to a given prediction, counterfactual explanations show what could be different to change that prediction. This “what-if” perspective is especially valuable because it offers actionable information — it helps users understand not only why a decision was made but also how it might be altered. For example, in fraud detection, knowing which changes to a transaction’s details could prevent it from being flagged is often more useful than simply knowing which features caused the flag in the first place. By highlighting the minimal adjustments needed to flip a prediction, counterfactual explanations provide a practical way to explore the model’s decision boundaries and support informed decision-making. This makes them a particularly intuitive and effective tool for interpreting complex models, especially in high-stakes domains (Qiu et al., 2025). When the classification depends exclusively on graph structure, counterfactuals naturally translate to structural perturbations—namely, the addition or removal of edges. These modifications correspond to real-world phenomena, such as the formation or dissolution of relationships, shifts in interactions, or evolving network topology. However, generating meaningful and interpretable counterfactuals in graphs is challenging due to the combinatorial complexity of possible graph modifications and the intricate dependencies among nodes (Prado-Romero et al., 2023). To tackle this challenge, we propose a novel, model-agnostic framework for producing instance-level counterfactual explanations in structure-only graphs, based on perturbation matrices that encode potential edge additions and deletions. Our method identifies a minimal set of edge changes that flip the predicted label of a target node. Importantly, the proposed approach treats the node classification model as a black box—it requires no access to internal model parameters or embeddings, relying solely on prediction queries. This makes our framework applicable across a wide variety of node classification methods. Our main contributions can be summarized as follows: • We introduce a model-agnostic counterfactual explanation approach tailored for node classification in graphs without node features, leveraging only structural information. • We develop a perturbation matrix formulation that identifies sparse and interpretable edge modifications—either additions or deletions—that are sufficient to alter a node’s predicted label. • We propose an approach that balances minimality and plausibility of structural changes under constraints of sparsity. • We validate our framework on real-world datasets, demonstrating that it produces faithful, understandable, and realistic explanations. This work pushes forward the interpretability of machine learning applied to networked systems by providing a principled, flexible, and broadly applicable method for explaining predictions in graphs that lack node features. Our optimization-based method finds the smallest structural perturbation that flips a target node’s predicted label, independent of the prediction model used. This qualifies as a counterfactual explanation, since it explicitly identifies the minimal input change required to alter the model’s decision. Our framework has significant potential for a variety of practical applications. For example, it can uncover how specific social ties influence user classification in social networks, identify key structural factors that contribute to fraud detection in

financial graphs, or reveal topological features that determine biological function in protein interaction networks (Lucic et al., 2022; Prado-Romero et al., 2023; Qiu et al., 2025).

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Submission ID: 710

Track 10: Data Science & Artificial Intelligence

### Artificial intelligence and Job satisfaction in Northern India: the mediating role of creativity

*Pooja Mittal and Prof. Anil Kumar*

**Abstract:** The study aims to investigate the link between artificial intelligence and job satisfaction in Northern India and determine whether or not creativity plays a mediating role in that relationship. The respondents (N = 250) who were employed in Northern India's Industrial sector made up the research sample. Along with a number of demographic inquiries, the questionnaire contained established measures of artificial intelligence, job satisfaction and creativity. To analyse the data, Smart PLS-4 was used. The results demonstrated that artificial intelligence has a substantial beneficial impact on job satisfaction and that creativity plays a partly mediating role in this connection. Through examining the connection between artificial intelligence and job satisfaction, the study expands on earlier research and strengthens the validity of the conclusions. This study also represents one of the first to investigate the role of creativity in the link between the two variables, which advances both our comprehension of the model and our ability to better grasp how artificial intelligence affects job satisfaction.

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Submission ID: 819

Track 10: Data Science & Artificial Intelligence

### Modeling Speculative Behavior in Asset Pricing: A Deep Learning-Based Hybrid Five-Factor Model

*Mohanan Moni, V Sreeraj, A V Biju, M P Silpakrishnan and T P Siyahul Haque*

**Abstract:** Problem Statement Most of the traditional asset pricing models such as the CAPM, APT, Carhart's Four-Factor Model, and the Fama-French Factor Models assume that the markets are efficient and investors behave rationally, thereby ignoring the speculative anomalies in the market. However, these assumptions of rationality and the market efficiency often falls during periods of intense speculation. This is because market outcomes during intense speculation is influenced more by sentiment and momentum than by fundamentals (Barberis et al., 2021; Shanker, 2017). Speculative actions often drive prices away from intrinsic values, causing mispricing and higher volatility (Kaizoji, 2000; Vidal-García & Vidal, 2022). Most existing models fail to incorporate these speculative and behavioral anomalies, limiting their effectiveness in predicting returns or managing risk under volatile conditions. Furthermore, the static structure of conventional OLS regression reduces its relevance in



dynamic, high-frequency markets [Fritz et al., 2024)]. This gap leaves both investors and regulators dependent on models that do not adapt well to real-time shifts in sentiment or trading behavior. As financial markets become faster and more data-driven, there is a growing need for asset pricing models that can account for speculative intensity. This study addresses this gap by including the speculative index as a fifth factor in the four-factor model and integrating this five-factor model with the advanced deep learning algorithm, the Mamba Selective State Space Model. Methodology To address speculative anomalies in asset pricing, this study developed a speculation index using five market behaviour indicators such as open interest, price spread, price range, VIX, and the Volume-Open Interest Ratio (VOIR) sourced from Bloomberg. According to the existing literature, each of these indicators are capable of capturing the speculative pressure in the market. Abnormal fluctuations in these indicators were identified using residuals from the Exponential GARCH (EGARCH) model, which is well suited for modelling volatility clustering and asymmetric effects in financial time series (Nelson, 1991; Alim et al., 2024). These residuals were then dynamically weighted using the Temporal Fusion Transformer (TFT), a deep learning model capable of capturing time-varying feature importance in sequential data (Van Son and Nhat, 2025). The resulting speculation index was introduced as a fifth factor into Carhart's Four-Factor Model to construct a modified five-factor framework. The other four factors of Carhart-Fama French Four factor model were collected from IIMA data library. This extended model was embedded within a MAMBA Selective State Space structure to improve latent state tracking and adaptability under market volatility (Gu and Dao, 2023). To enhance predictive accuracy, feature engineering was applied, and model robustness was evaluated through k-fold cross-validation. Figure 2: Mamba SSS Model Algorithm The daily data for 108 equities listed on the National Stock Exchange (NSE) spanning large-cap, mid-cap, and small-cap segments were also collected from Bloomberg is used for testing the predictive accuracy of the model and also for portfolio optimization. After validating the predictive accuracy of the new Hybrid Five-Factor Model, it is further applied to portfolio optimization to evaluate its practical usability. This is done in conjunction with established optimization algorithms such as Ant Colony Optimization (ACO) and Sequential Least Squares Programming (SLSQP), which are widely used for portfolio optimization [Dorigo & Socha, 2018; Gatta et al., 2023)]. Key Findings The study demonstrates that incorporating speculative index as a fifth factor and integrating the model with the Mamba Selective State Space deep learning architecture significantly improve predictive accuracy. The model captures market behavior influenced by sentiment and momentum, which traditional factors often miss, through the addition of the speculative factor. At the same time, the Mamba architecture enhances the model's ability to learn and adapt to complex, time-varying patterns in financial data. Together, these innovations allow the Hybrid Five-Factor Mamba-SSS Model to more accurately price assets and predict returns, especially under volatile or sentiment-driven market conditions. In portfolio optimization, the Hybrid Five-Factor Mamba-SSS Model combined with Ant Colony Optimization (ACO) and Sequential Least Squares Programming (SLSQP) and found that the SLSQP-based portfolios showed higher returns and lower volatility, especially during unstable market periods. Dynamic rebalancing kept portfolio performance steady with fewer trades. Speculative pressure influenced asset prices in a measurable way, and combining market signals with advanced deep learning algorithms improved the model's performance. Implications for Research This

study shows that adding a speculative factor can improve asset pricing models. Future research can explore other behavioral factors in asset pricing models along with the speculative factor. The integration of the Mamba Selective State Space model with traditional asset pricing models introduces a new methodological approach in financial modeling. Researchers could test similar models in different markets, like global stocks or bonds. They can also study how these models work over longer time periods. More work is needed to see how dynamic rebalancing affects risk and return. This study provides a base for building better models that reflect real market behavior. Future studies should continue to combine financial data with machine learning to create more accurate and flexible tools for researchers and investors. Implications for Practice The findings of this study can be applied directly in real-world investment strategies. Financial professionals can use the speculative factor to detect abnormal market behavior linked to sentiment and momentum. This helps in identifying mispriced assets during volatile conditions. The Hybrid Five factor Mamba Selective State Space model developed in the study allows for better forecasting of returns, especially in fast-changing markets. Portfolio managers can apply the hybrid model with optimization methods like SLSQP to build more stable and profitable portfolios. The model's ability to adapt and rebalance dynamically reduces the need for frequent trading while maintaining steady performance. These practical tools can support smarter investment decisions, better risk management, and improved portfolio outcomes across different market conditions, especially when speculation plays a major role.

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Submission ID: 1011

Track 10: Data Science & Artificial Intelligence

## A Study of Developing Marketing Capabilities in D2C Brands through AI-Based Technologies

*Sneha Mishra, Sheila Roy and Ashish Jha*

**Abstract:** This study explores the D2C brands' association with AI-based technologies to enhance their marketing capabilities. The central idea around which our study revolves is "Self Learning." Learning is a synonymous attribute to Artificial Intelligence and Direct-to-Consumer Brands. They both run on dynamism, which makes them highly adaptable and agile. Thus, we adopted the lens of Dynamic Marketing Capabilities to understand these entities; we looked into the literature on Artificial Intelligence and Dynamic Marketing capabilities and found similarities that motivated us to dig further. The revelations during interviews helped us develop the conceptual framework to establish the linkages among AI-based technologies, the Sensing aspect of Dynamic Capabilities (DC), Dynamic Marketing capabilities, and the Value proposed to the customers. The interviews spanned out to seven D2C brands based in India. The significant findings of our study were the learning capability and Power of these D2C brands, two new attributes of DMC that have not been explored earlier. Market Orientation and NPD were old concepts of Value Proposition. In our study, we found personalization to be an important aspect of the Value that these D2C brands offer because of the integration of AI-based technologies. As we explored the literature, we developed the conceptual framework. We validated it through interviews

with key people of various D2C brands, and after that, we presented three (3) propositions to establish a strong relationship in crafting a successful customer journey.

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Submission ID: 1030

Track 10: Data Science & Artificial Intelligence

### Non-Parametric Modeling for Spatio-Temporal Crime Hotspot Prediction

*Parth Mehta (Brij Disa Centre for Data Science and AI, Indian Institute of Management Ahmedabad, 380015, Gujarat, India), Karthik Sriram (Operations and Decision Sciences, Indian Institute of Management Ahmedabad, 380015, Gujarat, India), Ankur Sinha (Operations and Decision Sciences, Indian Institute of Management Ahmedabad, 380015, Gujarat, India).*

**Abstract:** Crime prediction is a critical component of urban safety planning, aiming to forecast when and where crimes are likely to occur so that law enforcement can respond proactively. Our study is based on the real-world scenario of street crimes, by collaborating with Delhi police department. In this paper, a non-parametric model for crime prediction is presented using the spatio-temporal kernel density estimation (KDE) framework. The objective is to propose a mathematical model for providing crime prediction based on historical street crime data. Using adaptive kernel bandwidth, the model predicts regions of high density to obtain crime hotspots over spatial and temporal dimensions. The KDE formulation is designed to incorporate additional periodic patterns and environmental variations. Further, based on predicted crime densities, the study also provides prescriptive insights by optimizing patrolling resources to minimize street crimes. To validate the model's capability in supporting hotspot detection and resource optimization, average captured crime and associated standard deviations are evaluated over multiple validation days.

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Submission ID: 1080

Track 10: Data Science & Artificial Intelligence

### Dynamic Pricing and Multi-Period Inventory Optimization for Perishable Agricultural Commodities

*Nisarg Trivedi, Aditya Vaish and Vedant Shah*

**Abstract:** India's agrifood sector is the backbone of its economy, it supporting a large portion of its population. The supply chain for perishable agricultural commodities (PACs), including fruits, vegetables, and some dairy products, however, is riddled with inefficiencies and results in high post-harvest losses, price fluctuations, and unfair value distribution. Right from the time when a crop is planted, there are inherent risks in terms of yield, quality, and demand in the market. When harvest occurs, PACs go through the journey of a complicated, frequently disintegrated supply chain. This usually passes through local aggregators who source fruits and vegetables from farms and move them to the Agricultural Produce Market Committee (APMC) Mandis. These regulated wholesale markets

are the key centers for trade. Within these Mandis, the traditional pricing mechanisms, often reliant on daily auctions and limited real-time market intelligence, fail to adequately capture dynamic supply and demand shifts or account for the rapid degradation of perishables. This fundamental disconnect between production, market dynamics, and inventory management at the Mandi level exacerbates losses, diminishes farmer profitability, and ultimately impacts consumer access and price stability. The current infrastructure in Gujarat Mandi, which offers a formal marketplace, often operates without a substantial level of advanced data-driven decision-making. The management of inventory is mostly reactive, with the produce often being kept in primitive conditions, speeding up spoilage and requiring immediate, often distressed, selling. This situation is further made difficult by the ubiquitous presence of intermediaries like commission agents and wholesalers. Although these intermediaries offer critical services such as aggregation, finance, and distribution, their information benefit and market access can result in a lack of transparency in pricing and decreased bargaining power for farmers, ultimately appropriating a disproportionate value chain. The lack of strong predictive models in supply, demand, and quality degradation, and static pricing methods, leads to a system where farmers sell at low prices in times of surplus supply, consumers pay high prices in times of scarcity, and large amounts of valuable produce are destroyed through spoilage. This systemic inefficiency highlights an imperative necessity for innovative solutions that can bring intelligence and dynamism into the agricultural supply chain. This research suggests the development and testing of a new dynamic pricing and multi-period inventory optimization framework specifically tailored for perishable agricultural commodities within the context of Gujarat Mandi. The primary objective is to enhance the efficiency, transparency, and profitability of the PAC supply chain by leveraging advanced analytical techniques. The proposed framework aims to address the inherent challenges of perishability by integrating real-time data on supply arrivals, quality metrics, and predicted demand fluctuations to generate optimal pricing recommendations. At the same time, it will integrate multi-period stock optimization tactics with considerations of spoilage rates, storage capacities available, and forecasted future demand to reduce waste and maximize value throughout the whole selling horizon of the Mandi. This two-pronged strategy aims to transcend conventional, static pricing and reactive inventory systems, facilitating more responsive and knowledge-based decision-making for all parties involved. The methodology will entail a multifaceted strategy. Initially, comprehensive data collection will be undertaken from selected Gujarat Mandis, encompassing historical daily arrival volumes, transaction prices for various PACs, quality grading data (where available), and relevant exogenous factors such as local weather patterns, festival calendars, and regional consumption trends. This will necessitate overcoming challenges related to data granularity, standardization, and accessibility within existing Mandi information systems. Next, predictive modeling methods, such as sophisticated time series analysis and deep learning models (e.g., LSTMs or Transformers), will be used to predict short-to-medium term arrivals of supply, demand in the market, and the pace of the quality deterioration of major perishable items. Such predictions will be used as significant inputs for the optimization part. For the dynamic pricing and multi-period inventory optimization, the study will investigate the use of mathematical programming models (such as mixed-integer linear programming) or heuristic algorithms. The algorithms will be used to derive optimal inventory holding decisions and pricing strategies for multiple time periods to maximize revenue while

minimizing storage and spoilage costs. The Gujarat Mandis case study offers a rich, real-world setting to test the framework, considering the state's large agricultural produce and its well-established APMC network. The anticipated contributions of the research are multi-dimensional and important for the Indian agricultural sector. For farmers, dynamic pricing using real-time market intelligence ensures better price realization, less exposure to market gluts, and better planning for future harvests. For Mandis, the system will enhance operational efficiency by reducing spoilage, maximizing the usage of storage space, and ensuring higher transparency in transactions. Middlemen's function will shift from pure speculative arbitrage to more value-added functions, as they are exposed to forecasted information that can facilitate more effective procurement, storage, and distribution, potentially leading to more cooperative relations with farmers. Consumers are ultimately the winners in fresh produce, with less price volatility and more reliable availability. Outside of direct stakeholders, this work will support greater objectives of food security and economic resilience in rural India by limiting post-harvest loss and empowering the agricultural communities involved. Scholarly, it will fill a substantive gap in the literature by offering a data-driven, actionable framework for managing perishable supply chains in the developing economy, providing a replicable model that can be adopted by other agricultural markets in India and internationally. This book highlights the revolutionary possibilities of coupling advanced analytics and computational optimization to create a more robust, equitable, and sustainable food system, from farm to fork.

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Submission ID: 1244

Track 10: Data Science & Artificial Intelligence

## **A Study on the Impact of Generative AI Tools on Individual Developer Productivity in Open-Source Projects on GitHub**

*Rupam Basu and Samadrita Bhattacharyya*

**Abstract:** The rise of Generative AI (GenAI) tools has significantly impacted how developers work on open-source software (OSS), especially on platforms like GitHub. This ongoing research looks into how these tools affect developer contributions and their mental workload, paying particular attention to the usage habits of both core and peripheral developers, as well as those with varying levels of experience. We analyze secondary GitHub data along with surveys in order to assess objective productivity measures such as merged pull request amounts (PR) as well as commit frequency. Our analysis employs a Difference-in-Difference method in order to compare productivity outcomes between diverse developers according to whether they have utilized generative AI or otherwise, with one time frame before GitHub Copilot's release (exogenous shock) as well as one afterwards once it had been launched. Furthermore, we examine how subjective productivity perceptions in the form of perceived cognitive load act as mediators between the use of generative AI tools and objective measures of productivity. We anticipate increased use of generative AI tools will lead to increased quality and frequent contributions in the community in addition to decreasing the cognitive cost of carrying out routine tasks. Additionally, we believe that a developer's years of experience will influence the relationship between the intensity



of generative AI usage and productivity results. This study highlights the potential of generative AI to transform OSS development through tailored productivity enhancement strategies and sustained engagement with these tools.

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Submission ID: 1257

Track 10: Data Science & Artificial Intelligence

## Data Driven Optimization of Patrol Vehicle Routes Using Predicted Crime Hotspots: A Matrix-Based Approach for Urban Safety

*Abdurahiman K (PhD Student at IIM Ahmedabad), Ankur Sinha (Professor at IIM Ahmedabad),  
Karthik Sriram (Professor at IIM Ahmedabad).*

**Abstract:** Urban policing is becoming increasingly data driven, relying on historical data and predictive analytics to deploy limited patrolling resources efficiently. This project presents a novel approach to find optimal patrol routes for police vehicles or drones based on predicted crime probabilities for different geographic regions of a city. Using crime data from Delhi comprising historical crime reports along with location coordinates, we convert the predicted spatial probabilities into a grid based matrix representation. On this matrix, we formulate a constrained combinatorial optimization problem: to maximize the total crime probability coverage using a fixed number of patrol vehicles, each restricted by a maximum allowable travel distance per time interval. In contrast to real-time vehicle routing models, our approach operates on pre-computed crime forecasts for future time windows, provided by a separate prediction model and develops vehicle routing plans in advance. These patrol paths are optimized for specific time periods, considering both resource constraints (limited number of vehicles) and mobility constraints (maximum distance a vehicle can travel in a time period). We propose and evaluate different solution strategies, greedy heuristics, full enumeration, hybrid models, exact integer programming (IP), and decomposition based methods. Our results demonstrate trade-offs between computational feasibility and solution accuracy. This study presents a scalable methodology for optimizing patrol planning to maximize crime probability coverage and provides a model for data-driven safety planning in urban areas.

**Keywords:** Patrolling vehicles, Vehicle routing, Crime prediction, Combinatorial optimization, Large-scale optimization, Column generation.

**Introduction** Effective patrolling is very critical for crime prevention, but in urban regions like Delhi, law enforcement faces a classic resource allocation challenge, where to send limited vehicles to patrol and respond to crimes most effectively. In the first part of the project, spatial crime probabilities are forecasted using historical crime records, and here we tackle the second layer to the problem, how to deploy patrol vehicles in a way that maximizes crime coverage given various resource constraints. While our current dataset pertains to Delhi, this project is generalizable to any region where crime predictions are available.

**Problem Setup** The geographical area under study is divided into a uniform grid matrix, where each cell represents a 200m x 200m area. For each cell, a predicted crime probability is generated for a given



time slot. A patrol route is defined as a sequence of adjacent cells visited by a vehicle, constrained by a maximum number of cells it can travel. The overall goal is to identify  $V$  such routes, each covering unique cells such that the sum of the crime probabilities across all visited cells is maximized. This leads to a large-scale constrained optimization problem, with constraints ensuring: path length limits, no overlap between routes, and movement only to neighboring cells.

**Methodological Approaches** We explore a range of methods to solve this problem, each with distinct trade-offs between computational speed and solution quality. **Greedy Heuristic:** This fast and scalable method builds a patrol path step by step. Starting from the highest-probability unvisited cell for each new vehicle, the algorithm extends the route by repeatedly selecting the neighboring cell with the highest remaining probability. This operation is done at each step of path construction until the travel limit is reached. While efficient, this approach may yield suboptimal routes as it does not consider future steps when making current choices. **Full Enumeration:** This method exhaustively generates all possible paths starting from each cell and selects the best set of  $V$  non-overlapping paths. It yields near optimal results for small matrices but quickly becomes infeasible for larger grids due to exponential growth in the number of possible paths. **Hybrid (Greedy + Enumeration):** To balance scalability and quality, we combine greedy path generation with a limited form of enumeration. For instance, starting points are selected based on greedy criteria, and for each starting point, all possible paths are generated. Then, the best combination of non-overlapping paths is selected from this candidate pool. **Exact Optimization (Integer Programming):** We formulate the full problem as an integer programming problem. Binary variables indicate whether a vehicle visits a specific, and constraints enforce the path connectivity, route length, vehicle count, and non-overlapping conditions. While this model guarantees optimality, it suffers from extreme scalability issues. Even moderately sized grids produce millions of decision variables, making the approach memory and time intensive. **Divide and Optimize:** Here, the city grid is divided into smaller sub-regions. Vehicles are proportionally assigned based on the cumulative crime probability of each sub-region. Each region is then optimized independently, using exact methods. While this sacrifices global optimality, it allows for faster and more scalable computation and enables parallel processing. **Optimize all + Select best:** In this two-stage method, we first compute an optimal path starting from each individual cell. From this large pool of paths, a secondary optimization is performed to select  $V$  non-overlapping paths with the highest combined score. Although this gives high quality solutions, it is computationally demanding due to the large number of candidate paths.

**Current Progress and Challenges** All six methods have been implemented and tested on synthetic datasets. Selected methods were also tested using actual crime data from Delhi. Results show that the exact IP method performs best on small matrices but becomes computationally infeasible as the grid size grows. Greedy and divide and optimize approaches offer scalability for large instances but may miss better quality paths. Hybrid models offer a middle ground for medium sized matrices. To overcome the scalability bottleneck in large scale deployment, we are developing a column generation approach. Instead of generating all possible paths upfront, this method adds promising paths iteratively, which significantly reduces memory usage and time while maintaining good solution quality.

**Conclusion** The study proposes a data driven, matrix based framework for optimizing patrol vehicle routing using predicted crime probabilities. By exploring multiple algorithmic strategies, we

demonstrate the trade-offs between solution quality and scalability. The approach is adaptable to other urban regions and supports smarter, proactive policing.

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Submission ID: 1350

Track 10: Data Science & Artificial Intelligence

## A Systematic Literature Review of Sentiment Analysis in Tourism: Insights from TripAdvisor, Yelp and Airbnb

*Anu C Haridasan, Suganya Sampat and Murali R*

**Abstract:** This study presents a Systematic Literature Review (SLR) on sentiment analysis research across tourism platforms like TripAdvisor, Yelp, and Airbnb. Articles published between 2015 and 2024 were retrieved from the Scopus database using targeted keywords and Boolean search strategies. From 2,776 initial records, 130 relevant studies were selected following PRISMA guidelines. Abstracts were pre-processed and clustered using K-Means, revealing five key themes: (1) Tourism Experience Reviews, (2) Aspect-Based Sentiment Analysis, (3) Text Classification Models, (4) Hotel Review Sentiment, and (5) Restaurant Reviews. Platform-specific mentions were extracted using Python to compare research trends across platforms. Findings show that TripAdvisor dominated with 80 studies focused on tourism experiences, heritage sites, hotels, and restaurants, highlighting its cultural and hospitality relevance. Yelp appeared in 46 studies on technical models and restaurant reviews, while Airbnb, with just 4 studies, was mainly explored for pricing prediction.

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Submission ID: 1355

Track 10: Data Science & Artificial Intelligence

## Decoding Bangalore's Real Estate Patterns: EDA-ML Hybrid Framework for Housing Price Analysis for Bangalore Metropolitan City

*Nisha Francis, Reshma K J and Archana T A*

**Abstract:** Bangalore, often referred to as India's Silicon Valley, has witnessed dynamic property market situations due to its rapidly growing IT sector and urban development. However, the complexity of factors influencing house prices makes accurate valuation challenging for stakeholders across the real estate spectrum. This study aims to analyse house price trends and develop accurate predictive models for the metropolitan city of Bangalore. The study leverages a dataset of 1,839 house listings, obtained through web scraping from Kaggle.com, encompassing diverse property characteristics, location data, and amenity information. This research conducts extensive Exploratory Data Analysis and Feature Engineering to identify key factors influencing house prices in Bangalore. Additionally, the research develops robust prediction models to assist stakeholders in making informed real estate decisions. Further, various predictive algorithms, including linear regression, lasso regression, Random Forest,

and gradient boosting, are employed to predict house prices based on multiple features such as location, amenities, and property characteristics. Analysis is carried out using Python in Google Colab. The results indicate that the Bangalore real estate market shows distinct segmentation from affordable to luxury properties, with central locations commanding premium prices. Property area and location emerge as key price determinants, significantly impacting bedroom count and amenity packages. The optimised gradient boosting model achieves high prediction accuracy for mid-range properties, though with slightly reduced performance in the luxury segment. Buyers, investors, and builders should prioritise evaluating price-per-square-foot metrics based on location before making investment decisions. The results of this study have a multitude of implications for buyers and investors in terms of their purchasing decisions and location pricing for builders.

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Submission ID: 1356

Track 10: Data Science & Artificial Intelligence

### Information dimensionality in dine-in vs delivery reviews

*Shishir Trivedi, Alekh Gour and Yukti Sharma*

**Abstract:** 1. Introduction Online consumer reviews (OCRs) have become a central part of consumer decision-making, especially with the expansion of food delivery platforms. Although prior research has overly focused on star ratings and sentiments to examine the downstream impact of OCRs on consumers' engagement and behavioural intentions, it is also critical to study the textual aspects encompassing what reviewers choose to say and how they narrate it. Accordingly, this study investigates how different information dimensions embedded in online reviews shape perceived helpfulness across varied food environments (delivery and dining). This leads to our main research question, which is "What information dimension of OCRs increases helpfulness?" And, does the relevance of informational dimensions vary across delivery and dining contexts? 2. Literature review OCRs are well known for being powerful information sources that influence consumer choices, especially in the food and hospitality industries (Filiari, 2015; Mudambi & Schuff, 2010). Predominantly, previous studies focused on quantitative metrics such as review valence, star ratings, and source credibility (Cheung et al., 2009). However, a recent body of literature is looking at the textual features of reviews, particularly the informational richness and argument quality, as factors that influence perceived helpfulness (Zhang et al., 2014). Although these studies contribute remarkably to the existing discourse, they fail to address the nuanced linguistic and semantic dimensions embedded in OCRs. To this end, we draw rich theoretical insights from the information adoption model (IAM), which describes how consumers accept information based on four dimensions- sensory, cognitive, affective and social (Sussman & Siegal, 2003). According to Filiari et al. (2018), content-level attributes such as emotion, reasoning, and sensory detail are important inputs in review processing and acceptance of these dimensions depends on contextual moderators, such as the service type (delivery vs. dine-in), the customer's intended goals, and review valence (Chen & Lurie, 2013; Xie et al., 2022). Despite these developments, not much research has been done, particularly in India, where various cultural values, levels of digital literacy, and platform

usage patterns affect how customers behave (Chaudhuri et al., 2021). This study adds to the body of research to understand how contextual factors and particular information dimensions interact with contextual variables to affect review helpfulness in the Indian food industry.

**3. Objectives** This study investigates how different information dimensions in online restaurant reviews affect their perceived helpfulness. This study adopts a nuanced approach by classifying review content into four informational dimensions. Further, it also explores how contextual elements such as service setting (dine-in vs. delivery) and review valence (positive vs. negative) influence the relation between information dimensions and helpfulness score.

**4. Methodology** The study incorporates a large dataset of online reviews from Zomato.com across different cities in India, to categorize review content into four informational dimensions: cognitive (reasoning and thought-based language), affective (emotional tone), sensory (descriptions of taste, smell, or appearance), and social (references to other people, such as companions or staff). Finally, we decided to include 18 cities in the study. Each dimension (sensory, cognitive, affective, and social) contains categorized word lists representing different psychological and experiential aspects of customer experiences. The dictionaries were created by systematically assembling domain-specific lexicons from psychological studies on emotion and language processing, sensory perception research, and restaurant review contexts. Thereafter, we employed a negative binomial model to fit the estimation of our dependent variable, i.e., helpfulness scores, captured as count data. We have control variables such as star ratings, review length, review polarity, review age, price category, readability, and type of experience (delivery vs dining).

**5. Results** Our findings suggest that consumers prioritize cognitive ( $\beta = 0.009$ ,  $p < .001$ ), sensory ( $\beta = 0.007$ ,  $p < .001$ ), and social ( $\beta = 0.008$ ,  $p < .001$ ) information dimensions. Meanwhile, the affective content ( $\beta = -0.024$ ,  $p < .001$ ) negatively impacts review helpfulness, suggesting that emotionally charged content may reduce review helpfulness. Further, we found that sensory descriptions, related to taste, aroma, and presentation, enhance the perceived helpfulness. Further, we considered the moderating role of service context. In dine-in reviews, we found both sensory ( $\beta = -0.030$ ,  $p < .001$ ) and cognitive ( $\beta = -0.038$ ,  $p < .001$ ) dimensions are more helpful than delivery reviews owing to a lack of physical interaction. We found that both affective and social content reduce the helpfulness of delivery and dine-in reviews. The study shows that more sentimental reviews, particularly the ones with higher positive valence, were less likely to be rated as helpful. Conversely, social content discussing dining companions, staff, or shared experiences tended to increase helpfulness, especially when embedded within negative reviews.

**6. Discussion** This study highlights that the service context plays a moderating role on the relationship between information dimensions and review helpfulness. Therefore, this study concludes that customers seeking dine-in recommendations value insights that are multi-dimensional in nature. Moreover, the study brings our attention to dining reviews, which are practically oriented; content related to sensory and cognitive dimensions was more impactful. However, emotional and social elaborations provided a sense of authenticity and justification for the complaint. While in the context of delivery reviews, affective and social content have a significant effect. The study offers significant solutions to restaurant managers by exploring the design of review platforms and feedback systems. Restaurant and food delivery apps mostly encourage high-quality and helpful reviews by prompting users to write about their reflection on the experiential dimensions, such as food quality and services. It is helpful for practitioners

as well. They can develop algorithms that benefit them by including sentiments, volume, and richness of content. This will help customers, practitioners, and restaurant industry people gather accurate reviews, which will make their decision-making ability more effective and efficient. Similarly, content dealing with experiences will help in initiating a discussion about the staff's efficacy, attention, ambience, and presentations that can have a significant impact on consumers as well as on business. Irrespective of its contributions, the study includes some limitations as it uses textual analysis at the word and phrase level. It fails to capture expressions of humour, sarcasm, and culture-specific influences. Our analysis considers written content only; in the future, we may think of doing a multi-model study by including images, videos, and symbols, which are becoming common in user-generated reviews. 7. Conclusion This study finds that helpful online food reviews balance information and emotion, offering concrete descriptions, logical evaluations, and relevant social context. The implications are relevant to restaurant owners, review websites and researchers. Management scholars could adopt more sophisticated natural language models or multi-model frameworks in the future to account for these information dimensions.

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Submission ID: 1397

Track 10: Data Science & Artificial Intelligence

## On The Improvement of Semiparametric Regression for Longitudinal Data

*Anjan Pramanik*

**Abstract:** Longitudinal data or panel datasets consist of repeated measurements taken on the same experimental units or subjects over time, allowing for the investigation of both temporal dynamics and subject-specific heterogeneity. However, in many real-world settings - particularly in Clinical Trials - such data are often unbalanced, with varying numbers of observations per subject, posing challenges for valid inference. This paper presents a framework for analyzing subject-wise imbalance longitudinal data with continuous responses. Literature has established that GEE yields consistent estimates but not efficient, while QIF gives both efficient and consistent estimates under misspecification of the working correlation structure. But imbalance in datasets reverses the story. We examine the challenges posed by data imbalance in implementing Quadratic Inference Functions (QIF) compared to Generalized Estimating Equations (GEE). As GEE is not affected by imbalance in data but QIF is, we introduce balancing procedures based on two imputation-based techniques - Multiple Imputation by Chained Equations (MICE) and Synthetic Minority Over-sampling technique (SMOTE), designed to ensure that each subject contributes an equal number of observations. Simulated datasets are created that replicate the structure of clinical randomized trials (CRT), and subsequently, imbalance is introduced to reflect real-world complexities. To compare the performance concerning estimation accuracy and robustness of these two estimating methods, we apply GEE and QIF on these simulated datasets as well as on real datasets. Our results indicate that QIF exhibits competitive or superior efficiency in high intra-subject correlation settings and even when normality assumptions are violated, while in low intra-subject correlation settings, GEE outperformed QIF. These findings highlight the importance of balancing

strategies in longitudinal data analysis and provide practical guidance for selecting appropriate modelling approaches under imbalance.

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Submission ID: 1417

Track 10: Data Science & Artificial Intelligence

## An Analytical Framework for Front End Testing Capacity Planning

*Saumita Roy, Arka Das and Shantanu Shankar Bagchi*

**Abstract:** In today's unpredictable and competitive business environment, especially in the memory sector facing rapid technological shifts and shorter product life cycles, the ability to cater to all demand is crucial for success. This concept, referred to as "No demand/memory left behind," emphasizes the importance of channeling all memory to meet demand. Micron operates in a stochastic demand scenario, which complicates production planning. Even with the most advanced time series forecasting techniques, significant forecasting errors persist. Over-forecasting results in excess inventory, while under-forecasting leads to missed opportunities and lost orders. To strike a fine balance between the mentioned counterbalancing factors, Micron must keep a buffer capacity above the forecasted demand, widely known as Flex Capacity at Micron. In this paper we focus on calculating the Probe Flex Capacity i.e., measuring the buffer capacity requirements for probe testing (production step where wafers are tested for electrical conductivity by mounting them in probe cards). Preparing for probe flex capacity is particularly complicated compared to any other standard flex capacity calculation. This complexity arises because probe testing, as part of the front-end process, is exposed to volatility from both upstream (supply variability) and downstream (demand variability). Wafer production is one of the most capital-intensive aspects of Micron's supply chain thus maximum utilization of the available capacity is crucial. Consequently, probe testing capacity must be adequately prepared to test all wafers coming out of fabrication. Additionally, probe testing must be ready to handle any variations due to die mix change requests realized in the demand. To balance these challenges and design optimized capacity for probe testing, we employ an analytical framework based on a conventional Newsvendor model. The rest of this extended abstract is structured as follows. We describe the problem description, followed by methodology. Thereafter, we discuss computational experiments before concluding with the robustness of the model.

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## Track 11: Low Emissions Development Strategies

Submission ID: 476

Track 11: Low Emissions Development Strategies

### Asset Specificity and its Influence on Decarbonization Targets

*Ankita Agrawal*

**Abstract:** Introduction Carbon emissions are one of the most urgent global environmental challenges of our time. Anthropogenic greenhouse gas emissions, particularly carbon dioxide (CO<sub>2</sub>), have significantly intensified climate change. In 2018 alone, global CO<sub>2</sub> emissions from fossil fuel combustion and industrial processes reached approximately 33.89 billion tons, representing a 59.2% increase compared to the 1990 levels used in the Kyoto Treaty baseline (Gao et al., 2020). Such escalation highlights the critical need for proactive and effective measures by both governments and corporations to mitigate emissions and stabilize the climate. In response to rising public concern, stricter environmental regulations, and increased market scrutiny, many firms have publicly committed to reducing their carbon footprints (Adomako et al., 2020; Bui & Fowler, 2022). Among the mechanisms adopted, carbon target-setting has emerged as a central management control tool, guiding firms toward measurable environmental performance (Tang & Luo, 2014). Traditionally, target-setting has played a significant role in financial performance management, aiding in planning, coordination, and performance evaluation (Covaleski et al., 2006; Hansen & Van der Stede, 2004; Widener, 2006). However, setting non-financial targets, particularly those aimed at reducing carbon emissions, poses unique challenges. Environmental targets are often long-term, lack immediate financial returns, and are difficult to measure or audit against standardized benchmarks (Eccles et al., 2014). Unlike financial targets, which are informed by historical data, carbon targets frequently rely on estimates and assumptions that lack empirical consistency. This makes it harder to assess progress, allocate resources, and incentivize behaviors aligned with environmental goals. Despite the popularity of frameworks such as the Science-Based Targets Initiative (SBTi), the empirical evidence indicates a worrying disconnect between aspirational carbon goals and actual implementation. As of 2022, 3,904 companies had established emissions reduction targets, with only 1,859 aligned with the 2°C climate scenario verified by the SBTi (Science Based Targets Initiative, 2022). While high-profile pledges such as Microsoft's goal to become carbon negative by 2030 attract considerable media attention (Smith, 2020; Hodgson & Thornhill, 2020), many firms fail to meet their commitments. Freiberg et al. (2021) and Aldy et al. (2023) provide early evidence that a significant portion of companies fall behind schedule in achieving long-term carbon targets, while others revise or quietly abandon them. For example, CDP's 2020 data shows that 1,041 companies had set emissions targets for 2020 out of which 633 (60.8%) achieved their goals, while 88 (8.5%) explicitly failed, and 320 firms (30.7%) effectively disappeared that is, they neither reported results nor acknowledged outcomes by 2021. A closer look revealed that many of the disappeared firms had quietly abandoned their 2020 targets after realizing they were unlikely to succeed, while others simply shifted focus to longer-term goals. Among those with absolute targets who

disappeared without reporting, around 63% would probably have failed even if results were published (Jiang et al., 2025). Many of these non-reporting firms had likely abandoned or postponed their targets, indicating reputational concerns or operational infeasibility often prevent companies from following through on announced goals. The Berkeley Haas study reports that almost 40% of firms with 2020 emissions targets either missed them or quietly stopped reporting, with about one-third “disappearing” before the deadline (Counts et al., 2025). These reports raise important concerns regarding the credibility of voluntary climate pledges and the systemic barriers that prevent companies from achieving ambitious environmental objectives. In the context of carbon target-setting specifically, numerous anecdotal accounts highlight its central role in corporate carbon reduction strategies. Yet, as the Carbon Trust notes, “deciding on environmental targets is a different sort of challenge to setting financial ones” (Rickard, 2014), underscoring the complexity and distinct nature of environmental performance management. This study seeks to explore these barriers, specifically focusing on the internal and external constraints that influence a firm’s ability to set and pursue ambitious carbon targets. One of the core arguments is that asset specificity plays a crucial role in this context. Asset specificity refers to firm-level investments in technologies, infrastructure, or relationships that are tailored to specific uses and cannot be easily redeployed (Williamson, 1985). High asset specificity increases rigidity and decreases strategic flexibility, thereby discouraging bold or transformative environmental commitments (Poppo & Zenger, 1998). In sectors like steel and chemicals, where long-lived infrastructure such as blast furnaces dominate production systems, asset-specific investments create substantial barriers to rapid decarbonization (Unruh, 2000; Seto et al., 2016). Therefore, asset specificity is an important factor for the carbon target setting. Prior research finds that difficult carbon reduction targets often lead to better completion rates (Ioannou et al., 2016). However, we argue that when firms have high asset specificity managers will take a more cautious approach and are less likely to adopt such challenging targets. For example, ArcelorMittal, one of the world’s largest steel producers, has committed to net-zero emissions by 2050 and aligned with the SBTi. However, the company continues to rely on highly specific, carbon-intensive technologies such as blast furnaces and coke ovens. Its decarbonization strategy relies on gradual innovation and supplier coordination (Liew & Cao, 2024), illustrating how asset specificity shapes both the ambition and timing of environmental target-setting. Asset specificity is also closely tied to carbon dependency, defined as a firm’s limited ability to reduce emissions due to reliance on fossil-fuel-based systems or technologies (Pinkse & Busch, 2013; Dahlmann et al., 2019). This condition makes carbon targets appear risky or infeasible, reducing their strategic importance and internal support (Sharma, 2000; Bundy et al., 2013). Furthermore, inconsistencies between public climate commitments and internal decision-making often generate skepticism among employees, weakening the behavioral effectiveness of non-financial targets (Hahn et al., 2014). An additional dimension explored in this study is the role of supplier opportunism. In many cases, particularly for Scope 3 emissions, firms depend heavily on upstream and downstream partners to achieve their carbon goals. These dependencies, especially when reinforced by asset-specific investments, increase the risk of opportunistic behavior. Suppliers may misreport emissions data, delay compliance, or undermine carbon reduction efforts to pursue their own interests (Williamson, 1985; Lumineau et al., 2022; Klaseen et al., 2023). For example, Drax Power Station’s practice of reporting biomass-related emissions at the

forest level instead of the smokestack has been widely criticized as a form of greenwashing (ClientEarth, 2023). Such behavior inflates buyers' perceived emissions reductions and compromises supply chain-wide climate strategies. The issue is exacerbated by information asymmetry, where buyers cannot verify the accuracy of supplier-reported data and incentive misalignment, which reduces trust and increases monitoring costs (Wathne & Heide, 2000; Wang et al., 2013). In this situation, where suppliers, acting in their self-interest, manipulate carbon disclosures or resist collaboration (Tangpong et al., 2010; Plambeck & Taylor, 2016). In global supply chains, where oversight is limited and enforcement is costly, these behaviors significantly hinder decarbonization. Hence Supplier opportunism acts as a mediator in the relationship between asset specificity and carbon target-setting, such that firms with high asset specificity face greater supplier opportunism, which in turn reduces their likelihood of setting difficult carbon reduction targets. To counteract these challenges, some firms adopt relational governance mechanisms, emphasizing trust, collaboration, and shared environmental objectives. Unlike transactional governance, which relies on formal contracts and audits, relational governance fosters long-term partnerships and encourages open communication (Dyer & Singh, 1998; Zhou & Xu, 2012). Toyota's supplier management model and the climate partnership between BHP and China Baowu illustrate how cooperative arrangements can reduce opportunism and promote credible carbon strategies (Anglo American & thyssenkrupp Steel, 2022). Based on the above discussed literature and argumentation we purpose that: P1: Firms with high asset specificity are more likely to set less difficult carbon reduction targets. P2: Supplier opportunism acts as a mediator in the relationship between asset specificity and carbon target-setting. P3: Sustainability collaboration mitigates supplier opportunism and facilitates the adoption of difficult carbon targets. Research Methodology We will use a 2x2 between-subjects experimental design, this research examines how variations in asset specificity and sustainability collaboration influence target-setting behavior. By introducing asset specificity as a central explanatory variable, this study offers a novel perspective on the structural and relational constraints that shape environmental ambition. It complements existing literature on goal-setting (Ioannou et al., 2016; Dahlmann et al., 2020) by shifting the focus from target effectiveness to the antecedents of target adoption. It also enhances the discourse on Scope 3 emissions by emphasizing inter-firm dynamics and supply chain governance. Conclusion In conclusion, this research argues that while setting difficult carbon targets can be symbolic, they must also be practical and achievable. In industries that rely heavily on fixed equipment and complex supply chains, it's not enough to make ambitious promises. Real progress on climate goals needs long-term planning, teamwork with suppliers, and a clear understanding of the limits within a company's structure and operations.

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## Will the Real Risk Please Stand Up: A Media Discourse Analysis of Climate Risk Communication in Nuclear Energy Sector for India's Net-Zero Goals

*Tanya Ahuja (Indian Institute of Management Ahmedabad).*

**Abstract:** This study asks the question: Why does environmental risk communication in the nuclear sector fail despite scientific assurances and regulations? Using media discourse analysis of the case of the Kudankulam Nuclear Power Plant (KNPP), it operationalises the constructs through John Dryzek's (2022) environmental discourse framework. It analyses 243 news articles from The Indian Express (2000–2023), accessed through the CEIC database, supported by government reports and judicial documents. The analysis contrasts a pro-nuclear discourse of techno-scientific rationality and climate commitments with an anti-nuclear narrative shaped by mistrust, fear of radiation proximity, and perceived democratic deficits. Findings reveal a “double entendre goal paradox,” wherein both sides seek sustainability but disagree on the means, thereby jeopardising policy legitimacy, while media emerges as both reflector and architect of risk perception. The study proposes a novel Nine-Cs Framework (NCF) for discourse analysis, integrating macro-, micro-, and media-level constructs. It reveals how communication gaps may fracture public trust, highlighting the need for deliberative, participatory, and culturally resonant risk engagement strategies. The study contributes to climate transition literature on policy resilience, particularly in contentious, high-stakes sectors like nuclear energy—a crucial consideration for India's Net Zero goals.

**Keywords:** Climate Change, Risk Communication, Media Discourse, Nuclear Energy, Systemic Resilience, Kudankulam Nuclear Power Plant, Environmental Policy, Just Transition, Transition Risk.

### 1. Introduction

As India grapples with balancing climate commitments and rising energy demands, nuclear energy presents itself as a compelling transitional solution. With high energy density and low greenhouse gas emissions, it is crucial to India's COP26 target of 500 GW of non-fossil energy by 2030. However, public resistance, rooted in fear, mistrust, and contested perceptions of risk, may complicate its deployment. The Kudankulam Nuclear Power Plant (KNPP) in Tamil Nadu embodies this tension, where governmental and expert assurances are met with deep-rooted community anxieties about safety, waste, and ecological disruption. This study explores the failures of risk communication in the nuclear energy domain through a media discourse analysis of KNPP. It foregrounds the role of language, metaphors, and stakeholder dynamics in constructing public understanding, trust, and opposition. Drawing on discourse theory, the paper aims to uncover why scientifically grounded policies may falter in the face of social contestation around risk perception and communication.

### 2. Objectives

The study aims to:

- i. Examine pro- and anti-nuclear media discourses surrounding the Kudankulam Nuclear Power Plant, to analyze why risk communication fails in reconciling scientific assurances with public perception.
- ii. Understand how media narratives shape environmental policy legitimacy and public trust in systemic climate resilience frameworks, to propose a discourse analysis framework to support future research on environmental communication and sustainability transitions to attain Net-Zero goals.

### 3. Methodology

The study uses John Dryzek's (2022) environmental discourse typology to conduct a qualitative media discourse analysis. It draws on 243 news articles from The Indian Express between 2000 and 2023, accessed via the CEIC database, using Boolean filters for keywords including "Kudankulam," "Koodankulam," "Nuclear Power Plant," and "Nuclear Energy" which are complemented by government reports, court judgments, and policy documents. Discourses are analyzed across four ontological questions, (i) entities constructed, (ii) assumptions about natural relationships, (iii) agents and motives, (iv) rhetorical devices) and, six effect-assessment dimensions namely, politics, policy, institutions, society, criticism, and flaws in argumentation. This allows for a comparative evaluation of pro- and anti-nuclear narratives for this case.

### 4. Findings and Discourse Analysis

#### 4.1 Pro-Nuclear Discourse

This discourse frames nuclear energy as clean, safe, and essential to meet India's energy deficit, accentuating advanced safety protocols, international cooperation (e.g., Indo-US nuclear deal), and India's indigenous three-stage thorium program. Agents include government ministries, technical experts, judiciary, and foreign allies. Rhetoric includes phrases like "nuclear sustainability," "Fukushima syndrome," and "right to life," positioning opponents as ideologically misinformed (Sreenivasan, 2013; Express News Service, 2006). Reports reveal that Supreme Court's backing of KNPP framed risk as manageable and invoked "public interest" (Anand, 2013). Meanwhile, scientists like M.S. Swaminathan proposed coastal bioshields, and Russia pledged design and technology support (Express News Service, 2011; Samanta, 2006).

#### 4.2 Anti-Nuclear Discourse

Led by local communities, civil society groups, and opposition leaders, this discourse constructs nuclear power as unsafe and undemocratic, by underscoring spatial radiation proximity, regulatory opacity, and the likelihood of nuclear disasters. Rhetoric around it includes "anti-people," "black judgments," and "rubber stamp regulators" (Mohan, 2013; Shah, 2017), while activists like M. Pushparayan of PMANE critique the lack of transparency. Legal experts like Prashant Bhushan decried regulatory capture (Anand, 2013). Political figures flag cyber-security risks (Express News Service, 2019), while political parties question the independence of AERB (Manoj, 2011), highlighting systemic vulnerability.

#### 4.3 Media's Role in Risk Perception

The media amplifies both discourses by reflecting stakeholder claims, exposing contradictions, and shaping public understanding through visual rhetoric and expert framing. It plays a dual role of communicating risk and constituting it (Boykoff, 2011; McCombs & Shaw, 1972). Despite scientific evidence, communities often trust what "sounds official," not necessarily what is official (Titscher et al., 2000). Risk perception hinges on symbolic events (e.g., Fukushima), emotional proximity, and



cognitive heuristics, often overshadowing probabilistic safety data (Slovic, 1987; Freer, 2012). This may result in a trust deficit, undermining systemic resilience and delaying project implementation.

#### 5. Analytical Framework: The Nine-Cs Framework (NCF)

The study contributes methodologically by proposing the Nine-Cs Framework (NCF) to analyze environmental policy discourses involving media:

1. Macro-Level
  1. Coalitions: Who participates? (e.g., state vs. civil society)
  2. Contestations: What is at stake? (e.g., safety vs. sustainability)
  3. Criticality: Why does the discourse matter?
2. Micro-Level
  1. Co-text: What intertextual evidence and language is used?
  2. Context: When and where does the discourse unfold?
  3. Constructs: What meanings and assumptions are embedded?
3. Media-Level
  1. Content: What information is conveyed?
  2. Container: Through what medium? (e.g., newspapers, television)
  3. Coverage: How widely and frequently is the discourse circulated?

This framework advances post-positivist analysis by integrating hermeneutics, actor motives, and media ecology into policy communication.

#### 6. Conclusion

This paper illustrates that environmental sustainability is not merely a techno-economic challenge but a deeply communicative and political one. While nuclear energy may offer a pathway to decarbonization and Net-Zero goals, its public legitimacy is contingent on how risks are communicated, perceived, and negotiated. The Kudankulam case demonstrates that systemic resilience in climate transitions requires more than engineering robustness: it demands deliberative governance, trust-building, and epistemic inclusion. Risk communication must evolve from monologic dissemination to dialogic engagement, recognizing “theories-in-use” (Argyris & Schon, 1992) among affected communities. By deploying media discourse analysis and proposing the Nine-Cs Framework, this study offers tools for analyzing and designing more participatory and resilient climate transition policies. It underscores that just transitions are not merely about shifting energy sources but about aligning social imaginaries, institutional trust, and policy communication in a shared future.

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Submission ID: 585

Track 11: Low Emissions Development Strategies

### Climate Change Impacts and GreenHouse Gas Emissions of Fairtrade India's Tea Estates: A Comparative Analysis of Organic and Conventional Practices

*Gideon Balasingam, Rebecca Anns, Deepthi Krishnan, Shobana S and Tharun R*

**Abstract:** This study examines the impacts of climate change and greenhouse gas (GHG) emissions on India's tea industry, focusing on four Fairtrade estates, two organic and two conventional estates located in Nilgiris, Assam, and Darjeeling. Findings reveal that conventional estates generate higher emissions due to reliance on synthetic fertilisers, mechanised processing, and fossil fuel-based energy. In contrast, organic estates employing agroforestry and sustainable practices show lower emissions and greater carbon sequestration potential. Climate-induced challenges including rising temperatures, erratic



rainfall, and extreme weather have reduced tea yield and quality, threatening tea workers livelihoods, especially in Assam and Nilgiris. The study underscores the socio-economic vulnerabilities of tea workers and farmers and recommends scaling up agroforestry, organic practices, renewable energy use, and supportive financial and policy frameworks. It calls for collaborative action among stakeholders to foster a resilient, low-carbon tea sector capable of withstanding climate-related pressures.

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Submission ID: 624

Track 11: Low Emissions Development Strategies

### **The Silent Challenger to Climate Change: Evaluating the Comprehensive Rice Fallow Management Initiative of Odisha.**

*Devesh Roy, Arabinda Kumar Padhee, Mamata Pradhan, Sunil Saroj, Vandana Shankar Vidhani, Devendra Kumar and Amit Kumar Burman*

**Abstract:** Background: As the world grapples with climate change, its effects are observed most intricately in the agriculture sector, affecting crop choices and sowing patterns and thus consequently affecting global food security. Thus, adoption of climate-smart agriculture (CSA) practices has become essential to sustainably increase agricultural productivity while addressing the issues of mitigation and adaptation to climate change. Though generally not pitched as CSA, Rice Fallow Management (RFM) has all the elements of a CSA. In RFM, rice fallows are areas on which paddy is cultivated in kharif season and are then left fallow in the subsequent rabi season due to multiple socioeconomic and environmental factors (Kumar et al., 2019). Rice is predominantly grown in eastern India in kharif season, and the region constitutes 80 percent of India's rice fallows (Kumar et al. 2020). These regions are found suitable for short duration and less water intensive legumes like- lentils, black gram, chickpea, greengram and oilseeds (Kumar et al., 2019). Hence with effective RFM, there is large potential for these regions to diversify to these sustainable and nutrient rich crops. Comprehensive Rice Fallow Management (CRFM) was implemented by Department of Agriculture and Farmer's Empowerment (DAFE), Government of Odisha (GoO) in 2022. CRFM was implemented in all 30 districts of Odisha with an aim to increase production of pulses and oilseeds in rabi season through a package of practices- timely supply of seeds, input subsidy on micronutrients, pesticides, light traps, PSB culture, rhizobium culture, Trichoderma, weedicide, yellow sticky trap and integrated pest management (IPM). CRFM in Odisha also plays a pivotal role in increasing agricultural production inter alia by improving soil health amid residual soil moisture in dry periods after rice harvest. If pulses are grown as rice fallow crops, they supplement soil by implanting nitrogen on the soil and utilize the unused fertilizer left in the soil at the time of crop cultivation (Kumar et al., 2023). As part of CRFM, there are possibilities of conservation agriculture (CA)-based management practices that have effect on soil carbon dynamic, system productivity, energy and carbon budgeting (Lal et al., 2020). Thus, this study aims to understand the effectiveness of CRFM taking Odisha's case. This study uniquely focuses on the impact evaluation of the CRFM in Odisha in terms of outcomes related to acreage, productivity and how it is distributed

across regions and across population groups. In the short period that has elapsed since the start of the project using remote sensing data and statistical methods, this study using quasi experimental methods in impact evaluation provides the first results on causal effects of CRFM focusing on the adoption of environmentally sustainable crops and other credentials. Research Question What is the causal effect of CRFM on the utilization of fallow lands considering soil moisture and rainfall in the region and upon utilization, what is the effect on the production and yield of pulses and oilseeds cultivated on the fallow lands? Data and Methods: To evaluate the utilization of fallow lands, historical remote sensing data from 2018 to 2023 with a supervised machine learning algorithm was used. Rice mask of Kharif season was used to identify the rice crop area, Normalized Difference Vegetation Index (NDVI) was used to distinguish the crop and fallow areas in subsequent rabi season to identify the shift in acreage of fallow lands. Pre-processing performed using Sentinel – 2 imageries minimized the impact of atmospheric effects and cloud masking helped in removing the cloud-covered pixels thus ensuring accuracy in NDVI calculations (Sonia et al. 2022). SMAP soil moisture data and CHIRPS rainfall datasets (2018-2023) were used to understand the utilization of fallow lands in terms of land suitability and land use dynamics. A novel approach of matching beneficiaries in CRFM database (20 districts in Odisha) and National Information Center (NIC) (10 districts) with data in Krushak Odisha Portal (KOP), the farm registry data maintained by Department of Agriculture and Farmer Empowerment (DAFE), containing socio-demographic and crops and land details of the farmers was uniquely implemented to overcome the data gap of CRFM database. The matching was done using unique identifier- anonymized biometric identity (Aadhar) numbers and other common identifiers. Since the intervention was implemented in all 30 districts and in the absence of pre-intervention data, classification of treatment and control group and timing of intervention, evaluation of change in productivity was conducted implementing Duflo and Saez (2002) approach – “treatment within control” paradigm by relying on difference in intensity of intervention. Two groups were created with median value of proportion of land under CRFM as threshold, with above-median proportion in one group and below-median in another group. Impacts were evaluated using quasi-experimental technique- Propensity Score Matching (PSM), Coarsened Exact Matching (CEM), and Inverse Probability Weighted Regression Adjustment (IPWRA) methods. Results and Implication: Utilization of Rice Fallows and Land Suitability Factors: Soil Moisture and Rainfall- In remote sensing data from 2018-2023 was taken, using which the fallow lands were categorized as – long time consistent fallows (perennial fallows) and fallows on an inconsistent basis (ephemeral fallows). Utilization of rice fallows was estimated using extensive and intensive margin approach. Extensive margin looked at the percentage change in the areas of perennial fallows prior to CRFM and have been converted to crop land post CRFM. Whereas intensive margin looked at the percentage change in ephemeral fallows converted to crop land post CRFM. In extensive margin, Odisha achieved an overall fallow to non-fallow transition of 9.1%, with a total of 257.3 thousand hectares. Jagatsinghpur, Kalahandi, Cuttack, and Puri depicted conversion of more than 20% (~20 thousand hectares). In intensive margin, Odisha recorded an overall decline of 64.5 thousand hectares in ephemeral fallows, 18 out of 30 districts observed a decline in ephemeral fallows. A positive relationship was found between land suitability and transformation of fallow lands, especially in Kendrapara, Puri and Jagatsinghpur which had high land suitability percentages and higher utilization. Outcomes upon

utilization of rice fallows: Crop Diversification and Effect on yield and acreage- From 2020-2024, during post CRFM, Odisha observed a 61.2 percent decline in rice cultivation in rabi season and an increase in acreage for pulses was observed for Bengal gram (37.7%), lentils (32.5%), black gram (12.7%) and green gram (12.4%). Diversification helps in reducing the carbon footprints by a large amount (Lal et al., 2020). Through quasi-experimental analysis it was also observed that the average treatment effect on the treated (ATT) values demonstrated positive and significant effects of the RFM program on crop yields, indicating that farmers participating in CRFM achieve higher yields relative to the control group. Odisha's yield post CRFM increased for green gram, black gram, lentils, seasmum and mustard when compared with other states and also aligned with the national average. In the intervention regions, Field pea showed the highest increase in yield (38%), followed by grass pea (~13%) and lentils (~11%). Key interventions such as the provision of quality seeds, pest management support, and the promotion of pulses and oilseed collectively boosted or stabilized yield outcomes for target crops. Achieving net-zero emissions involves not only reducing emissions but also increasing the capacity of natural systems, like soils, to store carbon where CRFM has an important role to play, increasing soil organic carbon (SOC) stocks in CRFM can thus help offset CO<sub>2</sub> emissions (Allammad et al., 2023). With improved soil health through CRFM, by acting as a carbon sink, soil plays a crucial role in mitigating climate change and achieving net-zero emissions.

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Submission ID: 650

Track 11: Low Emissions Development Strategies

## Quantifying Sustainability Gains from Reducing Food Loss and Waste in India

*Sowmiyaa Subramaniam (Indian Institute of Management Ahmedabad), Ankit Saha (Indian Institute of Management Ahmedabad), Ranjan Kumar Ghosh (Indian Institute of Management Ahmedabad).*

**Abstract:** India's commitment to achieve net-zero emissions by 2070 demands coordinated action across multiple sectors. This includes the food system, which is a significant source of greenhouse gas (GHG) emissions and a key area for climate mitigation. Afforestation and land restoration efforts can sequester carbon, but India must balance these with the pressing need to meet the dietary and nutritional requirements of its growing population, with over 196 million people remaining undernourished (FAO et al., 2024). This demand adds pressure on land, groundwater, and biodiversity, driving land-use change and associated emissions. In this context, addressing food loss and waste (FLW) represents a vital yet often overlooked lever for advancing sustainable transformation. Globally, FLW contributes 8–10% of annual GHG emissions, uses cropland and freshwater resources, and represents nearly USD 936 billion in lost value each year (Scialabba, 2014; UNFCCC, 2024). However, India-specific evidence is fragmented. Heterogeneity in methods and a lack of standardized data (Agarwal et al., 2021) limit robust estimates of how FLW reduction targets might affect future pathways involving diets, land use, and climate policies. This study addresses these gaps by quantifying the sustainability gains of FLW reduction using India-specific data and a scenario-based modelling approach.

**Literature Review** FLW includes losses during production and post-harvest, and waste at retail or consumer stages (Gustavsson et al., 2011). In low- and middle-income economies, food loss is more common due to poor infrastructure, while food waste dominates in high-income countries, though recent trends show rising household waste in Asia (UNEP, 2024). In India, post-harvest losses alone use about 6 % of cultivated land and 16 % of renewable water, adding roughly 20 % to agriculture-related emissions (Kashyap & Agarwal, 2020; NABCONS, 2022). The calories embedded in wasted food could address significant undernutrition (Parfitt et al., 2010; Abbade, 2020). Global studies (Chen et al., 2020; Gatto & Chepeliev, 2024; Munesue et al., 2015) have quantified nutritional and environmental costs, showing that cutting FLW could feed millions and lower emissions by up to 28 %. Yet, India-specific scenario modelling is limited. In India, Kashyap & Agarwal (2020) estimated 58 Mt of post-harvest losses in 2013, wasting 115 billion m<sup>3</sup> of water and emitting 64 MtCO<sub>2e</sub>, but did not cover retail or household waste. There is almost no assessment of how FLW interacts with broader future trajectories such as dietary transitions, climate mitigation strategies, and land-use policies. Together, these gaps highlight the need to examine FLW's role in India's sustainability pathways.

**Methodology** This study uses the FABLE (Food, Agriculture, Biodiversity, Land Use, and Energy) Calculator (Mosnier et al., 2023), an open-source tool designed to simulate national food and land-use systems. The model projects required crop and livestock production, trade balances, land use, water use, biodiversity indicators, and GHG emissions from 2000 to 2050, based on population growth and dietary trends (Jha et al., 2023). Three development pathways are analysed: Current Trends (CT), which extends recent trajectories; National Commitments (NC), which incorporates formal policy targets such as dietary guidelines and afforestation; and Global Sustainability (GS), which aligns with international best practices. For each pathway, FLW reduction scenarios of 10%, 30%, and 50% relative to 2010 levels are phased linearly. Unlike global or regional averages, this study integrates India-specific post-harvest data collected by the NABCONS (2022) study. It provides losses for 46 crops. The Calculator was updated with revised estimates and additional categories such as eggs, beverages, and spices. For household-level waste, which lacks comprehensive national data, the UNEP Food Waste Index (2024) estimate of 55 kg per capita per year was used. The 55kg was then allocated across 13 food groups using a reciprocal-rank method that adapts Chen et al.'s category-level shares to India's consumption profile. For the nutritional loss estimates, the methodology by Abbade (2020) was followed.

**Results and Discussions** India-specific data show notable differences from FAO regional averages, with higher losses for fruits and vegetables (37%) but lower for roots, oilseeds, and animal products. Under Current Trends, India's cropland area expands from 168 Mha in 2020 to 217 Mha in 2050 (+29%). In the National Commitments (NC) and Global Sustainability (GS) pathways, FLW reductions reverse this trend: a 10 % FLW cut lowers cropland to 162 Mha (–25% vs. CT) in NC and 150 Mha (–31%) in GS; a 30 % cut brings it down to 156 Mha (–28%) in NC and 144 Mha (–34%) in GS; and halving FLW by 2050 reduces cropland to 150 Mha in NC (–31%) and 138 Mha in GS (–36%) compared to Current Trends. GHG emissions follow a similar pattern. Under Current Trends, emissions rise from 739 MtCO<sub>2e</sub> in 2020 to 1,022 MtCO<sub>2e</sub> by 2050 (+38%). A 10 % FLW cut under NC reduces 2050 emissions to 738 MtCO<sub>2e</sub> (–28%); a 30 % cut lowers them to 718 MtCO<sub>2e</sub> (–30%); and halving FLW cuts them to

700 MtCO<sub>2e</sub> (–31%). In the GS pathway, halving FLW reduces emissions to 584 MtCO<sub>2e</sub> (–43% vs. CT). On the food security front, halving FLW by 2030 could recover enough calories and protein to feed about 42 million people at 2,000 kcal/day and 49.5 million at 50 g protein/day, covering roughly 20% of India’s undernourished population.

Conclusion These findings show that FLW reduction offers a critical but underutilized opportunity to advance sustainable development and climate goals in highly populous, rapidly growing countries. Integrating FLW targets into national strategies can support more sustainable and resilient food systems while advancing progress toward India’s net-zero commitment.

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Submission ID: 777

Track 11: Low Emissions Development Strategies

## Impact of Heat on Sleep: Evidence from India

*Sandip Kumar Agarwal, Souvik Dutta and Manas Nandan*

**Abstract:** Global warming as a result of climate change has adversely impacted health, human capital and economic outcomes, including mortality and suicides (Burgess et al., 2017; Carleton, 2017; Deschênes & Greenstone, 2011), labor productivity (Somanathan et al., 2021), human capital (Fishman et al., 2019; Garg et al., 2020). Most of these adverse outcomes are associated with the physiological and psychological functioning of the human body and mind. Sleep is among the most important complex biological processes that are crucial for the healthy functioning of a wide array of cognitive, mental and physiological processes that have a pronounced effect on several economic outcomes. Scientific evidence indicates a strong causal link between sleep quality and economic performance (Bessone et al., 2021; Rao et al., 2021).

Climate change has led to an increase in mean temperatures as well as changes in weather distributions, resulting in a higher frequency of extreme temperatures. A notable feature of climate change has been higher nighttime temperatures, which could potentially impact human sleep. In a systematic review of 36 research articles on sleep and ambient heat, Chevance et al., 2024 found overwhelming evidence that higher temperatures are associated with poorer sleep. Most of the studies in this review were from high-income countries, with very few based on populations in tropical latitudes. The review therefore emphasizes the need for evidence from populations in low- and middle-income countries (LMICs), particularly in tropical regions, where the adverse impacts of climate change are disproportionately

higher. In our current study, we estimate the causal impact of heat on human sleep duration using nationally representative data from India. We make a substantial contribution to the literature by providing much-needed new evidence from an LMIC that is geographically and climatically diverse, and located in low latitudes.



## Vulnerability and Adaptation of Fairtrade Spice farmers in Kerala - Documenting GHG emissions and building resilience.

*Gideon Balasingam, Shobana S, Deepthi Krishnan, Rebecca Anns and Tharun S*

**Abstract:** Introduction Climate induced rise in temperature, change in weather patterns, and increasing cases of natural calamities like floods and landslides has impacted one such segment of this sector. In this background, the state of Kerala has been facing at the receiving end of the wrath of climate change. The disastrous cyclone in the year 2017, named the Ockhi Cyclone, has had battering after effects even in the later years of 2018 and 2019. Spice cultivation requires special care and repeated frequencies of these disasters has severely affected the farmers. The state of Kerala being the land of spices has been chosen for this study. Literature Review SWM remains a function of several atmospheric and oceanic phenomenon which can lead to its volatility. This volatility has inched up with increased climatic variations and rising extreme weather events, which in turns affects the availability of water for Indian agriculture (Purna Chandra Tanti, 2024). Climate-smart agricultural (CSA) practices, such as crop rotation and integrated soil management, help farmers adapt to climate risk and contribute to a reduction in greenhouse gas (GHG) emissions. Farmers are generally motivated by the potential for increased income even though they express a preference for environmental preservation (Purna Chandra Tanti, 2024). Another study conducted to know the farmer fertilization practices in the farm lands of Indo-Gangetic Plains concluded that Nutrient Expert-based fertilizer management can lower global warming potential (GWP) by about 2.5% in rice, and between 12 and 20% in wheat over FFP (Tek B. Sapkota). Studies also suggest that through the adoption of conservation agriculture practices such as zero/reduced tillage, cessation of residue burning, reduced nitrogen fertilizer overuse, and decreased irrigations in wheat production season, farmers can reduce GHG emissions by 1.23 to 1.97 tonnes of CO<sub>2</sub> per hectare of land respectively in Bihar and Punjab States of the Indo Gangetic Plains (IGP). It translates to the creation of 1.23 to 1.97 carbon credits per hectare respective (Adeeth A. G. Cariappa). Literature Gap Despite the global significance of Kerala's spice sector and the region's acute vulnerability to climate change, there is a marked scarcity of dedicated research focusing on the climate impacts and adaptive responses specific to spice crops. Most existing climate change studies in Indian agriculture concentrate on staple crops like rice, wheat, and pulses, with only passing references to spices or their unique agro-ecological and socioeconomic contexts. Systematic documentation of yield impacts, quality degradation, and farmer vulnerability for spices remains largely absent in the published literature. This gap is particularly acute for studies that integrate climate data, farmer perceptions, and field-level agronomic practices to provide a holistic understanding of vulnerability and resilience among spice producers. Objective This study intends to answer the following research questions: • To understand the deleterious effects of climate change on the region, and its impact on the farmers. • To comprehend the effect of the above on crops against parameters like yield, quality, cost of production, etc., and to suggest crop-specific adaptive mechanisms. • To document the current agricultural operations and calculate



GHG emissions contributed by it. • To recommend a package of practices that can be implemented by the farmers to adapt to the climate change effects and to reduce their vulnerabilities. Methodology This climate change impact study was conducted in two phases. In the first phase, the thrust is given to documenting the deleterious impacts of climate change on spice farmers of fairtrade registered farmers. A total of 85 farmers who are certified organic practitioners were interviewed—35 from Idukki and 50 from Wayanad. Idukki accounting for 56% of the total production of black pepper, and Wayanad accounting for 15%, makes the study of these crops in these districts important. Square root method was used to determine the sample size which guided the selection of participants for interviews. The data was primarily drawn from the farmers' own farm diaries and direct interviews, possibly limiting the opportunity for mitigating interpretative bias through post-interview analysis. The second phase is devoted to the implementation of climate change mitigation models including measuring of carbon emissions at farmers' plots. For this, a sample survey and assessment was done among 5 farmers at Idukki and Wayand district. To assess the carbon footprint of their farms, the web based Cool Farm Tool software version 1.10.2 was utilised. Results Some of the findings were that the majority of farmers expressed that the decline in production of pepper was up to 30% to 50% after the 2018 floods. Those who replanted pepper claimed that in the initial 3 years of cultivation, normal growth was observed and thereafter the growth was stunned and retarded. The heavy rain and high humidity generated rotting of the roots of the crop while at the same time strong sunlight caused wilting of the plant. A few farmers tried grafting with colubrinum where they witnessed the grafted variety to be immune to certain diseases and climate change fluctuations. Wayanad, which was once known for its prestigious pepper, unfortunately sees a shift to coffee cultivation due to such repeated unsuccessful attempts. Propagation of pepper through the serpentine method was a popular method adopted by farmers for propagation. However, due to the loss of soil and lack of moisture, this method is not applicable now. Inter-cropping is method adopted by farmers has helped them to overcome the climatic disturbances. The different growth habits enable them to utilise the diverse resources productively. Integration of livestock and apiculture are likewise taken up by farmers strengthen organic or regenerative farming practices. Except one, all other results showed a carbon negative outcome, although figures varied depending on the crops, vegetation, and practices unique to each farm. The reason for positive emissions is because of the application of chemical fertilisers. The farmers follow a mixed cropping pattern and incorporate trees in their farming system, making it an eco-friendly practice that avoids carbon emissions. As a result, the farms and the produce can be considered carbon neutral. Discussion However, there is a need to create awareness among farmers about reducing their carbon emissions and assess their farm's carbon footprint in detail. To achieve this, the Cool Farm Tool can be customised to capture farm-specific data and provide insights on carbon emissions. There is a possibility of exploring voluntary carbon markets to incentivize spice farmers in Kerala. By quantifying the carbon sequestration potential of the eco-friendly and sustainable practices adopted by spice farmers, it is possible to generate carbon credits that can be sold in voluntary carbon markets. Conclusion Comprehensive approach was taken to find market for all crops, grown by member farmers. Regenerative agricultural practices were promoted to e (Adeeth A. G. Cariappa)nsure healthy soil and thereby healthy spices. Promote use of microbial formulations will improve plant resilience to drought and other environmental stresses and conserve soil moisture.

Provision of economic returns aims to provide additional economic returns for the farmers. This may include training on marketing, development of value chains, designing carbon credit eligible projects for the selected spice crops.

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Submission ID: 935

Track 11: Low Emissions Development Strategies

## **Harnessing Innovation–Production–Ecological Multiplex Networks: Mapping India’s Long-Term Low Emission Pathways**

*Geetam Saha and Juan Moreno-Cruz*

**Abstract:** IPCC (2022, 2023) emphasized the need for systemic changes in energy, industry, and societal behaviors. Addressing this challenge requires strategic actions in interconnected innovation, production, and ecological networks, due to feedback loops and dynamic system traits. Clean energy transition is crucial, yet it faces significant challenges, including dependence on fossil fuels, as well as a lack of sufficient technology and funding (Acemoglu et al., 2016; Bose et al., 2019; Kreps, 2020). Coal-based power generation accounts for more than 60% of India’s total electricity production (Ding et al., 2025), emphasizing the structural challenge of phasing out fossil fuel use. A significant health concern associated with it is the PM<sub>2.5</sub> emissions from coal-based power plants, which result in an increase in anemia among Indian women and children (Datt et al., 2023). Additionally, India faces an investment gap of USD 3.5 trillion to achieve its net-zero target by 2070 (Singh & Sidhu, 2021). This current work in progress introduces a computational approach to identify key innovation pathways in production networks that support the clean energy shift while reducing economic reliance and ecological harm. US datasets are used for illustration due to the limited availability of Indian data. However, an aggregation strategy has been proposed for the Indian context to build a comprehensive model. The proposed method aims to identify critical technological pathways for India’s clean energy transition, informing policy and investment decisions. The proposed approach can serve as a tool to facilitate the Government of India’s vision of long-term, low-emission development strategies (LEDS), which aim to develop technology solutions in conjunction with socioeconomic and ecological considerations (Ministry of Environment, Forest and Climate Change, 2023). Implementing energy transition strategies is a complex process that requires consideration of production, innovation, and ecological networks. Technological lock-ins challenge clean energy shifts, and identifying leverage points is crucial for the transition. A comprehensive approach is necessary to connect these networks, as literature reveals their interconnections and the following three key research gaps. 1. Carvalho and Voigtländer (2015) examined production and innovation networks, modeling technological diffusion but only at a “variety level” within production networks. Studying such heterogeneous data requires a multilayered approach to capture interactions between technology networks and production networks. 2. Apart from Boucher’s (2024) research, the literature on modeling ecological and production networks is sparse. While their model considers the effects of resource consumption and emissions on ecosystem services, it only

assesses viability within a sector, limiting its applicability to the entire network. Integrating ecological and production networks is crucial for a comprehensive three-layer model. 3. Lastly, no research has addressed all three networks simultaneously, highlighting the need for a unified model to predict critical pathways. Technological innovations do not directly impact the ecological network but rather do so indirectly by integrating technology into production processes. Without understanding how ecological and production networks interact, it is impossible to capture the indirect effects of technology on ecological systems. Our study examines the interactions among technologies, the economy, and the environment, utilizing a three-layer network to analyze their complex and heterogeneous relationships. It models the network's dynamic evolution through network analysis, identifying crucial nodes such as key hubs and bridges within the interconnected multilayer network of innovation, production, and ecological systems. The goal is to enhance energy transition paths by applying random graph and multiplex network theories to identify routes that strike a balance between economic stability and reduced resource use and emissions. This can be achieved by correlating the topological features of the emergent network, such as the global clustering coefficient, modularity index, centrality measures, and degree distribution, with key variables like gross domestic product, emission intensity, and consumption intensity. The research will use the US BEA Input-Output Accounts Tables, EPA USEEIO v1.1 Matrices, and USPTO Patent Grant Dataset to model the production, ecological, and innovation networks, respectively (Bureau of Economic Analysis, 2025; United States Environmental Protection Agency, 2020; United States Patent and Trademark Office, 2025). It will leverage CPC classification data from the USPTO dataset to define clusters within the innovation network and employ community detection algorithms, such as the Louvain method, to characterize modularity. The intralayer connections between the innovation and production networks will be modeled based on modularity characteristics to reduce computational complexity. Interlayer connections between the production and ecological networks will be established using resource consumption and emissions data from the EPA USEEIO v1.1 Matrices. Finally, the correlation between topological features and the economic and environmental variables will help identify the most optimal critical pathway for technology diffusion in support of the clean energy transition. In the Indian context, the available data includes the Ministry of Statistics and Programme Implementation's Supply-Use Table, covering the period from 2011 to 2020 (Ministry of Statistics & Programme Implementation, 2024). Additionally, the Centre for Social and Economic Progress's Hybrid Energy Extended IO Table for the year 2015-16, and the Indian Patent Office's inPASS dataset (Centre for Social and Economic Progress, 2022; Controller General of Patents, Designs & Trademarks, 2025). The same methodology described for the US datasets can be applied to the Indian dataset, utilizing interpolation to fill the temporal gaps. The workflow involves retrieving data from public databases, forming hyper-adjacency matrices to link layers, establishing a three-layer network, and visualizing it with NetworkX in Python. The resulting static model can identify missing links and dominant existing primary fossil fuel-dependent pathways. Predictions about the network's evolution are necessary to address questions about the dynamic interconnections of the multiplex network. To do this, the probability of linking two nodes must be defined. The fitness model meets this requirement (Barrat et al., 2008), as each network node has intrinsic properties, such as raw material inputs. The likelihood of two sectors connecting depends on their overlap in raw materials or

intermediate products. The fitness value defines the fitness of a particular node, which is based either on a discrete or continuous probability distribution. The probability of connection of two nodes and the expected degree of a node can be found. Utilizing this degree distribution, the network can be represented through node fitness values. This model effectively encapsulates the network's evolution but provides a mean estimate predicated upon a node's anticipated degree. Until this step, the model has not integrated the dimension of time; instead, it has focused on the intrinsic properties of nodes. This fitness model can be implemented through a well-established equation from statistical physics, referred to as the “Master Equation” (Barrat et al., 2008, p. 62). Such an approach will incorporate both intrinsic attributes and temporal aspects, thereby enabling a more precise simulation of actual network phenomena and facilitating the determination of the network's growth rate via the definition of the growth kernel. The growth kernel can be defined using the fitness model described previously. Based on the mathematical derivations, it can be reasonably proved that the evolution of the network can be modelled. Uncertainty surrounds the fundamental basis for defining the probability distribution. This will involve an iterative design in which different properties of the nodes are repeatedly used, and the model is run and tested against various static cases of the multilayer network, making this study a computational experimental design supported by mathematical proof regarding the data analysis. We find that using the mentioned strategy and the highlighted Indian datasets, the following main research questions and sub-questions can be addressed through both static and dynamic multiplex networks, which can facilitate India’s LEDS initiatives by providing policymakers, scholars, and practitioners with valuable insights. Main Research Question: How can both existing and emerging technological innovations reshape the Indian production network to support the clean energy transition, while promoting ecological conservation, and minimizing the risk of economic instability? The following four sub-questions can help to approach the main question systematically. 1. What are the key missing links in innovation clusters that hinder clean energy tech diffusion in the Indian production network? (Static Model) 2. How do key links between clean energy tech and fossil fuel-dependent economic activities shape the dynamics of India's production network? (Static Model) 3. What are the primary pathways linking fossil fuel-based activities to clean energy technology in India, and how can they be optimized for a smooth transition? (Dynamic Model) 4. What factors facilitate or block the integration of sustainable technologies in India's fossil fuel-dependent production network? (Dynamic Model).

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Submission ID: 1048

Track 11: Low Emissions Development Strategies

## **Uncovering Necessary and Sufficient Causal Factors of Food Loss and Waste in Agricultural Perishable Food Supply Chains: A Multi-Method Causal Analysis from a B2B Perspective in India's Emerging Rural Economy**

*Palash Kumar Ghosh, Dr. Prof. Rohit Kapoor and Dr. Prof. Narain Gupta*

**Abstract:** Purpose Food loss and waste (FLW) in Agricultural Perishable Food Supply Chains (APFSCs) poses a significant challenge to food security, sustainability, and rural economic development, particularly in emerging economies. Approximately one-third of the food produced globally is wasted, contributing to around 8% of total anthropogenic greenhouse gas (GHG) emissions, while 800 million people continue to experience hunger. The complexity of APFSCs characterized by perishability, informal systems, fragmented infrastructure, and multiple stakeholders makes it imperative to go beyond linear causal analysis and investigate the interrelationships among multiple constraints. While prior research has identified various individual drivers of FLW (e.g., cold storage deficiency, poor transportation, or lack of digital traceability), there is a paucity of empirical studies that holistically examine both necessary and sufficient causal conditions within a rural business-to-business (B2B) context. This study addresses this critical gap by identifying the key causal factors both necessary and sufficient that drive FLW in APFSCs. The research is situated within India's rural B2B environment and adopts a capability-oriented lens based on the Contingent Resource-Based View (CRBV). Addressing this issue is essential for achieving Sustainable Development Goal (SDG) 12.3, which aims to halve global per capita food waste and reduce food losses along production and supply chains by 2030. It also contributes to building more resilient, inclusive, and efficient food systems in emerging markets. Design/Methodology/Approach This research employs a novel, integrated multi-method approach, combining three robust empirical techniques: (1) Partial Least Squares Structural Equation Modeling (PLS-SEM) (2) Necessary Condition Analysis (NCA) (3) Fuzzy-set Qualitative Comparative Analysis (fsQCA) A total of 333 valid responses were collected from diverse APFSC actors in India, including farmers, wholesalers, cold storage operators, processors, and distributors. Constructs and indicators were developed from a comprehensive literature review and operationalized using multi-item Likert scales. The constructs represent dimensions such as technological capabilities (e.g., IoT, ICT), physical infrastructure (e.g., cold chain, packaging), behavioral traits (e.g., trust, collaboration), and institutional arrangements (e.g., stakeholder integration, training, education). The theoretical underpinning for this study is the CRRBV, which posits that the effectiveness of resources and capabilities is contingent on internal configurations and external environmental conditions. This makes CRRBV particularly apt for examining the diversity of causes behind FLW in rural agri-food contexts. Employing PLS-SEM allows for the construction of latent constructs with enhanced reliability and validity by minimizing measurement errors through latent score analysis. The latent variable scores generated from PLS-SEM served as standardized inputs for NCA. These same scores were subsequently normalized (0–1 scale) for fsQCA calibration. NCA identifies essential threshold conditions, and fsQCA uncovers complex causal combinations that result in high FLW. Findings The study provides deep empirical insights into the multi-causal nature of FLW in APFSCs within a rural B2B environment. Findings reveal that FLW is driven by interconnected factors such as inadequate infrastructure, poor ICT knowledge, and weak stakeholder collaboration. Rather than a single cause, high FLW results from multiple interacting constraints logistical, behavioral, and technological. Cold chain logistics, ICT integration, education, and stakeholder coordination are crucial to FLW mitigation. Tailored digital tools, localized training, and institutional partnerships can enhance supply chain resilience. The study offers actionable insights for sustainable agri-business practices, bridging theoretical gaps through



methodological triangulation and context-specific analysis. These results indicate that effective FLW reduction strategies must address multiple domains simultaneously logistics, digital infrastructure, human capability, and institutional arrangements rather than focusing on single-point interventions.

**Originality/Value** This study is among the first to apply a tri-method empirical framework - PLS-SEM, NCA, and fsQCA - in a unified manner to analyze the complex causal architecture of FLW in B2B APFSCs. It offers several key contributions:

- **Theoretical Advancement:** It extends the application of the CRBV by contextualizing how internal capabilities (e.g., ICT, training) and external contingencies (e.g., infrastructure, collaboration) co-determine supply chain performance outcomes like FLW.
- **Methodological Innovation:** By integrating three complementary analytical techniques, the study transcends the limitations of single-method research and captures both net effects and configurational causality, offering a holistic causal explanation.
- **Contextual Relevance:** The focus on India's rural B2B agricultural economy fills a critical empirical gap and provides grounded insights applicable to other emerging economies facing similar supply chain vulnerabilities.
- **Policy Utility:** The identification of necessary conditions supports policy prioritization, while sufficient configurations guide targeted interventions by public and private stakeholders.

**Practical Implications** The findings have direct and actionable implications for multiple stakeholder groups:

- **Supply Chain Managers and Agribusiness Leaders** Can use these insights to develop targeted improvement strategies such as investing in affordable cold chains, deploying mobile-based ICT tools, strengthening farmer-processor linkages, and offering tailored capacity-building programs.
- **Policymakers and Regulators** Should promote context-sensitive legal and policy frameworks that incentivize trust-building, inter-organizational collaboration, digital inclusion, and decentralized infrastructure development in rural supply chains.
- **Rural Entrepreneurs and Farmer Producer Organizations (FPOs/FPCs)** Can leverage the study's findings to design robust operating models based on shared digital infrastructure, local cold storage networks, and cooperative marketing strategies that reduce waste and improve margins.
- **Technology Providers and ICT Startups** Are encouraged to tailor innovations (e.g., climate forecasting, digital auction platforms, cold-chain traceability) to meet the practical and behavioral constraints of rural supply chain actors.
- **Academic and Research Community** The methodology and findings offer a blueprint for multi-method causal investigation in other domains characterized by complexity and resource scarcity, such as public health, disaster management, and energy transitions. By illuminating where and how to intervene, this study enables evidence-based, systems-level transformation of India's agricultural food system from an informal to a more efficient, formalized, and sustainable agri-business ecosystem.

**Conclusion** This research bridges the gap between theory and practice by clarifying the causal pathways and bottlenecks driving FLW in India's APFSCs within B2B rural contexts. The integrated use of PLS-SEM, NCA, and fsQCA allows for a multi-faceted understanding of FLW, revealing that high levels of loss are rarely due to a single factor. Instead, they emerge from multi-layered, interdependent failures - logistical, technological, behavioral, and institutional. Addressing FLW thus requires a multi-pronged strategy, incorporating infrastructure investments, behavioral training, digital tools, and collaborative governance mechanisms. By empirically identifying both necessary and sufficient causal factors, this study offers a roadmap for more resilient, efficient, and inclusive food systems in emerging rural economies.



## MULTIREGIONAL INPUT-OUTPUT MODELLING OF CBAM IMPACTS: IMPLICATIONS FOR INDIA'S LT-LEDS IMPLEMENTATION

*T M Usha Kiran and Sangeeta Mehrolia*

**Abstract:** INTRODUCTION In the Paris Agreement of 2015, majority of the countries united to constrain global warming to below 2°C. To make this ambition possible, countries are designing climate policies that help them to lower their Greenhouse gas (GHG) emissions and transition towards a greener economy. The Carbon Border Adjustment Mechanism (CBAM) is one such tariff mechanism implemented by the European Union (EU) in 2023. CBAM is similar to the EU Emission Trading System (EU-ETS), but the tariff is imposed on non-EU goods imported from other countries, where carbon emissions are not taxed, and the industries are less carbon efficient. Hence, to prevent carbon leakage and ensure a just transition, CBAM is introduced in emission-intensive sectors, like steel, aluminium, cement, fertilisers, and electricity (European Commission, 2021). Though such policies act as climate mitigation strategies, they introduce risks to the economy as climate transition risks – risks arising from the transition to a low-carbon economy. These transition risks impact the economy and its financial system through various macroeconomic channels, such as employment, trade, and output (Battiston et al., 2017, 2021; G20, 2023; NGFS, 2020). Due to the introduction of such policies, the macro-financial stability of developing economies, like India, is more impacted, as they have a low capacity to adapt to such structural changes (Magacho et al., 2024). India has pledged to achieve net-zero emissions by 2070 through its Long-term Low Emissions Development Strategies (LT-LEDS) (Press Information Bureau, 2022). Though India focuses on building a climate-resilient economy, it must ensure a stable economy resilient to external shocks. Despite prudent policies, the evolving regulatory landscapes of the international environment, like CBAM, may hinder economic stability through changes in demand, supply chains, and trade dynamics. This study attempts to analyse the direct and indirect economic impacts of the CBAM implementation by the European Union on India using a Multiregional Input-Output (MRIO) model. LITERATURE REVIEW The literature in the area of climate risks and its impact on the macro-financial stability of different economies is expanding. Climate risks are categorised into physical risks arising from temperature changes and transition risks due to the shift towards a low-carbon economy (Bank for International Settlements, 2021). Transition risk arises when economic structures are disrupted due to shifts in climate policy, technology, or market preferences (Battiston et al., 2017; NGFS, 2020). Although existing literature focuses on transition risks arising out of domestic policies for climate mitigation, such as carbon taxation or green supporting factors (Daumas, 2021; Monasterolo, 2020; Semieniuk et al., 2021), CBAM represents an external, policy-induced transition shock with global ripple effects (Cosbey et al., 2019; Mehling et al., 2019). Previous studies have used CGE models to simulate CBAM's trade and welfare impacts (Böhringer et al., 2012; Branger & Quirion, 2014), but these overlook intersectoral and international spillovers. MRIO models allow for detailed tracing of embodied emissions and value-added flows, making them ideal for

evaluating how climate policy shocks in one region propagate across global supply chains (Magacho et al., 2024). Analysis of the impact of CBAM from the perspective of the Indian economy remains unexplored. This study seeks to address this research gap by comprehensively assessing the potential impacts and challenges CBAM poses on various sectors of the Indian economy. **OBJECTIVES** 1. To quantify the economic impact of CBAM on India's trade-exposed, carbon-intensive sectors. 2. To estimate global supply chain spillovers caused by altered EU demand for Indian goods subject to CBAM. 3. To assess how these impacts influence India's long-term climate and development strategy (LT-LEDS). **METHODOLOGY** A Multiregional Input-Output (MRIO) analysis using the EXIOBASE 3 dataset is employed to simulate economic impact on CBAM-imposed sectors – iron and steel, cement, aluminium, and fertilisers. MRIO is advantageous over the commonly used general equilibrium models, like CGE, because, along with indirect impact within a country, it also describes inter-country direct impacts (Magacho et al., 2024). The analysis also uses the Leontief inverse matrix (Magacho et al., 2024) to estimate the direct impact on output losses in Indian sectors and the indirect impact on output losses across Indian supply chains – both upstream suppliers and downstream customers. **RESULTS** India exports nearly USD 2.5 billion worth of goods to the European Union (Magacho et al., 2024). The analysis anticipates a reduction in the demand for CBAM-imposed goods, which aligns with the results of Magacho et al. (2024). The demand reduction would lead to a reduction in output in carbon-intensive sectors. This impact will extend to raw materials suppliers and downstream industries relying on the final product. The spillover effects explain the global distribution of carbon-intensive production. Overall, the analysis is expected to validate the argument that CBAM can act as a driver of transition risk, having systemic economic impacts and influencing the soundness of the LT-LEDS. These findings facilitate national climate planning and understanding of international climate-trade relations. **DISCUSSION** This research shows that CBAM not only acts as a regulatory challenge but also as a system-wide policy shock affecting interlinked economies. For India, the exposure of its carbon-intensive sectors translates to significant transition risk by reducing revenue, investment in decarbonization, and distorting trade flows. Moreover, the results indicate a lack of preparedness among global value chain partners, many of whom may suffer from spillovers without direct CBAM exposure. This highlights the need for a globally coordinated climate finance mechanism, including border transition assistance, to help developing economies adjust. **CONCLUSION** This study uses MRIO modelling to demonstrate that CBAM induces meaningful transition risk for India and its trade-linked partners. The economic consequences extend far beyond the directly affected sectors, with implications for national policy and international climate diplomacy. The findings highlight the need to integrate CBAM response strategies within India's LT-LEDS planning, such as diversifying export patterns, accelerating decarbonization, and engaging in global trade negotiations. Ultimately, this research contributes to a deeper understanding of how external climate policies shape internal development trajectories and systemic risk exposure in the Global South.

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## Modelling the Distributional Impacts of India's Climate Transition

*Evelin Jose, Richa Richa and Varun Jyothiprakash*

**Abstract:** India, as a key player in global climate mitigation, has set an ambitious target of achieving net-zero emissions by 2070[1]. Realising this goal will require a profound structural transformation across sectors, shifting from a fossil fuel based development model to a low-carbon economy. India's unique developmental trajectory, shaped by deep rooted socio-economic structures, adds further complexity to this transition. Notably, the informal sector constitutes a significant share of total employment (close to 90%) [2], making the economic implications of decarbonization particularly critical. Given this context, it becomes imperative to assess the household-level distributional impacts of climate transition policies in order to capture the microeconomic dynamics at play. In a low-carbon economy, it is essential to ask (a) How will income, consumption, poverty, and inequality evolve under different climate scenarios? (b) What are the implications for employment and wages across the labour force as India moves toward a greener future? Therefore, to answer these questions, in this paper we employ an integrated macro-micro economic model to analyse the impact of the low - carbon transition on Indian economy. We utilise a system dynamics based macroeconomic model i.e. Green Economy Model for India (GEM- India) [3] in conjunction with the Global Income Distributional Dynamics (GIDD) microsimulation model developed by the World Bank [4]. GEM simulates national level outcomes, such as sectoral employment, under various climate policy scenarios. Its outputs, referred to as Linking Aggregate Variables (LAVs) includes employment by skill and sector, wage trends, and private consumption which serves as the input to the GIDD model. Through this integration, we apply the GIDD modelling framework to simulate welfare changes using four sequential modules: 1. Demographic Module: In this module, we have used the Household Consumption Expenditure Survey (HCES) data from the year 2022. In the initial step, the dataset was cleaned and key variable like age, gender, education level, household id, multiplier and person id were extracted. In the next step, we applied a demographic projection method i.e. pipeline effect, which adjusts the sampling household weights to reflect expected changes in population age structure and skill composition, in line with United Nations population projections. The educational attainment rate were assumed to remain constant over time. The resulting demographic distributions for the years 2030, 2050, and 2070 (with 2022 as the base year) are presented in Figure 1. 2. Labor Reallocation Module: This module captures the redistribution of workers across economic sectors in response to macro-level shocks derived from the GEM model. Using outputs from the Demographic Module (Module 1), we employ a multinomial logistic regression to estimate the probability of sectoral employment allocation for individuals. This approach enables us to project changes in the employment distribution across sectors for the years 2030, 2050, and 2070, using 2022 as the base year. We can see from Figure 2, a significant share of unskilled workers was concentrated in the agricultural sector in 2022. However, this share declines steadily by 2070, while employment in the manufacturing sector increases. This shift is largely driven by expanding opportunities in manufacturing and policy priorities such as the Government of India's Viksit Bharat

initiative, which emphasizes industrial growth and job creation. 3. Wage Premia Module: In this module, we estimate relative wages for skilled and unskilled workers across sectors, accounting for labour reallocation and inflation. Sector-specific wage growth trajectories are applied, reflecting the influence of the low-carbon transition particularly the emergence of green job opportunities and evolving sectoral wage differentials. This allows us to project wage premia between skill groups over time, under low carbon transition scenarios. 4. Growth Module: In this module, we apply a distribution neutral consumption growth rate across all households to ensure consistency with macroeconomic projections. This growth rate is taken from the GEM outputs on private consumption growth rate, enabling us to capture the economic dividends due to low carbon transition. In this study, we examine the socio-economic implications of climate change policy by incorporating a distributional impact assessment using the latest HCES data, in the context of India's net-zero target. It is among the few studies that analytically explore the microeconomic dimensions of climate policy, providing critical insights for policymakers in designing an inclusive and equitable roadmap toward achieving net-zero emissions.

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Submission ID: 1293

Track 11: Low Emissions Development Strategies

### **Do Climate Change technologies and Green Growth Policies Reduce Emissions? A Cross-Country Evaluation of the G7 economies.**

*Aparajita Gupta and Himani Chahal*

**Abstract:** This study examines the key drivers of carbon emissions in G7 economies and offers practical recommendations to support effective climate change policies and sustainable development. Given that the G7 countries account for about 45% of global GDP and have a significant impact on energy, trade and innovation, understanding their role in emissions is crucial. Using advanced panel data methods, including Pedroni Cointegration test, Cross-sectional ARDL and Panel Serial Correlated Errors (PCSE), the study explores how different types of technological innovations, green growth, renewable energy consumption, and other economic factors shape CO<sub>2</sub> emissions. The findings offer clear, practical insights for designing targeted, effective environmental policies that can help build a more sustainable future in the world's leading economies.

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Submission ID: 1304

Track 11: Low Emissions Development Strategies

### **Technology for Trash! A Fuzzy AHP Framework to Evaluate Innovation in Municipal Solid Waste Management**

*Vatsal Tripathi, Dr. Saurabh Chadha and Dr. Satyendra Kumar Sharma*

**Abstract:** Municipal solid waste (MSW) systems face growing pressure to become smarter, more efficient, and sustainable. This study investigates which emerging technologies address MSW supply chain challenges meaningfully and how they should be prioritised. Through expert consultations and a Fuzzy AHP approach, technologies like IoT, AI, GPS/GIS, and Blockchain are ranked against criteria such as reliability and efficiency. Surprisingly, GPS/GIS emerged as the top-ranked technology, challenging assumptions that the most advanced solutions always lead. The findings offer timely insights for city administrators, policymakers, and sustainability planners tasked with responsible tech adoption. Aligned with SDGs 11, 12, and 13, this research provides a decision-making framework that bridges academic inquiry and real-world urban waste management needs.

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## Modelling Low-Emission Development Pathways at the Subnational Level: A Comparative Assessment of Maharashtra and Madhya Pradesh

*Kshitij Singh, Aishwarya Pradip and Gauri Atre*

**Abstract:** India's Long-term Low Emissions Development Strategy leverages the federal structure for coordinated climate action between the national, state and local governments [1]. The role of states is not merely implementation, but actively designing region-specific climate policies [2]. Planning long-term development at the state level requires foresight beyond the short-term departmental projects and decadal plans, such as State Action Plans on Climate Change. Energy and emissions modelling tools can support subnational planning by simulating the state's future energy needs and emissions and assessing the impact of sectoral policies over different time horizons. Moreover, modelling insights provide an opportunity to bring together stakeholders to discuss the status quo, long-term targets and the reforms needed to achieve them [3]. NITI Aayog developed the India Energy Security Scenarios (IESS) 2047, which is one such Excel-based tool, to inform long-term climate policy planning at the national level. It further developed State Energy Calculators (SEC), based on the IESS, for six states in 2018 [4], which provides a common framework for evaluating the impacts of climate action across different states. This study presents a comparative assessment of long-term energy demand and greenhouse gas emissions under different policy scenarios for Maharashtra and Madhya Pradesh (MP), using the SEC framework. The Maharashtra SEC (MHSEC), was updated from the previously developed version and a new version of the SEC was developed for Madhya Pradesh (MPSEC). The SEC allows the selection of multiple policy options across five key demand sectors: industry, buildings, transport, agriculture, and cooking. The outputs include energy demand and energy supply mix, per capita energy demand, energy intensity, per capita electricity demand, and GHG emissions from 2021 to 2050. These updated SECs allow the user to compare these outputs under four climate policy scenarios, which include the states' current policy ambition alongside three other scenarios that are pessimistic, ambitious, and highly ambitious in comparison to the current state of ambition. The calculators were developed in three phases, with a detailed literature review of government reports, databases, and academic research to arrive at state-level data across sectors. Next, policy data and sectoral targets were used to build four trajectories representing different levels of decarbonization efforts. Lastly, the calculators were simulated to arrive at initial results. In both states, the development and update of the calculators is being undertaken in collaboration with the state's respective Environment Departments. While this study presents preliminary results, the trajectories, assumptions, and results of the calculators will subsequently be validated through government consultations. The study considers Maharashtra and MP for comparison due to their differing socio-economic features. Maharashtra is relatively developed and industrialised, contributing 13.5% of the country's nominal gross domestic product (GDP). Industrial investments in Maharashtra make a major contribution (around 46%) to the state's GDP (GSDP). The state is also a significant generator and consumer of



electricity, with industrial consumption constituting 32.5% of that of India in 2024-25 [5]. In contrast to Maharashtra, MP's economy is primarily driven by the agriculture sector (over 40% share), followed by manufacturing and tertiary sectors, [6]. Though MP aspires to expand its industrial base and renewable energy generation, the long-term development requires a holistic approach considering its agrarian sector. Comparing the results using the two state energy calculators yields shows that energy demand and emissions for different sectors evolve differently over time for different states, depending on the policies they undertake as well as their economic profiles. Our preliminary results for the transport sector show that MP can reduce energy demand by 11% and Maharashtra by 14% in 2050 through a highly ambitious shift towards vehicle electrification and public transport compared to business-as-usual. MP also observes a 14% reduction in energy demand with a larger modal shift towards public transportation alongside fleet electrification than purely shifting towards electric vehicles. This insight is critical to Madhya Pradesh as it is considering bringing a state transport unit as compared to the established bus transport in the highly urbanized state of Maharashtra. Preliminary results suggest that highly ambitious EV registration targets like 100% in vehicle segments such as 2-wheelers and 3-wheelers by 2050 can lead to a 111% and 96% spike in electricity demand in Maharashtra and MP respectively. These insights on the impact of electrification of the state road transport sector informed the revision of the EV Policy for Maharashtra 2025 upon invitation. The future electricity demand from EVs in the 2 states will be dependent upon their vehicle shares and future uptake of vehicles, necessitating varied long-term goals on vehicle fleets and public transport. A comparison of other demand sectors demonstrates the utility of such tools in assessing the existing ambition and policies, informing future policies, and supporting long-term planning in the states by using a uniform approach that is sensitive to regional socio-economic features. The study highlights the role subnational modelling tools can play in supporting long-term planning in states using the assessment of Maharashtra and MP.

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## Track 12: India Marketing Conference

Submission ID: 278

Track 12: India Marketing Conference

### Ease That Binds: Compulsive Reliance on Generative AI in the Age of Intelligent Companions

*Sonia Kataria, Sumit Saxena and Tanvi Gupta*

**Abstract:** As Generative AI (GenAI) tools like ChatGPT and Replika become embedded in everyday life, their role is shifting from convenience to fostering habitual use and even digital dependency. This study investigates the emerging phenomenon of Compulsive Reliance on Generative AI (CRGI) by exploring its psychological antecedents and underlying mechanisms. Drawing from dual-process theory and cognitive science, we adopt a two-part mixed-method approach. In Study 1, we conduct a passive netnographic analysis of 1000 Reddit comments using reflexive thematic analysis. Key themes include Cognitive Ease, Emotional Buffering, Identity Scaffolding, Perceived Omniscience, and Personalized Intelligence, all of which illuminate the cognitive-affective dimensions of CRGI. Building on these insights, Study 2 proposes and tests a conceptual model using a 2x2 between-subjects experiment, manipulating cognitive and affective ease. We hypothesize that cognitive ease (mental effortlessness) directly increases CRGI, with affective ease moderating this effect. Next, we examine whether cognitive offloading and perceived omniscience mediate these relationships. Lastly, we conduct moderated mediation to cross-check if affective ease moderate (reinforce) the above mediating effects. Our work moves beyond the addiction framing of GenAI use and conceptualizes CRGI as a non-pathological yet compulsive behavior driven by convenience and emotional utility. Theoretically, this research extends dual-process theory into the domain of human-AI interaction, contributing to the broader discourse on the technology-wellbeing paradox. Practically, it offers insights for AI designers to create friction-aware tools that support cognitive autonomy while mitigating overreliance.

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Submission ID: 283

Track 12: India Marketing Conference

### Hello, Are You There? Voice AI, Loneliness, and the User Experience of Digital Companionship

*Sonia Kataria (MICA Ahmedabad), Sumit Saxena (Mahindra University), Vaishali Singh (Amity Business School Ahmedabad).*

**Abstract:** With increasing loneliness due to urbanization and weakening social bonds, many individuals have started shifting their focus towards digital companions, also known as social chatbots or AI friend for emotional support. While such chatbots offer judgment-free, soothing interactions that enhance well-being, user retention remains low which suggest a lack of satisfying experiences. To address this, firms

have introduced voice-based interactions that simulate human-like conversations. Although service firms (e.g., e-commerce, insurance) confirm that voice chatbots improve engagement and outcomes, their effectiveness in strengthening human-chatbot companionship is underexplored. This study investigates how voice-based AI companions influence user experiences, specifically through hedonic (enjoyment-driven) and pragmatic (goal-oriented) dimensions. Drawing on Media Richness Theory, we argue that voice interaction fosters emotional resonance and improves communication flow, enhancing both types of experiences. Using a mixed-method approach, Study 1 employs in-depth interviews (N=16) and reflexive thematic analysis to identify key experiential themes such as perceived enjoyment, emotional contagion, psychological comfort, task efficiency, ease of interaction, and adaptive responsiveness. Studies 2, 3, & 4 use experimental methods to examine the mediating roles of AI-induced empathy, interactivity, anthropomorphism, and social presence, guided by Social Presence Theory and the CASA framework. Study 5 explores semantic fluency as a moderator, highlighting individual differences in processing voice-based communication. Our findings contribute to human-chatbot interaction literature by shifting the focus from well-being outcomes to experiential drivers. Practically, we suggest design strategies that enhance empathy and interactivity to strengthen social presence, foster richer user experiences, and improve chatbot retention.

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Submission ID: 290

Track 12: India Marketing Conference

## Can Positive and Engaged Healthcare Service Providers Drive Medical Tourists' Trust?

*Dr Farrah Zeba, Dr Musarrat Shaheen and Dr G Geethanjali*

**Abstract:** Medical tourism is an emerging sector for healthcare companies in the global arena. India is proving to be one of the most sought-after medical tourism destinations on account of the availability of affordable services with one of the state-of-the-art medical infrastructures. Most of the studies in this area have been limited to an institutional perspective. There is a dearth of empirical research that has explored this phenomenon from the theoretical lens of positive psychology. To address this gap, we offer a conceptual framework that combines prior research on the Job-demand resource (JD-R) model and the Broaden-and-Build theory of positive emotions. The model depicts how healthcare service providers' psychological capital and work engagement foster trust in their patients, which eventually results in credible and useful online reviews by their patients. For this model, trust has been conceptualized as two-dimensional — affective trust and cognitive trust, which are rooted in empathy and care. Also, the beneficiary contact has been taken as the boundary condition for this model. Applying purposive sampling, the data were collected using a survey questionnaire administered to healthcare service providers belonging to NABH-accredited hospitals in an emerging market like India. These reputed hospitals have been selected as they are actively involved in providing services to international medical tourists. The data collected was analyzed using PLS-SEM modelling to test the proposed hypothesis. This was followed by a qualitative study comprising eight in-depth interviews of healthcare service providers. The insights from this study aided in understanding the findings of the

quantitative study. The study offers a theoretical and multidisciplinary perspective of building customer trust (patients) in a high-credence service setting. For medical practitioners, the insights from his study will help them in designing digital marketing campaigns for their online digital medical tourism platforms to attract international clientele and investors.

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Submission ID: 299

Track 12: India Marketing Conference

## Beneficiary Packaging Cues' Influence on Conscientious Consumption

*Anupama Bharadwaj and Aaron Sackett*

**Abstract:** This research investigates when certain attributes (“clean” and “cruelty-free”) are most effective in encouraging purchasing behavior based on who benefits (i.e., the self vs. others) from the purchase. We predict that observing information about clean ingredients increases purchase preferences through increased self-focus, while observing information about cruelty-free practices increases purchase preferences through an increased focus on other (non-human) entities. Study 1 tested whether consumers view a product differently in terms of who benefits based on “clean” versus “cruelty-free” attributes. The study used a 2 (product cue: clean x cruelty-free) x 4 (product category: shampoo, milk, sunscreen, and deodorant) between-subjects design. Product category was an exploratory variable intended to affirm generalizability across product types. Online participants ( $N = 320$ ) viewed one of the eight product ads. Participants were asked to what degree the ad asked them to focus on caring for themselves and to what degree the ad asked them to focus on caring for others, including animals (White & Peloza, 2009), and to what degree the benefits of the product were self-focused and others-focused. Across product categories, results confirmed that product information emphasizing “clean” attributes increases focus on self-benefits,  $F(1,312) = 60.48$ ,  $p < 0.001$ , while product information emphasizing “cruelty-free” attributes increased focus on others-benefits,  $F(1,312) = 134.65$ ,  $p < 0.001$ . No significant interaction was observed between product cue and product category, Wilks' Lambda = 0.98,  $F(6,622) = 0.83$ ,  $p = 0.549$ . Study 2 tested whether self-focus and other-focus are distinct mediational pathways through which “clean” and “cruelty-free” product cues increase purchase likelihood. We predicted that products with clean cues elicit higher levels of self-focused benefits which increase preference for clean products as opposed to cruelty-free products, while products with cruelty-free cues elicit higher levels of others-focused benefits which increase preference for cruelty-free products as opposed to clean products. Study 2 was a 2 (product cue: clean vs. cruelty-free) x single-factor between-subjects design. Online participants ( $N = 152$ ) viewed a mock ad for a product with random assignment to product cue and completed a writing task that asked them to share what they liked about the ad's product and why these features were important to them. Participants indicated general preferences for either clean or cruelty-free products using a 9-pt. bipolar scale in which lower numbers indicated greater preference for clean products and higher numbers indicated greater preference for cruelty-free products, with a midpoint of 5 labeled as “no preference”. Individuals who viewed clean product cues focused on the self significantly more in their open-ended responses than did individuals who viewed cruelty-free

product cues, and vice versa for other-benefits,  $t_s > 10.0$ ,  $p_s < 0.001$ , Cohen's  $d_s > 1.8$ . Individuals who viewed cruelty-free product cues also subsequently reported relatively stronger preferences toward cruelty-free products than did individuals who viewed clean product cues ( $M = 4.76$ ,  $SD = 2.99$ ),  $t(150) = 4.30$ ,  $p < 0.001$ , Cohen's  $d = 0.70$ . Since this measure used a single bipolar scale with a "neutral" midpoint, we also tested mean responses against this midpoint. Participants in the cruelty-free product cues condition significantly preferred cruelty-free products over clean products ( $M = 6.62$ ,  $SD = 2.31$ ,  $t(77) = 6.18$ ,  $p < .001$ ), but participants in the clean product cues condition exhibited no significant preference for one type of product over the other ( $M = 4.76$ ,  $SD = 2.99$ ,  $t(73) = 0.70$ ,  $p = .487$ ). As hypothesized, focus on others significantly mediated the effect of clean vs. cruelty-free product cues on product preferences,  $b = 0.863$ , bootCI [0.167, 1.686]. However, focus on the self did not significantly mediate the effect of clean vs. cruelty-free product cues on product preferences,  $b = 0.325$ , bootCI [-0.388, 1.112]. We suspect that this is due to the tendency for people to already be focused on benefits to themselves when considering products for personal use. Study 3 tested a serial mediation of focus on others and empathic concern on product cues' influence on subsequent preference for cruelty-free products. The methods of Study 3 were identical to Study 2 along with the inclusion of a measure for empathic concern. Individuals who viewed clean product cues focused on the self significantly more in their open-ended responses than did individuals who viewed cruelty-free product cues, and vice versa for other-benefits,  $t_s > 11.5$ ,  $p_s < 0.001$ , Cohen's  $d_s > 2.1$ . Participants who were shown cruelty-free product cues again reported stronger preferences toward cruelty-free products ( $M = 6.54$ ,  $SD = 2.55$ ) than did participants who viewed clean product cues ( $M = 5.53$ ,  $SD = 2.67$ ),  $t(231.8) = 2.95$ ,  $p = 0.002$ , Cohen's  $d = 0.38$ . The clean vs. cruelty-free label manipulation had a significant effect on both other-focus ( $b = 3.556$ ,  $t = 11.49$ ,  $p < 0.001$ , bootCI [2.946, 4.165]) and on empathic concern ( $b = 0.788$ ,  $t = 2.43$ ,  $p = 0.016$ , bootCI [0.148, 1.428]). Other-focus had a significant effect on product preferences ( $b = 0.179$ ,  $t = 2.52$ ,  $p = 0.012$ , bootCI [0.039, 0.319]) but empathic concern's effect on product preferences failed to reach conventional two-tailed significance ( $b = 0.142$ ,  $t = 1.68$ ,  $p = 0.095$ , bootCI [-0.025, 0.309]). The indirect effect testing the hypothesized serial mediation was not significant ( $b = 0.037$ ,  $t = 0.93$ ,  $p = 0.353$ , bootCI [-0.031, 0.127]). However, within this analysis, and consistent with Study 2, we observed significant mediation of the effect of labels on product preferences by other-focus ( $b = 0.637$ ,  $t = 2.54$ ,  $p = 0.012$ , bootCI [0.164, 1.169]).

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Submission ID: 393

Track 12: India Marketing Conference

## Minimalist by Nature? Personality Traits and the Pursuit of Less

*Ruchika Agarwal and Medha Srivastava*

### Abstract:

Objective: As consumerism increasingly characterises modern lifestyles, it fosters perpetual material accumulation, resulting in environmental degradation, resource depletion, heightened waste generation, and augmented carbon emissions at a societal level. It also results in mental fatigue, increased tension,

and anxiety at the individual level (Parvatiyar & Sheth, 2023). Minimalism presents a persuasive alternative to consumerism, positing that reduced things might alleviate stress, diminish obligations, and allocate more time to prioritise what truly matters (Duong et al., 2023; Wilson & Bellezza, 2022). Notwithstanding the benefits, limited information exists regarding those who naturally gravitate towards minimalism. Personality traits and personal values are essential psychological characteristics that significantly influence various behavioural outcomes (Parks-Leduc et al., 2015). Insufficient emphasis has been given to comprehending the psychological and personality-driven elements that underlie consumer minimalism. This research seeks to address this gap by investigating the association between personality factors and minimalist values.

**Methodology:** This research used an exploratory mixed-methods study design. In the initial phase, semi-structured interviews were conducted with twenty people (Study 1) to provide deeper contextual insights regarding consumer minimalism. The interviews examined individuals' ideas, motivations, emotional experiences, and daily actions around possessions and consumption. Employing a grounded theory methodology, data were examined thematically to reveal emerging patterns and insights. In the second phase of the study, we expand upon the findings of Study 1, which found conscientiousness, emotional stability, and materialist values as being connected with minimalist values. The second study is underway (Study 2). We intend to administer an online survey to a sample of roughly 500 or more, selected from a varied demographic background, to examine the association. This study will investigate the predictive relationship between conscientiousness and emotional stability on minimalist values, as well as the moderating effect of materialist values on these associations. Considering the exploratory and confirmatory aspects of our research, we intend to methodically evaluate several theoretically viable structural models. These models vary on direct, mediated, and moderated relationships among conscientiousness, emotional stability, materialistic values, and minimalist values. We intend to evaluate ten distinct models to elucidate the impact of personality factors and values on minimalist behaviours.

**Findings:** The researchers found six principal topics through thematic analysis. Study 2 is now underway. Based on existing literature, we expect that the structural model offering the most precise explanatory framework will demonstrate conscientiousness and emotional stability as direct predictors of minimalist values. We anticipate that these predictive associations will vary considerably based on the individual's degree of materialist orientation, indicating a moderating effect.

**Contribution:** Present study contributes to the scholarship of responsible consumption, a growing field of inquiry that merges the distinct themes of sustainability, social responsibility, environmental impact, ethical considerations and minimalism. This research adopts a grounded, exploratory-to-confirmatory approach to examine why some people voluntarily choose "less" in a world that often rewards "more." This study extends the literature by elucidating the multifaceted psychological dimensions shaping minimalist values, offering valuable implications for researchers, practitioners, and policymakers striving to promote sustainable consumption behaviours.

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## The Spiral Model of Sustainable Tourism: A Marketing Framework from Uttarakhand

*Himanshu Chauhan and Devkant Kala*

### Abstract:

**Introduction:** Tourism in India, particularly in ecologically sensitive state like Uttarakhand, is increasingly torn between economic gains and the imperative of sustainability. While the sector contributes significantly to livelihoods, unregulated growth has led to over-tourism, cultural dilution, and environmental degradation. Conventional tourism frameworks—such as Butler’s Tourist Area Life Cycle or Doxey’s Irridex—emphasize growth trajectories or resident sentiment but often neglect the relational and regenerative dynamics needed for long-term sustainability. This research addresses the limitations of these linear or reactive models by introducing the Spiral Model of Sustainable Tourism, an innovative, community-first framework developed through Been There Doon That (BTDT), a slow tourism initiative. Implemented across several villages in Uttarakhand, including Rikholi and Dasau, this model reframes tourism not as a transaction but as a transformational relationship. The study underscores the need for culturally grounded, regenerative approaches that restore ecosystems, strengthen community agency, and reorient destination branding toward co-created narratives.

**Objectives** This research aims to introduce and conceptualize the Spiral Model of Sustainable Tourism as a regenerative framework that prioritizes community well-being, cultural vitality, and relational depth. By analysing its application in few villages, the study seeks to demonstrate how this model fosters long-term sustainability through iterative, community-led tourism development. Furthermore, it contributes to existing academic and practical knowledge by reorienting destination branding toward narrative co-creation, where communities serve as active participants rather than passive subjects. The overarching objective is to offer a scalable, culturally grounded alternative to conventional tourism frameworks that can inform both policy and practice.

**Methodology:** This study is grounded in a decade of field-based action research led by Been There Doon That (BTDT) across 14 Himalayan village communities, including Rikholi and Dasau. It adopts a mixed-methods approach combining qualitative, quantitative, and participatory techniques to ensure depth and contextual validity. Primary data collection involved 20 semi-structured interviews with tourism practitioners, local hosts, and visitors to understand stakeholder perspectives. Ethnographic methods, such as participant observation during heritage walks, community festivals, and storytelling sessions, offered immersive insights into evolving host-guest dynamics. Participatory Rural Appraisals (PRAs) were conducted with women’s collectives, youth groups, and panchayat members to co-generate tourism development pathways that aligned with local aspirations. The, 25% rise in community-led festivals and an increase in repeat visitor rates—served as indicators of enhanced cultural pride and trust. This triangulated methodology provided a comprehensive understanding of how the Spiral Model unfolds in real-world contexts and justified its relevance as a regenerative tourism framework.

**Results:** The Spiral Model of Sustainable Tourism emerged through iterative implementation in BTDT's partner villages, structured around five evolving and interconnected phases. The first phase, Community Foundation, focused on building trust and readiness within the host community through storytelling sessions, participatory mapping, and skill-building activities—an approach successfully adopted in villages like Rikholi and Dasau. The second phase, Conscious Engagement, involved inviting visitors through slow, low-impact experiences such as heritage walks and culinary storytelling, ensuring cultural sensitivity and alignment with local rhythms. As these interactions deepened, the Deep Connection phase followed, characterized by mutual knowledge exchange—such as artists and students contributing to local schools or co-creating art with villagers. In the fourth phase, Sustainable Amplification, communities began independently initiating tourism offerings like homestays, seasonal festivals, and eco-walks, demonstrating entrepreneurial growth and ownership. Finally, the Cultural Regeneration phase saw the revival of local practices including traditional water harvesting, tree plantation, and preservation of oral histories. The model's spiral structure enabled communities to revisit earlier phases based on changing needs, highlighting its adaptability.

**Discussion:** The findings affirm the model's efficacy in creating regenerative tourism ecosystems. By moving away from metrics like tourist footfall or length of stay, the Spiral Model prioritizes social capital, cultural resilience, and emotional reciprocity between hosts and guests. **Theoretical Implications:** The model advances the discourse on regenerative tourism, departing from sustainability as maintenance and instead emphasizing restoration and enhancement. **Marketing Implications:** Destination branding is reimagined from promotional imagery to participatory narrative-building. Local communities, such as those in Dasau, transition from passive beneficiaries to co-authors of place-based stories.

**Limitations:** While rich in ethnographic depth, the model's generalizability may be constrained without further quantitative validation across larger geographies. **Future Research Avenues:** Developing a Spiral Tourism Readiness Index and exploring its applications in coastal and tribal areas could enhance the model's policy utility.

**Conclusion:** The Spiral Model of Sustainable Tourism represents a paradigm shift—tourism is no longer a commodity to be consumed but a relationship to be nurtured. Grounded in grassroots experiences from Rikholi, Dasau, and other villages, the model offers a culturally resonant, ecologically sensitive, and emotionally grounded approach to tourism development. Its emphasis on trust, connection, and regeneration provides a powerful alternative to growth-centric models, aligning with India's larger goals of inclusive, resilient rural economies. By inviting stakeholders—marketers, policymakers, and NGOs—to reimagine tourism through a regenerative lens, the Spiral Model serves as both a framework and a philosophy for the future of Indian tourism.

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Submission ID: 398

Track 12: India Marketing Conference

## Guarded by Green? The Differential Protecting Effect of Green Brand Equity from Consumer Backlash Post Transgression

*Anwasha Bandopadhyay (PhD Student, Marketing, Indian Institute of Management, Ahmedabad), Dr. Nitika Garg (Professor, Marketing, UNSW Business School), Dr. Sourav Borah (Associate Professor, Marketing, Indian Institute of Management, Ahmedabad), Dr. Soumya Mukhopadhyay (Assistant Professor, Marketing, Indian Institute of Management, Ahmedabad).*

**Abstract:** When a firm engages in environmental sustainability initiatives over a long period of time, they gain intangibly in the form of green brand equity. What does the firm gain from this? In our study, we aim to examine whether green brand equity protects the firm from consumer backlash post transgression. Given contradictory theoretical arguments in the literature, our study adopts an empirics first approach to examine this phenomenon. The study also examines the moderating effect of this type of transgression- if green brand equity does guard the firm from backlash post transgression, is the effect unequivocally the same or does it vary based on whether the transgression is value-based or performance-based? The study further proposes to examine pre vs. post crisis actions by firms that can help mitigate consumer backlash post transgression and how each strategy works depending on the type of transgression. Using an event study showing real-world evidence, controlled condition experiments that help us gain a causal understanding of the phenomenon as well as examine firm level actionable moderators to mitigate backlash, and interviews with managers to gain insights on our proposed solutions, this study adds to the literature on sustainability, firm transgressions and moral legitimacy of firms.

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Submission ID: 413

Track 12: India Marketing Conference

## Evaluating the Effect of Informational Interventions in Shaping Consumer Perception to Foster Electric Vehicle Adoption using a Randomised Controlled Field Experiment

*Pranshu Raghuvanshi (Indian Institute of Science (IISc), Bangalore).*

**Abstract:** The number of four-wheeled private vehicles is increasing yearly, and this growth is most rapid in developing economies. The number of private motorised vehicles has more than doubled in the last decade, reaching 300 million in 2020, compared to 141 million in 2010. Vehicular emissions contain certain pollutants like carbon dioxide, nitrogen oxides, and unburnt hydrocarbons, which have a high global warming potential and stay in the atmosphere for a long time. Electric vehicles (EVs) are essential for reducing carbon emissions, yet their adoption remains sluggish due to economic and behavioural barriers. In this study, we test the effect of informational interventions on the consumer perception of electric vehicles in a randomised controlled field experiment. We start with an observational study

where we studied the consumer perception of electric vehicles' instrumental attributes, infrastructure, and government support. While previous studies have extensively examined the instrumental attributes influencing EV adoption, consumer perceptions of these attributes often lag behind technological advancements due to information asymmetry and cognitive inertia. This misalignment may hinder market growth despite improvements in EV technology. Hence, we design interventions to change consumers' perception of electric vehicles. We surveyed more than 400 potential four-wheeler vehicle buyers in Lucknow. Applying the Mann-Whitney U test, Exploratory Factor Analysis and Logistic Regression, we found that attitude, perceived behavioural control, subjective norms, range anxiety, and innovativeness significantly affect EV adoption intent. The results obtained in the observational study were used to design the interventions for the experimental study. We designed three interventions, one each to address three psychological variables: perceived behavioural control, subjective norms, and range anxiety. In the randomised controlled field experiment, we randomly assign participants to four groups (three treatment groups and one control group). Each group had around 100 participants. As indicated by the baseline survey, these groups were not significantly different. The participants were asked to give scores between 0 and 100 for electric and conventional vehicles, so the sum of both scores was 100. After the initial scores were obtained, they were administered the intervention. After a time lag, they were again asked to give scores for electric and conventional vehicles. We used the difference in difference (D-i-D) approach and computed the average difference in scores pre- and post-intervention for all the groups. We found the computed average difference in scores for all the treatment groups to be significantly more than that of the control group. Thus, all three interventions were found to be significant. We also saw a heterogeneous effect for all the interventions. This study explores consumer perceptions of EV attributes and identifies behavioural factors influencing adoption. The study's insights can help policymakers and marketers design targeted interventions that address consumer concerns, reshape consumer perceptions, and foster greater EV adoption, ultimately facilitating a smoother transition to sustainable transportation.

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Track 12: India Marketing Conference

## Help or Hurt: Effect of Natural Cues on Online Grocery Purchase Decisions

*Yukti Sharma and Alekh Gour*

### Abstract:

**Introduction:** Imagine a scenario where you open an online grocery platform (OGP) for shopping. You searched for natural packaged products and applied related filters (“natural”, “no artificial ingredients”, “no preservatives”). Finally, you purchased products without verifying whether the product details on the back of the package match the filter criteria. A situation like this is common in developing nations, such as India, where only 35% of OGPs provide access to labelling information (Sharib et al., 2024). Accordingly, consumers rely heavily on attribute-based shopping support aids (e.g., ‘healthy’ filters) to inform their purchase decisions (Virdi et al., 2019). Initially designed to enable informed choices,

consumers' growing dependence on shopping aids has been blamed for evoking broad, unwarranted expectations about food items, often leading to suboptimal food choices. Echoing the concern, the FDA issued a recent 'request for information' (RFI) to explore how consumers navigate information on OGPs and form subsequent inferences about food items (Docket No. FDA-2023-N-0624-0002). While burgeoning literature uncovers how consumers navigate over OGPs (Benn et al., 2015), there are scarce scholarly efforts to understand the downstream effects of attribute-based food shopping aids in shaping their expectations and purchase decisions, particularly in cases of inconsistency with actual product attributes. Addressing the call, we consider the popularly (ab)used shopping aid of food's naturalness and explore the subsequent 'complex meaning network'. Specifically, we endeavour to explore: RQ: Do 'natural' aids help or hurt the online grocery buying process?

**Theoretical Framework:** We draw on rich theoretical underpinnings from the cue consistency and the 'spreading activation of semantic memory' (Collins and Loftus, 1975) to unveil the situatedness of consumers' expectations and behavioural intentions. Accordingly, we argue that consumers consider both natural aids and natural claims as cues to form expectations about food. Packaged food items often come with multiple variants of natural claims, such as 'total natural', 'no artificial ingredients', and 'no preservatives', which are added as metadata in a product's record and can be readily translated into shopping aids over OGPs. These cues, known to compensate for consumers' cognitive miseries, necessarily boil down the decision-making to a single buying criterion (Virdi et al., 2019), which results in overgeneralisation of a product's positive value on a single aspect to other 'immediate' and 'distant' attributes (Boatwright et al., 2008). Particularly when natural aids are consistent with the natural value of the product, it results in a larger spread of meaning structure to encompass even the overgeneralized, unrelated attributes and enhanced favourable behavioural intentions. In contrast, when natural aids are inconsistent with the actual natural value, the consumer gives more weight to negative information cues, which in turn weaken the "aura of naturalness" and shrink the activation spread (Crucke et al., 2022). Necessarily, inconsistent cues allow consumers to discount the claim's effectiveness through increased expectancy verification and ambivalence.

**Methodology:** We propose conducting three methodologically rigorous studies, comprising two experiments and one large-scale analysis of archival data from Amazon. Figure 1 outlines our study plan. In study 1, we delineated the consumers' meaning structure of natural food using an archival dataset of 1,600 naturally categorised items from one of India's largest OGP, Amazon. After obtaining the generalised evidence, we propose to conduct a 2 (Natural aid: Present vs. Absent)  $\times$  2 (Natural Claims: Present vs. Absent) between-subjects design to examine how the presence of naturalness cues catalyses the inferential elaboration, while enhancing activation spread, trust in the OGP and purchase intentions. Finally, in Study 3, we propose to examine the underlying mechanism of evoked ambivalence.

**Results:** For our study 1 using the archival data, we found that natural cues embody food with 'immediate' (e.g., minimally processed, no artificial ingredients) and 'distant' attributes (e.g., healthy, tasty) (Schirmacher et al., 2023). We found ten latent topics grouped into three categories: 'producing,' 'processing,' and 'final products,' constituting consumers' 'meaning structure' of natural food. Besides, consumers' inclination towards macro-level inferences can be attributed to the lack of a definite

‘meaning structure’ associated with ‘naturalness’. The experimental studies are ongoing, and data collection is expected to be completed by next month.

**Implications:** We contribute to the existing scholarly discourse in multiple ways. This study represents a pioneering effort to explain the downstream effect of natural shopping aids on consumers’ expectations. First, using a large dataset, we generalise the meaning structure evoked by natural cues deployed in OGPs. Second, we propose a boundary condition for the spread of activation through cue inconsistency. Finally, we explain the mechanism through evoked ambivalence. Accordingly, we endeavour to inform international food policymakers and present a case for the ‘responsibilisation’ of OGPs regarding the blatant use of food shopping aids.

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**Submission ID: 501**

**Track 12: India Marketing Conference**

## **Distaste Engineering: Mapping the Cultural Logic of Rejection**

*Meghna Rajeev (IIM Ahmedabad).*

### **Abstract:**

This working paper introduces the idea of "distaste engineering", as a method to explore how cultures not only celebrate what is seen as cool or desirable, but also actively create and circulate what they perceive as embarrassing or excessive. Prior studies on Consumer Culture Theory (CCT) has focused on how tastes are cultivated and performed (Arsel & Bean, 2013). This paper, grounded in Bourdieu's theory of cultural capital and symbolic violence (Bourdieu, 1984; Coskuner-Balli & Thompson, 2013), aims to shift the lens to look at the affective structures of distaste, and the workings of the oft ritualized performances of what is collectively rejected, or considered aesthetically illegitimate. We define distaste engineering as the socio-technical and emotional process by which platforms, users, and cultural gatekeepers come together, sometimes knowingly, often not, to construct what doesn't belong. In particular, content created by working-class, vernacular, or regionally marginalized voices (who have low cultural capital) is frequently surfaced by algorithms, amplified through ironic memes and reaction videos, and then framed as something to laugh at or dismiss (Kaur, 2022; Liu & Kozinets, 2021). More importantly, this isn't just accidental. There is a logic and structure to it. Platforms reward emotionally provocative content, the audiences gather around shared moments of ridicule, and the creators sometimes play into their roles to gain visibility (McCoy & Scarborough, 2014; Gollnhofer, Weijo & Schouten, 2019). In this way, distaste isn't just a matter of personal preference, it becomes a shared cultural and economic resource (Bryson, 1996; Rivera, 2012). The empirical focus of this work is Indian digital culture, especially the growing ecosystem of so called "cringe content." We're currently conducting netnographic fieldwork on platforms like Reptiles of Kurla and r/cringe, where content tagged as lowbrow or embarrassing is circulated for collective amusement. Early patterns suggest deep entanglements with class, caste, region, and language, but our goal isn't to fix cringe into a category. Instead, we're trying to understand the affective and symbolic work that distaste performs who it targets, how it circulates, and what it makes possible (Warren & Price, 2024; Allen, Gupta & Monnier, 2008).



Our evolving framework includes five key concepts: • Distaste Regimes – the informal rules around what gets rejected and why • Distaste Engineering – the main analytic, focused on how distaste is made and monetized • Layered Symbolic Violence – the compounding exclusions at play in acts of mockery • Cringe Ambivalence – the push-pull of repulsion and fascination • Social Hygiene – the moral language used to justify removing “unfit” content from public view We are also exploring a preliminary semiotic mapping of audience responses along the axes of sincerity vs. irony and empathy vs. mockery. This is intended as a flexible tool for tracking how emotional reactions to cringe content encode social positioning, and how distaste is enacted, justified, and circulated. At this point, it remains flexible and will evolve with ongoing data collection. This study will use a qualitative design combining Netnography (Kozinets, 2015) with semi-structured interviews. Netnographic data will be collected from cringe aggregators, for example, Reptiles of Kurla, r/cringe to name a few. We will focus on looking at visual content, comments, and engagement patterns. Primary data will involve interviews with owners, moderators and users who engage with such content and these platforms. Data will be analysed through thematic coding (Braun & Clarke, 2006), discourse analysis (Foucault, 1972), to understand how distaste is constructed, circulated, and monetized. The approach aims to follow abductive logic (Timmermans & Tavory, 2012), moving iteratively between theory and data. Ultimately, this paper reframes distaste as an active cultural project that complements and enforces taste hierarchies. This paper aims to offer CCT scholars a framework for understanding how symbolic boundaries are co-produced through aversion, not just through what we admire, but through what we are taught to reject or laugh at.

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Submission ID: 561

Track 12: India Marketing Conference

## **More Than a Voice: A Stimulus–Organism–Response (S-O-R) Model of Companionship and Emotional Attachment to AI Voice Assistants and Their Role in Shaping Purchase Intention and Continued Use**

*Sandip Ray and Dr. Neelotpaul Banerjee*

### **Abstract:**

**Purpose:** In the era of Artificial Intelligence, AI-enabled voice assistants are becoming increasingly popular and widely adopted by consumers, transforming their interactions with service providers. While most researchers focus on the functional aspects of AI-enabled voice assistants, only a handful of studies explore the psychological dimensions that influence attitudes, companionship, and emotional attachment in AI-enabled voice interactions. Based on the Stimulus-Organism-Response (S-O-R) framework, this research examines how key stimuli, anthropomorphism, fear of missing out (FoMO), personalisation, and communication competence, shape consumer attitudes. These attitudes subsequently cultivate feelings of companionship and ultimately lead to the development of emotional attachment. The relationship between attitude and companionship is moderated by loneliness. These

relational bonds underpin the foundation of the continued use intention of the AI-enabled voice assistant and influence consumer purchase intentions facilitated by it.

**Design/methodology/approach:** Framed by the S-O-R model, we develop a conceptual framework and collect data through a survey of 477 respondents. Structural equation modelling (SEM) is used to examine the hypothesised relationships, followed by the application of Artificial Neural Network (ANN) applied to uncover non-linear patterns and assess the relative importance of predictors in driving key outcomes.

**Findings:** All constructs demonstrated strong reliability and validity (composite reliability ranging from 0.799 to 0.957) and acceptable convergent validity (AVE ranging from 0.527 to 0.778), confirming robustness of the measurement model. Structural equation modelling (SEM) demonstrated strong evidence of empirical support for the proposed model. Anthropomorphism, fear of missing out (FoMO), personalisation, and communication competence significantly influenced consumer attitudes toward AI-enabled voice assistants. Attitude positively predicted companionship, which significantly led to emotional attachment. Emotional attachment significantly impacts both continued use intention and AI-enabled voice assistant-influenced purchase intention. While loneliness had a significant direct effect on companionship, its moderating role between attitude and companionship was not supported. ANN results revealed that emotional attachment was the most influential predictor of both purchase intention and continuance use intention.

**Practical implications:** The results of this study reveal how emotional aspects, specifically companionship and emotional attachment, have a major influence on how consumers behave toward AI-enabled voice assistants. Findings demonstrate that emotional connection, apart from just being functional utility, has a major impact on both continued use intention and influence on purchase intentions. Constructs like Anthromorphism, personalisation, and communication competence foster a positive attitude towards AI-enabled voice assistants, which leads to consumers treating the AI-enabled voice assistant as a companion and forming emotional attachment with AI-enabled voice assistants, and developing deeper relational bonds. Furthermore, the study demonstrates the role of Fear of Missing Out (FoMO) in encouraging interaction with AI-enabled voice assistants, as Consumers desire to stay connected and informed at all times. Marketers can improve consumer engagement and boost consumer AI relationships by humanising voice assistants, incorporating personalised and emotionally intelligent interactions, and strategically leveraging FoMO driven prompts. These disclosures provide practical advice for creating relationally intelligent AI-enabled voice assistants that strengthen emotional bonds, encourage continuous use and positively influence the purchase intention behaviour of consumers. The findings of the study will assist marketers in developing strategies for enhancing the relationships between consumers and AI-powered voice assistants.

**Research Limitations:** The cross-sectional survey design used in this study is limited to the consumer responses within a specific AI voice assistant context. Experimental or longitudinal research may provide strong causal insight. Findings of the study are context-specific, taking into account regional and cultural boundaries, limiting the ability to generalise the study findings across countries.

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## Deceptive or Defensive? Consumer Reactions to Shrinkage, Non-Shrinkage, and Counterfeit Product

*Vikas Choudhary, Anneswa Bose and Tanmoy Bag*

**Abstract:** Amid rising global inflation, firms are increasingly adopting shrinkflation—reducing product size without altering price—as a strategy to manage costs while avoiding consumer backlash. This phenomenon has become especially prevalent in developing economies like India, where inflation is a growing public concern. Although shrinkflation may go unnoticed due to cognitive and perceptual biases, consumer awareness and concern about the practice are on the rise. Motivated by this trend, the present study investigates consumer behavior in response to product downsizing, specifically examining whether shrinkflation influences purchase intention toward counterfeit products. Across two experiments, the study compares consumer responses to downsized versus non-downsized products and counterfeit alternatives. Drawing from fairness theory and consumer psychology, the findings challenge prior assumptions that consumers prefer downsized products over price increases. Instead, results suggest that consumers may perceive shrinkflation as unfair and show greater willingness to opt for counterfeit products when faced with reduced product sizes. This research contributes to the literature by highlighting how fairness perceptions and product size deviations affect consumer choices, thereby offering important implications for marketers navigating pricing strategies during inflationary periods.

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## Conversational Persuasion: How Follow-Up Questions Drive Consumer Acceptance in AI Chatbots

*Christo Sagaya Milton T (IIM Ahmedabad), Rajat Sharma (IIM Ahmedabad), Arvind Sahay (MDI Gurgaon)*

**Abstract:** AI-driven conversational interfaces are becoming the operational standard in digital commerce, assisting consumers with product search, selection, and service. Despite widespread adoption, consumer satisfaction remains limited—only about one-third report positive experiences, while 20% express dissatisfaction (IBM, 2024). This underscores the need to identify design features that improve chatbot engagement. One promising solution lies in using follow-up questions to increase consumers' perception of being understood. Human-chatbot interactions are inherently social, and consumers often apply interpersonal norms to AI agents. While existing studies compare chatbots to human agents (Luo et al., 2019; Mozafari et al., 2022; Yu et al., 2024), few explore how to improve chatbot-only interactions. Perceived understanding—a factor known to enhance human

communication—may also influence consumer behavior when interacting with chatbots. This study hypothesizes that follow-up questions can improve recommendation acceptance by increasing perceived understanding. Additionally, it suggests the effect depends on the specificity of the consumer's question and the number of follow-up questions asked by the chatbot. Two studies were conducted. Study 1 (N=11), a qualitative investigation via semi-structured interviews, revealed that many users feel chatbots fail to understand their needs. These insights informed study 2 (N=241), a controlled experiment testing three conditions: no question (control 1), rhetorical question (control 2) and follow-up question. Participants imagined shopping for a smartwatch and interacted with a chatbot following one of these conditions. Results confirmed the primary hypotheses. Participants exposed to follow-up questions showed the highest recommendation acceptance (79.01%), followed by rhetorical question (61.73%) and no question (39.24%) groups ( $\chi^2 = 26.52$ ,  $p < .001$ , Cramer's  $V = 0.33$ ). Pairwise mediation analysis between follow-up and control 1 ( $\beta_{\text{Indirect}} = 1.37$ , 95% CI: [0.73; 2.35]), and between follow-up and control 2 ( $\beta_{\text{Indirect}} = 1.17$ , 95% CI: [0.58; 1.96]), revealed that perceived understanding significantly explained these effects while involvement did not ( $\beta_{\text{Indirect}} = 0.33$ , 95% CI: [-0.01; 0.89]). This research contributes to the literature by moving beyond human-chatbot comparisons and focusing on improving chatbot design. It also extends the concept of perceived understanding from interpersonal to AI-mediated contexts and identifies follow-up questions as a tool to reduce AI aversion. Practically, the findings suggest that embedding thoughtful follow-up questioning in chatbot interactions can enhance perceived understanding and boost commercial outcomes. Simulating human-like inquiry offers a scalable path to better consumer engagement in an increasingly AI-driven marketplace.

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Submission ID: 627

Track 12: India Marketing Conference

## Consumer Motivations and Their Effects on Brand Fetishism and Social Gratification in Neo-Luxury Contexts: A multi-study perspective

*Juhi Phukan, Mohd Adil, Rajat Kumar Dogra and Vivek Thakur*

**Abstract:** The rising inflationary pressures in today's economy have led consumers to look towards neo-luxury brands for superior value (Unnithan et al., 2024). The luxury goods market has experienced notable growth over the years, with a significant portion of this expansion attributed to the middle-class segment (Statista, 2023). Based on existing literature, key factors that influence luxury purchases include motivation (Mansoor et al., 2024; Shahid et al., 2024), brand fetishism (Lah & Sušjan, 2023), and personal gratification (Roy et al., 2025). These factors often lead consumers to prioritise luxury goods over other alternatives, even during periods of economic uncertainty. Notably, previous research did not comprehensively examine the motivations behind neo-luxury consumption. This gap in the literature suggests that further exploration is needed to understand how motivations, brand fetishism and social gratification influence neo-luxury brands. Furthermore, exploring the role of vanity as a

personality trait and consumers' susceptibility to interpersonal information as potential moderators could enhance our understanding of how brands enable consumers to assimilate into specific groups (Petravičiūtė et al., 2021). Hence, taking into account the backdrop of the study's context, the aim of this study is to: a) Gain a deeper understanding of the phenomenon associated with neo-luxury consumption behaviour, b) Examine the constructs of brand fetishism and social gratification within the context of neo-luxury consumption behaviour and c) Determine whether the trait of vanity and consumers' susceptibility to interpersonal information moderates the relationship between brand fetishism and social gratification about neo-luxury consumption behaviour. Based on the Uses and Gratification theory, this study posits that strong brand attachment leads to self-control during purchases and obsessive thoughts. A conceptual model was proposed from this theory. A mixed-methods approach in two phases was employed. Phase I involved a word-cloud analysis of relevant abstracts and recommendations to identify key factors in the neo-luxury context. In Phase II, a structured questionnaire was created using validated scales. Data was collected through purposive sampling in the Delhi NCR region at neo-luxury apparel retailers like H&M, Calvin Klein, FabIndia, and Biba, yielding 683 responses. Study 1 used word cloud analysis to identify key factors related to neo-luxury, while Study 2 examined the causal relationships among these factors using PLS-SEM, formulating seven hypotheses for empirical validation. All hypotheses were positively significant, but vanity and CSII did not moderate the link between brand fetishism and neo-luxury consumption. This research contributes to understanding the relationship between brand fetishism and social gratification, showing that attachment and community belonging enhance identity and status, leading to neo-luxury choices. For marketers, the findings suggest that fostering intrinsic motivation can boost neo-luxury consumption, highlighting the need for experiences that promote internal fulfilment.

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Submission ID: 639

Track 12: India Marketing Conference

## The Influence of Hyperparameter Settings on the Persuasiveness of AI-Generated Marketing Content

*Christo Sagaya Milton T (IIM Ahmedabad), Rajat Sharma (IIM Ahmedabad).*

**Abstract:** The rapid adoption of generative AI (GenAI) in marketing is transforming how persuasive content is crafted, enabling swift, cost-effective creation of ads and emails at scale. While GenAI's potential is widely recognized, empirical research on how consumers respond to AI-generated content—particularly as shaped by objective model parameters—remains limited. Prior studies have explored prompt strategies and compared AI- to human-generated messages (Karinshak et al., 2023), but few have systematically examined how hyperparameters like temperature and top-p influence subjective perceptions of persuasiveness. This gap is critical, as marketers increasingly rely on GenAI for personalized, creative, and contextually relevant content. Building on theories of creativity in

advertising—which emphasize that novelty and originality are key drivers of message effectiveness (Rosengren et al., 2020)—this study proposes a threshold-based explanation for the relationship between temperature setting and persuasion. Below this temperature threshold, the hypothesis is that increasing temperature results in a positive linear enhancement of persuasiveness, as content is perceived to be more novel and original, thereby strengthening perceived engagement and distinctiveness. However, once this temperature threshold is surpassed, generated outputs tend to lose coherence and contextual relevance, making it illogical to be used for any persuasive communication and thus making it unusable. Our analysis will focus exclusively on temperature values below the threshold, thereby excluding from consideration any outputs generated beyond the threshold where content coherence is compromised. We posit that content generated at higher temperature (vs low temperature) will lead to better persuasive outcomes. This effect is expected to be mediated by consumer’s perceptions of novelty and originality. The research consists of two complementary studies. First, a Facebook ad experiment will test two versions of the same ad: one generated at a low temperature and one at a high temperature (both below the threshold), controlling for content length. Persuasion will be measured by click-through rate (CTR). Second, a controlled laboratory experiment will employ a between-subjects design. Participants will be randomly assigned to view either the low- or high-temperature ad. In addition to measuring persuasion, this phase will assess perceived novelty and originality as mediating variables. By bridging the gap between technical AI parameters and consumer psychology, this research will provide actionable insights for tailoring AI-generated content to maximize persuasion. The study will advance both theory and practice by elucidating the mechanisms through which hyperparameters shape consumer perceptions and by offering guidance for optimizing marketing communications in the era of GenAI.

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Submission ID: 651

Track 12: India Marketing Conference

## Ordering More, Eating Less: Unpacking the Drivers of Food Waste in the Digital Age

*Rajat Kumar Dogra, Mohd. Adil, Vivek Thakur and Juhi Phukan*

**Abstract:** Food waste is a significant global sustainability issue impacting environmental, economic, and social systems. The United Nations Environment Programme (2024) estimates over 931 million tonnes of food are wasted annually. The rise of online food delivery, particularly among Millennials and Generation Z, has exacerbated this problem by promoting over-ordering through various apps (Talwar et al., 2023; Jia et al., 2022). While these platforms enhance food accessibility, they inadvertently encourage wasteful behaviors, such as excessive purchasing due to promotional deals and minimum order requirements (Sharma et al., 2021; Li et al., 2024). The lack of physical cues for portion control contributes to these tendencies, normalizing wasteful consumption among tech-savvy consumers (Li et al., 2024). Previous research, primarily using the Theory of Planned Behavior (TPB), has examined food waste behaviors; however, emotional factors often go unaddressed (Adaryani et al., 2025; Etim et



al., 2024; Russell et al., 2017). Scholars like Deci & Ryan (2000) and Kirmani et al. (2023) have suggested incorporating factors from Self-Determination Theory and other frameworks to better understand consumer choices regarding food waste. This study proposes an integrative model combining TPB, Self-Determination Theory, Identity Theory, and the Model of Goal-Directed Behavior to investigate young consumers' over-ordering and food waste intentions in online contexts. The model includes constructs such as attitudes towards online food ordering, time constraints, price advantages, provider identity, guilt, social norms, and reuse intentions. The goal is to contribute to sustainable consumption efforts and inform targeted interventions within the digital food economy. The research addresses two key questions: RQ1: How do digital food delivery platforms amplify over-ordering behaviors among young consumers through contextual and psychological factors, and what is the impact on intentions to reduce food waste? RQ2: To what extent do guilt and social norms mediate the relationship between over-ordering and the intention to reduce food waste? Food waste refers to safe-to-consume food discarded at various supply chain stages, with households contributing over 60% globally, according to the UNEP. In India, approximately 68.8 million tonnes of food are wasted annually, exacerbated by online food ordering platforms like Swiggy and Zomato, which promote over-ordering among urban youth. Recent research emphasizes the behavioral dynamics in digital food environments. This study merges the Theory of Planned Behavior (TPB), Self-Determination Theory (SDT), and Identity Theory to explore how attitudes, motivations, emotions, and social constructs shape online food decisions. Key elements include attitudes toward online ordering and how time pressure and price can lead to impulsive choices. The consumer identity of being a "good provider" often causes excess ordering in social situations. Guilt can mediate awareness of waste and prompt corrective actions like reusing leftovers, influenced by social norms. The model identifies over-ordering as a driver of food waste and underscores the need to address underlying factors to implement effective interventions, aiming to reduce waste in India's online food ecosystem. This study uses a quantitative cross-sectional survey to explore factors affecting over-ordering and food waste in online food ordering. Eight hypotheses were tested, revealing six significant results. Key influences on leftover reuse behavior include attitudes toward online ordering, time pressure, price advantages, and intentions to reduce waste. The findings highlight the importance of addressing consumer concerns about food waste and safety to encourage reuse. Social norms were found to be significant moderators, indicating that targeted campaigns could promote sustainable consumption. This research enhances academic understanding of food over-ordering and offers practical implications for real-world applications.

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## From Strain to Strength? Unpacking the Double-Edged Nature of Salespeople Stress through Mixed Methods

*Abhimanyu Sahoo and Vaibhav Chawla*

**Abstract:** From Strain to Strength? Unpacking the Double-Edged Nature of Salespeople Stress through Mixed Methods Introduction: Stress at work is becoming an important concern. The American Psychological Association, (2020) claims that stress is one of the foremost causes of the national mental health problem that substantially impacts various populations in America. B2B salespeople are particularly vulnerable to mental health problems due to the highly competitive nature of the industry (Baliga et al., 2025). The fact that 63% of salespeople reported mental health concerns in 2022 and 70% in 2023 (Sales Health Alliance, 2024). illustrates that the salespeople's mental health crisis is chronic and growing and requires immediate response. Organizational researchers have employed quantitative frameworks to study sales stress using role conflict, ambiguity, workload, team and leadership challenges, and fear of technology in sales (Friess et al., 2024; Rayburn et al., 2021). Moreover, research indicates what stressed salespeople or what they should focus on. Still, there is a paucity of updated, well-founded information regarding how B2B salespeople feel and experience stress. There is also a lack of integration between methodological approaches: qualitative insights are rarely employed to inform or modify quantitative models, and large-scale secondary data is neglected in stress research. As a result, the discipline lacks a comprehensive, process-oriented knowledge that takes into account how, why, and for whom stress might result in different outcomes.

**Objectives:** The following questions serve as a guide for this study: Study 1: 1. What are the primary sources of stress experienced by B2B sales professionals in high-pressure work environments? 2. What are the negative consequences of B2B salespeople's responses to workplace stressors? 3. What are the positive consequences of B2B salespeople's responses to workplace stressors? Study 2: 4. How does stress become a positive influence on B2B salespeople's performance? 5. Why do some B2B salespeople experience stress as a positive influence on their performance, while others experience it as negative? Study 3 (currently in the design phase): 6. To examine the impact of intolerance of uncertainty and need for control on job satisfaction and sales performance among b2b salespeople through mediators. 7. To investigate the impact of several coping strategies developed in Studies 1 and 2 on job satisfaction and sales performance among b2b salespeople through mediators.

**Methodology:** This study examined how salespeople perceive and understand job stress through a multi-method approach across three sequential studies. We conducted the first two study by employing a grounded theory approach suggested by Strauss & Corbin, (1990). For Study 1, we used purposive sampling to conduct semi-structured interviews with B2B salespeople and stopped at 25 participants after attaining theoretical saturation (Hagaman & Wutich, 2017). Participants in Study 1 are unsure about how stress is perceived as a positive consequence, as well as why some salespeople perceive stress as positive while others see it as negative. We collected and examined data from Reddit in order to

investigate these questions further. Study 2 gathered passive data from Reddit, a platform where salespeople can anonymously discuss their ideas and experiences, following ethical guidelines suggested by Rocha-Silva et al., (2024). We manually filtered threads based on the following criteria: (i) they were written in English, (ii) they were posted on moderated, public subreddits with at least 1000 members, (iii) they were posted in the five years before data collection, (iv) they had at least five comments, and (v) they shared sales stress. The study also found several kinds of stressors and categorized them into two main cognitive dimensions: UI and need for control. Expanding on the qualitative results of Study 1, Study 2 uses a quantitative methodology to test empirically the grounded theory-developed conceptual framework of sales stressors. This third phase aims to examine the impact of intolerance of uncertainty and need for control on job satisfaction and sales performance among b2b salespeople. This study also attempts to investigate and combine several coping strategies developed in Studies 1 and 2, categorizing them as resource-based, problem-focused, and emotion-focused coping mechanisms as potential defences against the adverse effects of stress. In first two study, we utilized NVIVO15 for qualitative coding. We started with open coding to identify in vivo codes and code the participants' dialect. We next classified the in vivo codes into first-order categories using similarities. After that, we employed axial coding to evaluate first-order category links to generate second-order themes and link concepts. Study 3 (now in the design process) will empirically evaluate the model by conducting a large-scale survey to investigate hypothesized relationships and boundary conditions. The multi-method design enables triangulation, increasing the validity and depth of findings at the individual and organizational levels.

Results: Findings from Study 1 reveal that traditional stressors such as role stress and work overload remain relevant but are now compounded by client management stressors, lack of management support, teammates' underperformance and stock management stressors. Some salespeople perceive stress as a motivator to improve focus & adaptability, client & team relationships, work efficiency, and productivity. In contrast, others see it as a hindrance to client interactions and sales skills, such as rushing pitch, taking time to close deals, struggling to close deals, reducing persistency, ignoring prospects, less appealing pitches, negotiation difficulties, immature thinking, and missed opportunities. Study 2 findings reveal that stress becomes a positive force when cognitively reframed through values-driven reprioritization, process orientation, and strong support systems. Furthermore, perceptions of stress were influenced by mindset, coping strategies, psychological flexibility, optimism, leadership style, and organizational support. These insights contribute to a more nuanced understanding of how stress is perceived and assessed in real-world situations, going beyond pre-existing categories to offer a deeper understanding of stress in contemporary sales. Our qualitative research provides researchers with a holistic view of sales stressor and its positive and negative outcomes. Our research suggested that work overload, stock management, teammate coordination, customer management, and management support affect salesperson effectiveness. Stress can also demotivate salespeople, burn out, lose enthusiasm in work, and impact their sales skills. However, the picture is not dark; stress can also catalyse a salesperson's performance (Cooper & Nelson, 2007). Job stress is a double-edged sword for salespeople and managers. Managers must identify stressors to establish a healthy workplace and enhance salespeople's mental health and productivity. Furthermore, they can help salespeople to reframe stress.

Additionally, they can also promote a stress-positive mindset by establishing specific, attainable goals and reiterating that progress and success can be attained under pressure. Overall, this research contributes to a more balanced view of job stress and provides practical recommendations for creating healthier, more adaptable organizational settings.

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Submission ID: 735

Track 12: India Marketing Conference

### **Consumers sometimes avoid brands endorsed by virtual influencers: role of creepiness and message features**

*Arijit Das*

**Abstract:** Brands are working with virtual influencers to support their social media initiatives. However, brands aren't aware of the potential hazards associated with virtual influencers. We looked into the function of anthropomorphism on avoidance of the brand endorsed by the virtual influencer, using the Uncanny Valley theory. By conducting experimental studies, we first examined the impact of the perceived anthropomorphism of a virtual influencer on brand avoidance, revealing the mediating role of creepiness. In the second study, we showed that the effect of anthropomorphism on creepiness and brand avoidance was attenuated when the social cue was prominent. In the third study, we found that abstract messages will accentuate creepiness and brand avoidance. From a theoretical perspective, this study advances the literature on the Uncanny Valley Theory and Influencer Marketing. Moreover, our findings offer implications for marketers managing virtual influencers in their social media campaigns.

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Submission ID: 783

Track 12: India Marketing Conference

### **The Role of Consumer Loneliness on Customer Incivility: Exploring Interpersonal Mentalizing and Brand Anthropomorphism**

*Harshita Vyas, Vidyadhari S Chandaka and Ashwini K Awasthi*

#### **Abstract:**

**Introduction:** This paper aims to explain how consumer loneliness influences customer incivility in online settings, especially those mediated by AI-powered conversational platforms. Despite advancements in AI technologies designed to improve convenience and efficiency in customer service, businesses are witnessing a rise in abrasive, dismissive, and disrespectful customer behaviors within

online service environments (Lee & Cranage, 2023). These episodes of customer incivility, once limited to in-person settings, are now proliferating across digital service platforms, especially those mediated by AI-powered conversational agents. Yet, current service marketing literature has largely sidestepped an investigation of how a consumer's emotional and psychological landscape might drive such behaviors. This oversight is critical in a time when emotional disconnection, social isolation, and technological mediation converge to redefine the brand consumer dynamic. Among the internal states shaping consumer behavior today, loneliness stands out as both pervasive and under-theorized. With over one-third of global consumers reporting frequent feelings of isolation, exacerbated by digital dependency and remote lifestyles (World Economic Forum, 2022; Cigna, 2023), understanding how loneliness spills into consumer-brand interactions is more urgent than ever. Unlike depression or anxiety, loneliness is a social emotion it affects not only how consumers feel, but also how they interpret the intentions of others (Nowland et al., 2018; Chen, Huang, & Zhang, 2022). In service contexts, this may result in heightened defensiveness, misinterpretation of tone, or even unprovoked hostility, particularly when the interface lacks human warmth or empathy. This study introduces interpersonal mentalizing, a construct rooted in social neuroscience, as a mediating psychological mechanism. The ability to understand the intentions and emotions of others, a core tenet of Theory of Mind (ToM) is often impaired in lonely individuals (Qualter et al., 2021). This deficit may lead consumers to perceive neutral service responses as antagonistic, especially when conveyed through text-based or voice-based AI platforms where emotional nuance is minimal. In such emotionally sterile environments, the mental effort required to humanize the "other" is amplified, and the likelihood of misreading cues increases. This paper argues that such breakdowns in social cognition are pivotal in transforming passive isolation into active incivility. Amid this landscape, brand anthropomorphism, the practice of endowing brands or service bots with human-like attributes, emerges as a promising moderating variable. Prior studies have shown that anthropomorphic cues such as facial avatars, empathetic phrases, or human-sounding names increase trust and perceived warmth (Sharma & Rahman, 2022; Pieper & Woisetschlager, 2023). Drawing from the Social Surrogacy Hypothesis (Derrick et al., 2009), this study contends that anthropomorphized AI agents may serve as emotional stand-ins for human connection, buffering the negative behavioral tendencies triggered by loneliness. The scope of this study is deliberately interdisciplinary, combining insights from consumer behavior, social psychology, and digital service marketing. The significance of this work lies not only in its theoretical novelty by bridging cognitive empathy and AI-mediated branding, but also in its practical implications for the future of emotionally intelligent service design.

## 2. Literature Review

### 2.1 Consumer Loneliness

Loneliness is understood as a subjective state of perceived social isolation or emotional disconnection, distinct from objective isolation (Russell et al., 1978). Research in psychology consistently links loneliness to maladaptive social cognition and increased hostility (Cacioppo & Patrick, 2008). From a consumer behavior perspective, loneliness alters perception, making individuals more prone to defensive and negative responses (Chen et al., 2022). While much is known about how loneliness affects brand relationships and purchase behaviors (Park, Sung, & Im, 2021), its role in service interactions, particularly negative behaviors like incivility, remains under-explored.

### 2.2 Customer Incivility

Customer incivility has traditionally been studied through the lens of service employee stress and emotional labor (Sliter et al.,

2010). It manifests in subtle yet toxic behaviors such as rudeness, dismissive tones, and impatience (Wilson & Holmvall, 2013). In digital environments where anonymity and depersonalization are common, such behaviors tend to escalate (Wirtz & Lwin, 2009). Few studies, however, trace these behaviors back to emotional antecedents like loneliness. 2.3 Interpersonal Mentalizing Interpersonal mentalizing, rooted in Theory of Mind (ToM), is a cognitive process that enables individuals to interpret and respond to others' intentions, beliefs, and emotions (Frith & Frith, 2006). Individuals with weakened mentalizing abilities often misread neutral stimuli as threatening or disrespectful (Qualter et al., 2015), a pattern increasingly observed in digital service contexts. In lonely individuals, this impairment can heighten perceived slights from even neutral or polite AI responses, fueling incivility. 2.4 Brand Anthropomorphism Anthropomorphism involves attributing human-like qualities to non-human agents (Epley, Waytz, & Cacioppo, 2007). In branding, it helps reduce psychological distance and promote emotional connection (Puzakova et al., 2009). Recent research shows that anthropomorphized AI agents equipped with human names, faces, or language trigger social surrogacy effects, alleviating feelings of isolation (Derrick et al., 2009). These cues may serve a regulatory function, mitigating the translation of loneliness into hostile consumer behavior. The study draws on two interrelated psychological theories: Theory of Mind (ToM): The foundational theory posits that individuals interpret social environments based on their capacity to attribute mental states to others (Frith & Frith, 2006). Loneliness impairs ToM, especially in ambiguous or low-context digital environments. Social Surrogacy Hypothesis theory suggests that humans often compensate for social isolation through non-human attachments (Derrick et al., 2009). Brands that mimic human attributes can act as emotional substitutes, helping individuals feel less isolated and more regulated in behavior. This dual-theory approach offers a robust lens to examine how internal psychological states affect external consumer actions in virtual service interactions.

**Research Objectives:** The study is structured around the following key objectives: 1: To investigate the direct effect of consumer loneliness on customer incivility in online service interactions. 2: To examine the mediating role of interpersonal mentalizing in the relationship between loneliness and incivility. 3: To assess whether brand anthropomorphism moderates the direct relationship between loneliness and incivility.

**Methodology:** The proposed methodology for the study is to collect a sample survey from consumers who have used online-based services in the past three months.

**Potential Contributions:** It introduces consumer loneliness as an antecedent to customer incivility. It demonstrates interpersonal mentalizing as a psychological mediator, extending the ToM (theory of mind) into consumer behavior. Brand anthropomorphism is used as an emotional regulator to lessen the harmful behaviors in conversational interfaces. It will also encourage firms to design emotion-savvy and intelligent AI interfaces.

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## The Effects of Celebrity Endorsements in Financial Services on Neural Mechanisms in the Consumers' Minds

*Dhruvisha Dave (Academic Associate, Indian Institute of Management- Ahmedabad), Subhadip Roy (Professor, Indian Institute of Management- Ahmedabad).*

### Introduction

In the competitive landscape of financial services marketing, establishing consumer trust and emotional engagement is paramount. To achieve this, brands often employ celebrity endorsements, leveraging attributes such as attractiveness, credibility, and likeability to enhance brand image and influence consumer behavior (Erdogan, 1999). The underlying assumption is that these celebrity traits can transfer to the brand, fostering positive consumer responses. However, recent advancements in consumer neuroscience challenge this notion, suggesting that the human brain may process celebrity endorsements differently than previously understood. Walla et al. (2023) utilized electroencephalography (EEG) to investigate neural responses to names of real-life friends versus celebrities and influencers. Their findings revealed that, despite self-reported feelings of closeness to celebrities, the brain's electrophysiological responses to celebrity names were akin to those elicited by unfamiliar names, indicating a lack of genuine emotional connection at the neural level. This suggests that the perceived intimacy with celebrities does not translate into the subconscious trust mechanisms that are crucial in financial decision-making. This study aims to explore how celebrity endorsements in financial services influence consumers' neural mechanisms, particularly focusing on trust and decision-making processes. By integrating insights from marketing literature and neuroscience, this research seeks to provide a comprehensive understanding of the efficacy of celebrity endorsements in the financial sector.

### Review of Literature

The activity that happens in the left hemisphere is connected with approach-related pleasant feelings and the right hemisphere's activity with withdrawal-related negative emotions. Vecchiato et al. (2011) used this technique to analyse TV advertising, connecting power spectral density in theta and alpha regions with ad pleasantness. Pleasant advertising increased left frontal alpha and decreased right frontal theta, while unpleasant ads did the inverse. These findings support neuromarketing's use of frontal asymmetry as an emotional indicator. This method detects implicit trust, emotional congruence, and endorsement fit, which are crucial to assessing celebrity effect on consumer attitudes in financial advertising.

Neuroscientific advertising research increasingly examines consumers' non-conscious marketing stimuli processing. Ohme et al. (2009) demonstrate how small advertising modifications can create substantial neurological and physiological changes without awareness. The study records real-time emotional responses to modest creative deviations using EEG, EMG, and skin conductance, important to high-trust fields like financial services marketing. This complements prior findings that frontal EEG asymmetry and facial EMG may detect affective responses to brand features, celebrity endorsers, and small messaging tone adjustments (Davidson, 1993; Plassmann et al., 2007). The study suggests that

physiological measures can better understand consumer trust and emotional engagement, paving the way for more nuanced research into celebrity endorsements, where subconscious emotional cues may heavily influence brand evaluations and decision-making in complex industries like banking and insurance.

Erdogan et al. (2001) added managerial aspects to celebrity endorsement research, which is generally lacking in consumer-centered studies. The paper empirically validated source credibility (Hovland & Weiss, 1951), source attractiveness (McGuire, 1968), match-up hypothesis (Kamins, 1990), and meaning transfer model (McCracken, 1989) in campaign planning. Based on product category, managers consider celebrity-brand-audience congruence and trait relevance differently, supporting schema congruity theory and role-based symbolic processing. It also addresses academic gaps like celebrity availability and risk management, making endorsement strategy more realistic.

### Objectives

The following research hypotheses are proposed: 1. What would be the relative effect of a celebrity vis a vis a generic advertisement for a high-risk product such as a mutual fund for consumers? 2. How would this effect be moderated by the congruent/incongruent celebrity-product combination? 3. Would primacy/recency of the endorser moderate this effect?

### Methodology

Electroencephalographic (EEG) signals were recorded using a 32-channel EEG cap arranged according to the international 10–20 system. EEG data were acquired at a sampling rate of 1000 Hz, with reference electrode Cz and a high-pass filter of 0.1 Hz and low-pass filter of 40 Hz applied during acquisition. Impedance levels were kept below 25 k $\Omega$  for all electrodes. Eye movements were simultaneously tracked using a screen-based eye tracker of Tobii, with a sampling frequency of 120 Hz, positioned below the screen. The research comprised two studies:

In Study 1, participants were randomly assigned to two experimental groups, each exposed to different ad combinations that varied in congruency and attractiveness.

In Study 2, participants were divided into three groups, with experimental manipulations based on celebrity congruence and expertise. The study followed a between-subjects factorial design.

The EEG data was preprocessed using BrainVision Analyser and for each stimulus Attention, Effort, Engagement, and Approach Withdrawal indices were calculated. Tobii was used to extract metrics like fixation time and pupil dilation areas of interest for each stimulus.

### Major Findings

The study's results indicate significant differences in consumer attention, effort to comprehend, engagement, and approach towards celebrity versus generic advertisements for high-risk products, such as mutual funds. In Study 1, which compared celebrity and non-celebrity advertisements, the Attention Index was notably higher in the celebrity group ( $M = 11.70$ ) compared to the non-celebrity group ( $M = 9.30$ ), indicating enhanced attention. Similarly, the Effort Index was greater in the celebrity group ( $M = 11.30$ ) than the non-celebrity group ( $M = 9.70$ ), suggesting increased cognitive processing. In Study 2, which compared advertisements featuring the effects of one celebrity, two celebrities, and multiple celebrities, distinct patterns emerged across all EEG indices. The Attention Index was highest for the multiple celebrity group ( $M = 15.80$ ), followed by two celebrities ( $M = 15.60$ ), and one celebrity ( $M =$

15.10), indicating a slight increase in attentional engagement with the number of celebrities. The Effort Index also followed a similar trend, with the highest cognitive load observed in the multiple celebrity condition ( $M = 16.20$ ), compared to one celebrity ( $M = 15.40$ ) and two celebrities ( $M = 14.90$ ). For the Engagement Index, the multiple celebrity condition again showed the highest mean rank ( $M = 18.30$ ), indicating deeper cognitive involvement, while both the one and two celebrity groups showed equal and lower engagement ( $M = 14.10$  each). This finding suggests that advertisements featuring a single celebrity outperform those with multiple celebrities in terms of attention, cognitive effort, and engagement, indicating more focused neural processing.

#### Implications

This study has major consequences for academic research and marketing practice. The study uses EEG and eye-tracking to prove that celebrity endorsements boost customer attention, engagement, and approach motivation when evaluating high-risk financial products like mutual funds. The changes in brain responses, longer fixation durations, and increased pupil dilation show that consumers may interpret celebrity-endorsed ads more cognitively and emotionally. The study also shows that viewer responses are greatly affected by the number of celebrities, emphasising the need for smart celebrity selection. The study shows how non-conscious neurological mechanisms influence consumer behaviour beyond self-reported attitudes, contributing to neuromarketing theory.

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Submission ID: 789

Track 12: India Marketing Conference

### Too Fast to Notice: Dark Patterns in the Blink of an Eye

*Pooja Singhal and Dr. Deepa Khatwani*

**Abstract:** The proliferation of the quick commerce (q-commerce), defined by the near-instantaneous delivery of everyday essentials has refurbished consumer expectations within the digital retail ecosystem. However, this has also led to facilitation of such accelerated paradigm of transaction that has become a breeding ground of implementation of dark patterns i.e. user interface strategies subtly exploit cognitive biases to manipulate consumer behavior (Mathur et al., 2019). This disruptive design strategy is becoming more quotidian in online platforms, often presenting the illusion of user autonomy while really guiding customer behavior in established trajectory. Despite the theoretical availability of options such as the possibilities to exit, select options using filters, develop preferences and compare but in reality, consumers are in force of algorithms driven pathways that nudge them in specific directions. This study scrupulously examines the nature, occurrence, and psychological impacts of the dark pattern utilization in the major q-commerce platforms. Utilizing a mixed-method research design, incorporating bibliometric analysis and structured ( $n = 250$ ) survey (Gray et al., 2018; Luguri and Strahilevitz, 2021), the research reveals the most common typologies of dark patterns. Findings reveal that these User interface (UI) design contribute to increase cognitive load and perceived manipulation

that subsequently elevate user frustration as mediating variables impacting outcomes such as impulsive buying, purchase regret, distrust, and perceived deception (Tversky & Kahneman, 1974; Luger & Rodden, 2013; Acquisti et al., 2015). Furthermore, the study also proposes; gender, frequency of purchase and brand Loyalty as moderating variables, which affect the magnitude of these impacts (Buchanan et al., 2007; Guadagno & Cialdini, 2005). Considering these revelations, the paper suggests a paradigm shift towards transparent and user-centered interface architecture. It reiterates the necessity of ethical compliance across the industry regarding the design processes and suggests preliminary models of regulatory intervention, policymaking, and sustainable UX approaches with the foremost focus on user autonomy and trust.

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Submission ID: 815

Track 12: India Marketing Conference

## Multiple deviations and customer service recovery experience journey

*Nilamadhab Mohanty*

### Abstract:

**Purpose:** This study examines the consumer service recovery process within the framework of multiple deviations (MD). In this study, multiple deviation (MD) refers to a series of service failures and incidents of failed service recovery. For example, companies employ chatbots to resolve initial service failures, and if the chatbot is ineffective, they escalate the issue to human representatives for resolution. Nonetheless, if the human agent neglects to resolve the issue, it may lead to numerous failures or deviations. So far, very few studies have examined the customer service recovery experience in scenarios with multiple deviations. This study examines the evolution of a multiple-deviation SRJ over time in response to this gap.

**Methodology:** Following the longitudinal pre-recovery, recovery, and post-recovery stages, this study provides a theoretical framework combining recovery expectations, recovery experiences, and post-experience valuations (i.e., perceived competence, perceived warmth, perceived relatedness, and perceived value). In order to empirically test the proposed model, the author conducted both qualitative (sequential incidence technique, critical incidence technique) and quantitative (scenario-based) studies to collect data on consumer recovery journey experiences.

**Findings:** The results of both studies indicate that there are three experiential phases that customers go through during a multiple deviation experience: pre-recovery expectation, recovery experience, and post-recovery assessment of the experience. During the pre-recovery stage, the customer forms expectations regarding the service recovery. During the recovery stage, the customer experiences the recovery process and realizes the competence, warmth, and relatedness needs. In the post-recovery phase, customers evaluate their experience and compare it with their expectations. Any violation of the expectation leads to dissatisfaction. Similarly, customer perceptions of warmth, competence, and

relatedness influence their perceptions of value. The perceived value, along with conformance to expectations, determines customer satisfaction. If the customer is satisfied, then he/she forgives the failure and decides to continue with the business. If he/she is not satisfied, then the consumer doesn't forgive and decides to switch the service.

Implications: This study gives useful insights on the multiple deviation phenomenon. In addition, the study presents a research approach to explain how the consumer service recovery experience unfolds over time in the context of multiple deviations. The study also helps identify organizational responses essential to address the effect of multiple deviations on consumer switching behavior.

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Submission ID: 829

Track 12: India Marketing Conference

## Phygital as Temporal Integrator: A Cognitive Framework for Reconstructing Coherent Customer Journeys Across Time

*Mayank Shukla and Sridhar Guda*

### Abstract:

**Introduction:** The customer journey in today's dynamic marketplace has evolved into disjointed episodes that are scattered across touchpoints and time (Lemon & Verhoef, 2016). It can start from the evaluation of past product reviews, in-store exploration, and visualizing through AR for future scenarios, all occurring at different interfaces and at different times. Hence, it imposes a challenge, what we propose as temporal fragmentation, for the consumers who are exposed to multi-touchpoints and asynchronous brand interactions at different times. (Baxendale, Macdonald, & Wilson, 2015; Hamilton & Price, 2019). Therefore, in this paper, we propose a framework consisting of a phygital environment, a blend of phygital and digital ecosystem, and experiences, as an enabler of seamless integration of past, present, and future timeframes (Rese, Baier, Geyer-Schulz, & Schreiber, 2020). **Literature Review** Phygital environment is defined as a set of hybrid consumption experiences (physical and digital) that provide valuable and novel customer experiences (Batat, 2022). Prior research in customer experience and omnichannel marketing has emphasized spatial and platform transitions (Lemon & Verhoef, 2016). But the temporal dimension remains overlooked. In this paper, we address this gap by integrating two key theories, Event Segmentation Theory (Zacks et al., 2007) and Temporal Construal Theory (Trope & Liberman, 2003). Additionally, we draw on the broader construct of episodic thinking, the human tendency to mentally organize experiences as stories or scenes. **Objectives** The objective of the research is 3 folds: 1. Conceptualize Temporal Integration as a consumer capability addressed by the phygital environment. 2. Define three constructs- Temporal Anchoring, Temporal Bridging, and Temporal Coherence, which help in facilitating the integration. 3. Provide a framework for a better customer experience, addressing cross modalities across marketplaces.

**Methodology:** The paper is a conceptual theory-building paper that is developed through abductive reasoning. It is grounded in literature from cognitive psychology and marketing. **Conceptual Framework** **Temporal Anchoring:** The idea here is to retrieve the past brand's interactions through a phygital environment. (Eg., Remembering a good stay in a hotel). **Temporal Bridging:** The functional role of this construct is to link episodes or segments across the customer journey. The psychological role is

simulation or projection. (Eg, using AR to recall and imagine the same property now). Temporal Coherence: This creates sense-making in the customer journey by seamlessly combining anchoring and bridging. (Eg., Feeling emotionally connected through the brand across time) Together, these processes produce Temporal Integration, reducing cognitive load and enhancing experiential satisfaction. Discussion: This framework helps to position the phygital environment as a temporal enabler, not just a channel integrator. It helps to contribute to marketing theory in the following manner: 1. Introducing temporal coherence as an experiential construct. 2. Building and enabling a path between psychology and digital design. 3. Offer practical and managerial insights in multiple sectors. Conclusion: This study helps to provide an alternative look at fragmented consumer journeys by helping brands offer multitemporal coherence. With the help of phygital design and environment, marketers can help consumers to reconstruct their past, invigorate their future, and provide a richer present.

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Submission ID: 889

Track 12: India Marketing Conference

## Standing for a cause, stumbling at the finish: Why activism trust gains vanish overnight

*Vishnu Prasad and Meta Dev Prasad Murthy*

**Abstract:** When firms or brands publicly endorse polarising social/political viewpoints, it is called brand activism, and it has become one of the significant brand strategies for connecting with the consumer (Vredenburg et al. 2020). However, there is limited clarity on how the triadic relationship between the consumer, brand, and cause works, how it leads to the development of trust in the brand, and how this trust breaks when there is a violation of expectations in this relationship. The present research addresses these gaps in how the balance between the brand, activism cause, and consumer view exists and how they impact brand activism trust. Secondly, it will examine whether this trust affects purchase-related decisions and variances due to brand types. Thirdly, how this trust deteriorates under various forms of violation of the triadic relationship, depending on the valence, intensity, timing, and attribution of violation. Based on the balance theory, we hypothesise that relationships through brand-cause-consumer balance (brand-cause congruence, brand-consumer trust, and consumer-cause agreement) (Woodside and Chebat 2001) contribute positively to how much consumers trust the brand's activist stance and how imbalance leads to deterioration in trust. Hypothesis 2 predicts that for consumers who trust an activist stance, a utilitarian brand has higher purchase intention and loyalty than a hedonic brand. However, when there is distrust in brand activism, the utilitarian brand receives a higher negative effect. This is because the consumers perceive a higher positive/negative reinforcement when the social/political activism is undertaken by a brand known for functionality/practicality rather than emotional enjoyment (in the case of hedonic brands) due to the unexpected nature of the effect. Finally, when there is an expectation violation due to the break in the triadic relationship, there is a sense of violation reflected in either an increase/decrease in purchase intention and loyalty (Hypothesis 3). See Figure 1 for the conceptual framework. Study 1 tested hypothesis 1 using a survey-based design



with 380 participants assigned the activism cause advocating for immigration. Based on this scenario, the relationship between the brand-cause-consumer is measured, and the brand activism trust and commitment to the brand is tested. The model revealed that each of the relationships in the triadic relationship is significant and positively affects brand activism trust. Cause-brand congruence emerged as the strongest variable ( $\beta = .536, p < .001$ ), which is followed by the consumer-cause agreement ( $\beta = .438, p < .001$ ) and then brand consumer trust ( $\beta = .143, p < .001$ ). In addition, the degree of trust in the brand's activism strongly influenced commitment to the brand ( $\beta = .919, p < .001$ ) and commitment to the cause ( $\beta = .853, p < .001$ ). This study 1 lends support to the importance of the elements of the triadic relationship influencing brand activism trust and how it, in turn, leads to consumer commitment to the brand. Hypothesis 2 is tested through two between-subjects experiments (combined  $N \approx 440$ ; Study 2a,2b). In each of the experiments, the participants evaluated a hedonic brand or a utilitarian brand, both of which took a polarizing position (absolute freedom of speech/Abortion rights). Participants first read a short vignette on the brand's stance and then reported the agreement and trust in brand activism, subsequently about purchase intention and loyalty. Results from the ANCOVA through both experiments indicated a significant interaction ( $p < .001$ ), between the brand activism trust and the brand type. When consumers felt high trust in a brand's activist stance, they indicated notably stronger purchase intentions (Study 1b;  $F(1,216) = 22.74, p < .001$ ) and brand loyalty (Study 1c;  $F(1,226) = 19.03, p < .001$ ) for utilitarian brands compared to hedonic brands. Thus, the empirical evidence suggests that when brands which are typically functional create genuine brand activism, there is a higher positive violation effect, hence leading to the greater positive effect due to the surprise benefit from it. Similarly, when the activism feels disingenuous, there is a greater negative effect due to greater negative expectation violation, when compared to hedonic brands, hence leading to greater negative effects. When the balance in the triadic relationship collapses, the expectation violation occurs leading to a significant change in consumer perceptions regarding brand actions (Hypothesis 3; Study 3a-3d). In study 3a, we vary the violation (valence and intensity), 1) negatively through, either a mild reversal (where the brand quietly pulled partial support for the cause) or an overt change in views (where the brand publicly reversed its stance) and 2) positively through a mild increase in support or through higher support to the cause for the participants ( $N=201$ ). ANOVA analysis reveals that perceived mild reversal leads to lower trust ( $p < 0.01$ ), but still, they were willing to monitor and change their opinion based on the brand action ( $p < 0.01$ ). For the overt stand reversal, it leads to consumer anger and brand-switching intentions ( $p < 0.01$ ). Study 3b introduced the idea of the timing of violation, comparing a newly occurring violation (positive vs negative) with a previous violation (positive vs mixed vs negative) that had occurred in the past but was only now being disclosed ( $N=180$ ). Results indicate that consumers' reactions to brand activism are sensitive to the consistency of violation signals over time. When initial violations are clearly positive or negative, subsequent negative signals significantly increase monitoring and brand-switching intentions ( $p < .01$ ). By contrast, mixed initial violations result in muted responses, suggesting that ambiguity dampens reactivity ( $p > 0.1$ ). Study 3c examined the manner in which customers attribute blame. Participants ( $N = 220$ ) were informed that the brand altered its position due to either internal motivations (such as profit or cutting costs) or external pressures (such as legal or regulatory changes). When the infraction was perceived as compelled by external circumstances,

participants exhibited reduced negative responses when compared to internal ( $p < 0.01$ ), while a drop in overall trust was still noted. Ultimately, Study 3d investigated whether a solitary brand's withdrawal from a cause elicits greater disfavour than a simultaneous exit with many competitors ( $N=190$ ). Consumers exhibited markedly greater outrage ( $p < .01$ ) when the brand was the exclusive transgressor, indicating that shared culpability mitigates indignation, whereas individual responsibility amplifies it. In combination, these studies not only elucidate the triadic relationship for successful brand activism but also associated hazards. Even slight signs that the brand is defaulting on its public commitment can trigger significant decreases in trust and brand assessments, particularly if consumers view the rationale as opportunistic or financially motivated. This research enhances comprehension of the dynamics of trust formation and dissolution in diverse contexts, highlighting the potency and vulnerability of brand activism in modern consumer marketplaces.

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Submission ID: 994

Track 12: India Marketing Conference

## Unveiling the Devil's Choice: How Moral Alternative's Presence Affects Moral Disengagement with Environmental Consequences

*Tejaswi Pant*

### Abstract:

**Introduction:** While plastic-packaging is widely used for its affordability and convenience, the long-term brand-equity cost outweighs short-term benefits for brands. Amazon.com is blamed for “208m pounds (94m kg) of plastic packaging in the US in 2022.” (The Guardian, 2024). Coca-Cola is labelled “world’s top branded plastic polluter” (The Guardian, 2025). While sustainable packaging materials are being innovated (Lau & Wong, 2024), alternatives to plastic-packaging face consumer’s resistance due to current habituation with plastics (Temmerman et al., 2023). There is a need for marketing interventions that re-engage consumers with consequences of disengaged wastage. This research shifts from disposal-stage to alternative-evaluation stage waste-management solutions by building on priorly established moral disengagement in non-green purchases (Sharma and Paço, 2021), to explore how to nudge its deactivation. Specifically, how moral alternative’s presence influences consumer's moral disengagement with environmental consequences, and potential mediation by anticipated guilt is explored using experimental design.

**Literature Review:** Moral disengagement (MD) is rooted in social cognitive theory (Bandura, 2002), and refers to psychological mechanism that allows individual to forgo self-sanction for harmful consequences. Bandura identified eight MD mechanisms: moral justification, euphemistic labeling, advantageous comparison, displacement and diffusion of responsibility, distortion of consequences, dehumanization, and attribution of blame. Disengagement mechanisms have been studied as situational and dispositional characteristics (Moore, 2015), influenced by individual traits such as low empathy and

high cynicism (Detert et al., 2008) and social influences of peers and early life experiences (Caravita et al., 2014). Repeated reliance can entrench disengagement tendencies (DeLisi et al., 2014). However, interventions to dismantle moral disengagement at pre-purchase stages and promote upstream hazard-avoidance need to be explored. Consumers disengage to cope with post-purchase guilt (Sharma and Paço, 2021). However, anticipated guilt being a regulatory-emotion can help in resisting disengagement instead of resisting self-sanction. This study addresses these critical needs by eliciting consequential-contrast at alternative-evaluation stage of buying process through presence of a moral alternative (with packaging-type options) and testing whether forward activation of guilt (i.e. anticipated guilt) drives this effect.

**Research Objectives (Hypotheses):** 1. To test whether presence (vs. absence) of a moral alternative negatively influences moral disengagement, and 2. whether negative influence of the presence of moral alternative on moral disengagement is mediated by anticipated guilt.

**Methodology:** This study employed a between-subjects experimental design to test the effect of Moral Alternative (presence vs. absence) on moral disengagement index and the mediating role of anticipated guilt. Participants (N=104) from U.S and U.K. recruited via Prolific after informed consent, responded to a simulated online grocery shopping scenario followed by visual stimuli (simulated webpage with product options) and the questionnaire. The 24-item moral disengagement scale (adapted from Detert et al., 2008), and 10-item anticipated guilt scale (based on Roseman et al., 1994) were used as measures, along with manipulation check and demographic questions. Manipulation checks confirmed that: participants in MA-present condition significantly affirmed to have observed an ethical option ( $F = 15.39, p < .001$ ) and significantly agreed that one choice stood out as environmentally-responsible choice ( $F = 29.90, p < .001; M = 5.87$  vs.  $4.29$ ). MD items showed high reliability ( $\alpha = 0.91$ ), averaged to form moral disengagement index. One-way ANOVA results (figure 1) revealed significant negative influence of MA (presence vs. absence) on moral disengagement ( $F(1,103) = 4.06, p < .05$ ), as hypothesized. Regression confirmed a 0.37-unit reduction in disengagement controlling for demographics. However, mediation analysis (PROCESS Model 4) showed non-significant mediation by anticipated guilt (figure 2).

**Conclusion:** I find that moral alternative's presence attenuates moral disengagement, indicating potential activation of self-regulation. However, this effect operates independently of anticipated guilt, suggesting that salience of consequences (without emotional-anticipation), can suffice moral engagement. Further studies with alternate study-designs are needed to enhance validity and combat limitations such as social desirability and alternate explanations. I plan to include behavioral outcomes, and further conduct field studies to test applicability and generalizability of the effect.

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## Can paying feel good? A Proposed Study on the Emotional Experience of Subscription Payments

*Itisha Jain and Jogendra Kumar Nayak*

**Abstract:** Introduction and Research Aim Subscription-based services have been a part of how people consume products and services. In recent years, various business sectors, including education, entertainment, personal care, sports, media, and others, have adopted a subscription model to drive recurring revenue and enhance customer loyalty. Though these payments are automatic and unnoticed, they are still meaningful. Past research has focused on the discomfort people feel while making a payment—a concept often described as the “pain of paying.” (Reshadi & Fitzgerald, 2023) However, this study has a different perspective: Can people feel good when they pay for a subscription? We believe that when payments are perceived as fair, predictable, or aligned with personal value, they can foster a sense of satisfaction. This proposed study aims to investigate how consumer satisfaction influences positive emotional responses during subscription payments. To achieve this, we address the research question and a few hypotheses: RQ: In subscription-based services, how does consumer satisfaction connect to the pleasure of payment? H1: Customers positively attribute the quality of service to price. H2: Customers positively attribute to the brand image of the service provider. Methodology The study will employ a quantitative, survey-based approach. We have planned to survey active subscription users in India. The study will sample people who have subscribed to services such as entertainment, online education, wellness products, and digital tools. We will choose the respondents who are users of some subscription-based service. They will be invited to participate in a survey. This survey will help us understand their experiences, such as what makes a payment feel reasonable, simple, or satisfying. The survey aims to identify which features consumers are likely to value the most, such as customized messages from the service provider, flexible options, or timely reminders. Discussion and Contribution We expect this study to show that payment experiences involve more than just money. They carry emotional value. People tend to have a positive view of payments when they are simple, considerate, and clear. Although it often goes unnoticed, this feeling can encourage customers to use a service more often, recommend it to others, or engage more deeply. However, even if users appreciate the service, they may feel frustrated if payments are unclear or feel forced. This highlights the importance of focusing on how payment design works, not just what it includes. This study contributes to consumer research by examining and introducing the pleasure of payment in the subscription business model. It starts a conversation about how companies can improve their offerings and their pricing. It also provides useful insights for understanding emotional responses in everyday interactions. Implications for Theory and Practice This research is expected to benefit both academics and practitioners. It highlights an emotional response that is rarely studied by academics. It suggests that not every payment experience is negative; sometimes, regular payments can relate to feelings of trust, pride, and satisfaction. This study also provides suggestions for companies looking to enhance the payment

experience, especially those that offer subscription-based services. Businesses should focus on giving more control over their plans, communicating in a kind and personal way, and making billing clearer. Customers can feel appreciated with a simple thank-you note or a customizable pause button. These small design choices, based on the outcome of the survey, could help businesses enhance user interactions and lower the cancellation rates in a growing market where digital payments are very common.

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Submission ID: 1069

Track 12: India Marketing Conference

## Development of an Entrepreneur's Personal Branding Index (EPBI) Using Social Media Metrics and the Honeycomb Framework

*Uneza Irshad, Rahela Farooqi, Ms. Nabiha Fatima and Ms. Ayman Sajid*

**Abstract:** According to the recent Global Entrepreneurship Monitor report (Global Entrepreneurship Research Association, 2024), India proudly stands among the five best economies to start a business, ranking second in this domain. The country has ranked fifth among the 56 GEM economies in 2024 position globally in the NECI (National Entrepreneurial Context Index) rankings, reflecting a robust entrepreneurial environment. Unlike larger firms, marketing skills of the entrepreneur is one of the major deciding factors in the success of a start-up (Hills and Hultman, 2013). Entrepreneurial firms are created around their founders. In such an organisation, the founder significantly influences brand value, serving as a primary brand ambassador who embodies the organisation's principles and shapes brand meaning through various interactions (Lückenbach et al., 2022). As a result, entrepreneurs become a deep-seated part of their company's brand. Therefore, brand of an entrepreneurial firm is a mix of company brand and entrepreneur's personal brand. In the field of marketing, personal branding is an emerging phenomenon that has experienced considerable developments. Defined as a set of distinguishing traits that highlights the person from others while used to achieve goals and increase value for person's effort, personal branding has turned into a necessary skill for progress. Prominent artists, athletes, managers, and politicians, as well as an increasing number of entrepreneurs apply this skill to build themselves and their businesses. Today, personal branding is an inevitable part of any entrepreneurship activity. Constructing a personal brand and relationships are especially significant in early-stage organisations, when the entrepreneur plays a predominant role (ElMassah et al., 2019). Thus, personal branding is a key solution for entrepreneurs seeking to build legitimacy and stand out in competitive markets (Anggarini, 2021; Gorbatoev et al., 2018). In the past, personal brands were built through face-to-face interactions, whether in offices or other settings. With the onset of COVID-19, this gradual transition from in-person to virtual branding accelerated dramatically making the shift to online personal branding nearly instantaneous. The widespread adoption of digital personal branding can be attributed largely to social media which serves as the "primary mechanism" (Labrecque et al., 2010) for its dissemination



through social online environments like Instagram, Twitter, LinkedIn, Facebook and YouTube (Khedher, 2015; Chen, 2013). In light of the increasing emphasis on social media as a strategic branding tool, there is a growing need to understand how entrepreneurs cultivate their personal brands in digital spaces. Although personal branding has been extensively studied in the context of CEOs (15 studies), leaders (3), and executives (2), there is a relatively limited focus on entrepreneurs (only 5 studies), highlighting a gap in the literature regarding personal branding in entrepreneurial contexts (Scheidt et al., 2021). Moreover, limited empirical research has explored the specific dimensions of entrepreneurs' social media content that contribute to their personal brand and drive online engagement. This study addresses this gap by conceptualizing Entrepreneurial Personal Branding (EPB) within the digital context and developing a multidimensional Entrepreneur's Personal Branding Index (EPBI). It further examines how distinct branding behaviors across social media platforms influence user engagement metrics such as likes, shares, and comments—offering insights into how entrepreneurs strategically communicate their brand identity and build audience relationships online.

**Research Objectives**

1. To conceptualize and define the construct of Entrepreneurial Personal Branding (EPB) within the context of digital platforms using the Honeycomb Framework as a theoretical foundation.
2. To develop a multidimensional Entrepreneur's Personal Branding Index (EPBI) grounded in empirically derived social media metrics aligned with the seven dimensions of the Honeycomb Framework: Identity, Conversations, Sharing, Presence, Relationships, Reputation, and Groups.
3. To explore the relationship between social media branding behaviours and engagement metrics, assessing how content aligned with specific Honeycomb dimensions influences user engagement (likes, shares, comments, etc.).

**Research Methodology**

This study follows the scale development procedure proposed by Spector (1991), which comprises five distinct phases.

- Phase 1 involves establishing a preliminary definition of the construct.
- Phase 2 focuses on generating an initial pool of items through literature review and expert interviews. Experts from both academia and industry will be consulted to ensure content validity. Ph.D. scholars with expertise in branding and marketing will review and refine the item pool, removing redundant or non-essential items. Additionally, senior faculty members and experienced entrepreneurs or CEOs will be interviewed to ensure the items accurately reflect the dimensions of entrepreneurial personal branding.
- Phase 3 entails pilot testing. The draft scale will be tested on business management students to identify ambiguous items and refine wording for better clarity and comprehension.
- Phase 4 includes data collection and item analysis. Following Gorsuch's (1983) guideline, the target sample size will be five times the number of items. The survey will be administered to students pursuing a Postgraduate Diploma in Entrepreneurship, Innovation and Design Thinking, along with practicing entrepreneurs—representing the scale's target users. A snowball sampling technique will be used to broaden participation, with each respondent encouraged to invite peers or colleagues.
- The final questionnaire will begin with an operational definition of Entrepreneurial Personal Branding, followed by a section where respondents select a well-known entrepreneur to assess. Participants will then respond to the finalized scale items using a Likert-type format. The collected data will undergo Principal Components Analysis (PCA) and Exploratory Factor Analysis (EFA) to identify underlying dimensions and refine the scale. In the final phase, the revised scale will be re-administered to a new sample, and Confirmatory Factor Analysis (CFA) will be used to assess its reliability, validity, and model fit.



## Free to Fee: Can Sustainable Messaging Cues Influence Consumers' Switching Intentions in E-Commerce Retail?

*Sukriti Sekhri and Dhrithi Mahadevan*

### Abstract:

#### INTRODUCTION

Product returns are a persistent and growing challenge in e-commerce, not only eroding firm profitability but also significantly increasing environmental pressures through reverse logistics, repackaging, and unsold inventory disposal. Returns now total over \$428 billion annually, with apparel witnessing particularly high rates at 37.2% due to dislike and 19% from ordering multiple variations (Frei et al., 2020). Environmentally, over 25% of returns are discarded, equating to 5 billion pounds of waste (CNBC, 2019). These returns pose a dual challenge for retailers, denting profit margins and burdening them with managing excess inventory. While charging return fees could reduce this burden, retailers hesitate to impose them for fear of losing market share as consumers might retaliate by shifting to another retailer. Despite consumers claiming to value sustainability, there's limited awareness regarding the environmental impact of returns. Our research explores whether increasing consumer awareness of the environmental consequences can shift return costs without harming retailers or the environment. Specifically, we investigate the impact of environmental messaging in retailers' return policies on consumers' switching intentions, aiming to understand the underlying mechanisms and boundary conditions.

#### OBJECTIVE AND CONCEPTUAL DEVELOPMENT

Extant research on product returns has focused on the cause of product returns (Sahoo et al., 2018) and effective strategies for dealing with reverse logistics (Altug et al., 2021). However, there has not yet been a systematic attempt to connect consumers' desire to behave in an environmentally-conscious manner with the environmental implications of their choices. Our primary research objective is to address this gap and examine how firms can design marketing interventions to reduce return behaviour without compromising customer satisfaction or penalizing the retailer. When consumers are presented with reasoning for a certain loss-inducing task, they are more likely to perceive the loss as fair, compared to when there is no given reason (Thaler 2008). Higher perceived fairness would lower consumers' switching intentions (Malc et al., 2016). We conjecture that when a retailer introduces a return fee and provides an environmental justification (rather than no reasoning), consumers are likely to perceive the fee as fair, and this will in turn influence consumers' switching intentions. Thus, H1: When a return fee is imposed, consumers' switching intention will be lower (versus higher) when an environmental awareness message is present (versus absent). H2: This effect is mediated by perceived fairness. Specifically, a return fee with (without) an environmental awareness message would lead to higher (lower) perceived fairness, which in turn would decrease (increase) switching intentions. Framing theory suggests that the way information is framed influences how people process it (Goffman, 1974).

We propose that, unlike previous studies, a gain-framed return policy would be more effective than a loss-framed one in encouraging consumers to pay a return fee. Since product returns typically involve consumer dissonance toward the retailer, a positive environmental cue (“carot”) may work better than a negative one (“stick”). We hypothesize that perceived fairness is higher when consumers are rewarded for environmentally-friendly behaviour (choosing not to return) than when penalized for returning – thus reducing dissonance. Thus, H3: An environmental nudge paired with a gain-framed (rather than loss-framed) policy is more effective at lowering switching intentions.

#### METHODOLOGY

Study 1 was a 2-cell between-subjects’ design (Environmental awareness message: Present vs. Absent), presenting participants (N = 100) with a return scenario stimulus, and charging a \$5 return fee. We found that providing environmental information while charging the return fee led to lower intentions to switch from the e-commerce retailers (M = 4.91, SD = 1.60) than if they were simply charged the fee (M = 5.59, SD = 1.33,  $p=0.02$ ). Perceived fairness mediated the link such that providing an environmental rationale increased the perceived fairness of charging a return fee, which lowered the switching intentions (Indirect effect = -0.4278, [-0.8603, -0.1256]). Study 2 (N = 70) focused on the type of return policy (gain-oriented: cashback for not returning vs. loss-oriented: return fee charged for returning). We found that participants who were presented a gain-oriented policy had significantly lower ( $p = 0.032$ ) switching intentions (M = 4.07, SD = 1.97) than those who viewed the loss-oriented policy message (M = 4.98, SD = 1.50). In subsequent studies, we plan to introduce a behavioural measure of return intentions through a study design where participants are able to make revisions to the products in their cart.

#### IMPLICATIONS

Our research significantly contributes to theory and practice. First, we show that a potential link exists between consumer’s sustainable intentions and retailers’ product return fee, which can be leveraged to address negative consequences of product returns. Second, our findings suggest that retailers can shift the cost of product returns onto consumers without hurting market share, if they educate consumers about this link through a suitable return policy. The long-term aim is to encourage more responsible consumer behaviour. Theoretically, our research contributes to literature on sustainability and pro-environmental behaviour; persuasive message framing; and e-commerce retailer policies.

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Submission ID: 1121

Track 12: India Marketing Conference

## Promoting to the Unseen: Promotion strategies and consumer response in the Bottom of Pyramid Market

*Sundus Chishti, Adil Akhtar.*

#### Abstract:

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Submission ID: 1139

Track 12: India Marketing Conference

### Religion and Market: A Study of the Langar tradition in Sikhism

*Saheb Singh Bhatia and Hari Sreekumar*

**Abstract:** Religion and the market are two complex social institutions that influence each other. As the nuptials take place between these two institutions, various aspects of religious life get moulded. The application of traditional market logic of competition, brand differentiation, consumer choice, profit and market share maximization, among others, in the religious space has made marketization of religion a very obvious and overt phenomenon. This results in the market-religion complex exerting considerable influence over consumers. Such marketization of religion increases consumers' vulnerability and results in negative economic, social and psychological consequences for consumers. There is a substantial body of literature in Consumer Culture Theory (CCT) that has looked at the role of religion in consumption; however, this literature has underexplored the dynamics between religious teachings and the market. As an attempt to correct this oversight, this study takes the context of the communal consumption tradition

of Langar (Sikh community kitchen) to study how religious notions in Sikhism coexist with marketization. To explore the inter-relationship between religious teachings and the market in the traditional Sikh consumption practice of Langar, we conducted an ethnography in one of the five holy seats of Sikhism: the Gurudwara Takht Sachkhand Sri Hazur Abchalnagar Sahib in Nanded, a major city in western India. In addition to interviews, we compiled field notes, photographs, videos, and maintained a reflexive journal. To analyse our data, we used the constant comparative method of moving back and forth between data and emergent understanding. Our findings reveal that while marketization is getting entrenched in Sikhism, more conventional interpretations of the religion pose considerable resistance to the marketization process. While we find pragmatic accommodations of marketization among religious actors and consumers, we also find that participants deploy traditional interpretations of Sikhism, its communitarian and egalitarian precepts, and anti-commercial religious teachings to resist marketization. Our study adds to the literature on sacralization and secularization in consumption by highlighting the role of religions traditions, teachings, norms, and practices in erecting boundaries around the sacred, thereby diminishing the more problematic incursions of the market into the sacred domain. We thereby add to the literature on marketization in religion by highlighting the reach as well as limitations of such marketization in a minority religion of India.

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Submission ID: 1150

Track 12: India Marketing Conference

## Visualizing Touch: An Experimental Study on Sensory-Enabling Technologies, Need for Touch, and Cross-Modal Correspondence in Online Apparel Shopping

*Savitri Kumari and Bibhas Chandra*

**Abstract:** This study investigates how Sensory-Enabling Technologies (SETs) influence consumer buying behavior in online apparel shopping through cross-modal stimulation and mouse-click attention tracking (mcAT). Grounded in the Stimulus-Organism-Response (S-O-R) framework and the concept of cross-modal correspondence, this research explores how visual sensory technologies (i.e. zoomification tools) can enhance tactile perceptions and influence purchase intentions within digital environments where direct physical interaction is absent. A dedicated experimental website (sensoryapparel.in) was developed, integrating 11 SETs tools across casual, evening, and formal wear categories. Data on consumer engagement, fixation time, and impulsive reaction time (IRT) were collected to evaluate the influence of these technologies on sensory perception and buying behavior. Findings reveal that GIFs, videos, motion pictures, and magnifiers significantly enhance consumer evaluations and purchase intentions across apparel categories. Furthermore, zoomification tools (mouse hover zoom, magnifier, and zoom with scroll) were shown to effectively generate cross-modal correspondence, enhancing perceived touch through visual cues. The study also highlights the role of consumers' Need for Touch (NFT)—both instrumental (functional) and autotelic (hedonic)—in moderating engagement with SETs. Consumers with high autotelic NFT preferred visually rich tools

like 2D and 3D displays for formal wear, while those with instrumental NFT were more responsive to detailed zoom functionalities for tactile evaluation. These findings contribute to sensory marketing literature by providing empirical evidence of how visual technologies in e-commerce can stimulate tactile perceptions and shape consumer decision-making through cross-modal effects. The study underscores the importance of aligning sensory technologies with consumers' tactile preferences (NFT) to enhance engagement, reduce uncertainty, and improve purchase outcomes in online apparel shopping. From a managerial perspective, the results suggest that e-commerce platforms should strategically integrate zoomification and visual enhancement tools to simulate touch experiences, foster consumer engagement, and increase confidence in purchase decisions. These insights hold particular relevance for optimizing virtual try-on tools, zoom functionalities, and immersive visual interfaces to elevate consumer satisfaction in online apparel environments.

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Submission ID: 1184

Track 12: India Marketing Conference

### The influence of cognitive reflection on the phantom decoy effect

*Pravesh Kumar Padamwar*

**Abstract:** The decoy effect occurs when the choice makers do not have strong preferences for an alternative and construct their preferences based on irrelevant alternatives. The preferences are constructed in the phantom decoy effect due to an unavailable (phantom) superior alternative. For instance, the pre-launch promotions of a new electric car model (that has comparable quality to currently available cars) increase the market share of currently available electric cars over hybrid cars. Desirable alternatives are sold out quickly, and we often face situations where a superior option is unavailable in real life. However, there is very little published research on the phantom decoy effect in consumer behavior literature. Past studies have reported the moderating role of intuitive versus reflective thinking style on choice anomalies such as the attraction effect and the compromise effect. Referring to past choice anomalies studies and the dual system framework, this paper examines the role of cognitive reflection on the phantom decoy effect to explore the understanding of the underlying mechanism of the effect. I have conducted experiments in which the participants were primed to use higher cognitive reflection before choosing from the choice sets with superior phantoms. The preliminary analysis indicates the systematic occurrence of the phantom decoy effect only in the higher (versus baseline) cognitive reflection condition.

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Submission ID: 1186

Track 12: India Marketing Conference

### Examining the Effect of Personalized Marketing Messages on Consumer Purchase Intentions in Online Shopping: An S-O-R Model Approach



*Anirudh Krishna Murty and Dr. Ashutosh Mohan*

**Abstract:** In the rapidly evolving Indian digital economy, personalized marketing has emerged as a strategic imperative for organizations aiming to influence consumer behavior and drive purchase intentions. Enabled by the rise of artificial intelligence (AI), big data analytics, and predictive algorithms, businesses can now deliver highly customized marketing messages across digital platforms. These hyper-personalized efforts not only improve engagement and brand affinity but also raise critical concerns about data privacy, transparency, and ethical marketing practices. In light of this, the present study investigates the psychological mechanisms and boundary conditions that govern the effectiveness of personalized marketing in influencing online shopping behavior, using the Stimulus-Organism-Response (S-O-R) framework. Objectives of the Study: The study is designed with three primary objectives: (1) To assess the influence of personalized marketing messages (stimuli) on consumers' internal psychological states, particularly perceived personalization (cognitive-emotional relevance) and trust (belief in platform reliability and integrity) (2) To examine how these organismic states influence purchase intentions (response) in digital environments (3) To explore the moderating role of privacy concerns, which may either amplify or inhibit the impact of personalization depending on consumer sensitivity, perceived surveillance, and data control. Methodology: A quantitative, explanatory research design was adopted, utilizing primary data from a structured online questionnaire distributed to 278 Indian online shoppers with prior exposure to personalized digital marketing. The survey employed purposive sampling to target respondents with relevant experience across channels such as email, mobile apps, and social media. All measurement items were adapted from validated scales in existing literature and rated on a 5-point Likert scale. The study employed Structural Equation Modeling (SEM) to analyze direct, mediated, and moderated relationships among variables. Results show that personalized messages significantly enhance perceived personalization and trust, which in turn positively drive purchase intentions. However, privacy concerns significantly moderate these effects—dampening trust and behavioral response among consumers with high sensitivity, thereby confirming the personalization–privacy paradox. Potential Contribution: This study contributes to marketing theory by extending the S-O-R model through the integration of contextually relevant mediators and moderators for the Indian digital landscape. For organizations, the findings offer strategic insights into balancing personalization effectiveness with ethical data usage, thereby enhancing customer trust and retention. On the policy front, the results underscore the need for strong data governance frameworks—such as the Digital Personal Data Protection Act, 2023—to protect consumer rights without stifling innovation. By bridging people's psychological responses, organizational strategies, and regulatory concerns, the research aligns directly with the conference theme: The Future of the Economy—People, Organizations, and Policy.

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Submission ID: 1211

Track 12: India Marketing Conference

## **Understanding the Impact of Social Media Posts and Family Dynamics on Adolescents' Food Behaviour**

*S Lianbiakl and Varisha Rehman*

**Abstract:** This research addresses the pressing global health concern of adolescent obesity, exacerbated by digital food marketing. It investigates the interactive dynamics of social media content and family influence on adolescents' food choices, a critical gap in current understanding. Begun with an extensive systematic literature review, the work comprises multiple studies. Study 1 developed a typology of Instagram food post content. Studies 2 and 3 analysed visual and textual cues, identifying engaging content strategies. Study 4 highlighted the family's crucial role as an information source and protective buffer against unhealthy marketing. The ongoing Study 5 experimentally examines the combined influence of Instagram and family dynamics on purchase intentions. This research systematically addresses the understudied role of sibling influence and provides a robust framework for social media marketing research. Findings will inform responsible brand strategies, public health interventions, and family-based strategies to promote healthier adolescent diets.

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Submission ID: 1220

Track 12: India Marketing Conference

## Empathy Engines or Emotional Voids? Understanding Social Engagement Through GenAI and AI-Powered Social Media Platforms

*Rupali Singh, Vidushi Vatsa and Shefali Goel*

**Abstract:** The rapid rise of Gen AI platforms like ChatGPT and Gemini, along with other AI-powered social media platforms, is reshaping how individuals engage, express themselves, and seek connection digitally. These tools promise responsive dialogue, personalized interaction, and on-demand emotional presence to their users. But the users frequently report a complex emotional experience: a strong sense of companionship during interaction, followed by a lingering feeling of emptiness or disconnection. This emotional paradox — feeling both connected and isolated — makes it necessary to understand the underlying psychological processes. Today, many apps and websites use artificial intelligence (AI) to help people make choices, talk to others, and feel connected. On the other hand, there are warnings which suggest that depending too much on these AI systems can also cause problems. For example, Banker and Khetani (2019) found that when people rely too much on AI recommendations—like what to watch, buy, or read—they may stop thinking for themselves. This can make people feel less aware of what really matters to them and hurt their well-being. Similarly, Du and Xie (2021) pointed out that AI in the market can feel both helpful and risky. It can make life easier and more fun, but it can also raise big questions about privacy and trust. Further to add on to this idea, Shankar (2024) explained that AI has two sides. On one side, it can make our experiences better by giving us more personal and smart suggestions. On the other side, it can take away our sense of control, make us feel watched, and reduce real human connection. While these studies have provided valuable insights into the effects of AI, there are still important areas that require further investigation, like why do people sometimes feel close to AI (like ChatGPT or Gemini), but also feel strangely alone afterward? Does making AI sound or act more human (called anthropomorphism) affect how we respond to it emotionally? Can these AI tools

really replace real friendships, or do they just help us get by when we're feeling lonely? It will look closely at how people emotionally react to AI conversations—why some people feel comforted while others feel more isolated. It will also study how the way AI "talks"—like remembering things or showing kindness—changes how we feel about it. And finally, it will explore whether AI connections truly help us feel less alone or just create a short-term illusion of connection. By doing this, the research hopes to better explain the emotional effects of using AI every day. This study aims to examine how users emotionally engage with generative AI platforms such as ChatGPT and Gemini, focusing on the factors that contribute to their simultaneous feelings of connection and isolation. It seeks to explore the emotional dynamics that unfold during interactions with these systems—specifically, how users develop a sense of intimacy and, at times, experience emotional letdown or detachment. In doing so, the research will investigate how human-like features such as warmth in tone, memory of previous conversations, and conversational depth shape users' perceptions of empathy, authenticity, and emotional closeness. Finally, the study will assess whether, over time, these AI-mediated interactions act as substitutes for, supplements to, or complicators of real-world social relationships, especially across different user groups characterized by varying levels of loneliness, digital fluency, and age. This study draws on two key frameworks to understand the emotional paradox of connection and isolation in AI-mediated interactions. We use Anthropomorphism Theory (Epley, Waytz, and Cacioppo 2007), to explain how and why users attribute human characteristics to generative AI systems. This framework is especially useful for examining how design cues—such as warmth, memory, or conversational fluidity—shape perceptions of empathy, authenticity, and emotional presence during human-AI exchanges. We also use the Social Surrogacy Hypothesis (Derrick, Gabriel, and Hugenberg 2009) which can explain why users may turn to AI companions in moments of social need and how these tools might serve as substitutes or supplements for human relationships. Together, these frameworks will help to analyse the psychological processes and emotional outcomes involved in sustained engagement with generative AI platforms. This study adopts a mixed-methods design to investigate how users experience connection and isolation when they use Gen AI platforms and interact with AI generated social media platforms and how anthropomorphic features influence the connection or the isolation. The first phase involves qualitative, in-depth interviews with users of generative AI platforms such as ChatGPT and Gemini, as well as consumers who frequently encounter AI-generated content on social media platforms. The second phase consists of an experimental study designed to examine how specific features of AI communication—such as human-like tone, memory, or expressiveness—shape user perceptions of empathy, authenticity, and emotional engagement. The third phase is a short-term diary study, in which participants will reflect on their day-to-day interactions with generative AI platforms and AI-generated content across digital channels. This longitudinal element captures how emotional responses evolve over time and whether AI interactions supplement, replace, or complicate real-life social connections. Together, these three phases offer a comprehensive view of the psychological and emotional impact of generative AI in users' digital lives. This study will offer a deeper understanding of how generative AI tools influence users' emotional lives, particularly the paradox of feeling both connected and isolated. It will contribute new insights into how anthropomorphic design features shape perceptions of empathy and authenticity in AI interactions. The findings will help clarify whether AI-generated communication supports or

undermines users' real-world social connections. Practically, the research can inform ethical AI design, guiding developers and platforms to create emotionally responsible features. It will also aid marketers and policymakers in balancing personalization with emotional well-being in AI-powered digital communication.

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Submission ID: 1245

Track 12: India Marketing Conference

## To Err is Human: When Anthropomorphism Hurts in High-Stakes Accuracy-Driven Contexts

*Shrestha and Amogh Kumbargeri*

**Abstract:** Anthropomorphism is the tendency to imbue products with human-like traits, which has been shown to increase consumer engagement, trust, and emotional connection. This research identifies a novel boundary condition where anthropomorphism might backfire: high-stakes contexts that require increased accuracy and precision. We call such contexts high-stakes, accuracy-motivated contexts. We propose that anthropomorphism in functional products such as calculators may activate lay beliefs about human fallibility, such as “to err is human,” thereby reducing the perceptions of accuracy, precision, product preference, and trustworthiness. In the extended abstract, we present a pilot study (N=59), which shows directional support for perceptions of accuracy, precision, and fallibility. The research has important implications for marketers and product designers. (PS: please find the extended abstract attached to this submission)

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## Beyond the First Green Choice: How Moral Licensing Shapes the Long-Term Trajectory of Sustainable Consumption

*Vishnu Prasad and Meta Dev Prasad Murthy*

**Abstract:** Consumers increasingly engage in sustainable consumption, yet their commitment to such behaviors fluctuates over time. Existing literature has examined the factors impacting sustainable purchases/behaviors, such as environmental concerns (Techawachirakul et al., 2023) and social norms (Hosta & Zabkar, 2020). However, less attention is given to what happens after consumers purchase/perform sustainable products/behaviors. Specifically, we conceptualize and demonstrate moral licensing, wherein consumers justify subsequent non-sustainable behaviors by recalling their earlier eco-friendly purchases. Consumers often adopt sustainable behaviors intending to reduce environmental impact (Hosta & Zabkar, 2020). However, their adherence to such behaviors is influenced by how they mentally account for past actions. Research suggests sustainable choices reinforce an individual's moral self-concept (Liu & Yang, 2025), fostering a temporary sense of ethical sufficiency. Over time, this self-worth can lead to moral licensing, where consumers feel licensed to engage in self-indulgence and exhibit non-sustainable consumption. We propose that the long-term trajectory of sustainable consumption is not always habitual but may fluctuate based on temporal shifts in moral self-regulation (Kumar & Panda, 2024). Rather than forming enduring habits, consumers engage in short-term cycles of sustainable and compensatory behaviors, disrupting consistent engagement. Temporal dimensions further influence this pattern, as the perceived sufficiency of past actions diminishes over time, thus reinforcing or weakening sustainable habits. As a result, prior eco-friendly behaviors may not necessarily lead to sustained commitment but contribute to fluctuating engagement shaped by self-perception and temporal justifications. See Figure 1 for the conceptual framework. Study 1 examined the primary proposition using a 2-factor [control vs. sustainable consumption (purchasing eco-friendly appliances)] longitudinal experimental design spanning four weeks. In the short term (Week 1), participants in the sustainability condition were less likely to engage in subsequent sustainable behaviors (energy conservation), compared to those in the control condition ( $M_{\text{control}}=5.81$  vs.  $M_{\text{sustainability}}=4.92$ ,  $F(1, 248)=6.14$ ,  $p=.014$ ), consistent with moral licensing. However, in the long term (Week 4), participants who engaged in repeated sustainability behaviors demonstrated a reversal effect, exhibiting a higher likelihood of sustainable choices compared to the control group ( $M_{\text{control}}=5.67$  vs.  $M_{\text{sustainability}}=6.29$ ,  $F(1, 248)=4.89$ ,  $p=.027$ ). These results suggest that when moral self-worth is threatened due to prolonged moral licensing over weeks, consumers gradually revert to their moral behaviors to restore their lost moral identity. Study 2 investigated the moderating role of habit formation in moral licensing using a 2 (habit framing: habitual vs. effortful)  $\times$  2 (consumption: control vs. sustainable) between-subjects design. Participants engaged in a computer-simulated shopping task across multiple sessions, where sustainable choices (sustainable clothing) were either framed as habitual (low effort, automatic) or effortful (high cognitive load, deliberate). Consistent

with Study 1, results revealed that when sustainability was framed as effortful, moral licensing effects emerged, leading to reduced subsequent sustainable behaviors ( $M_{\text{control}}=5.88$  vs.  $M_{\text{sustainability}}=4.73$ ,  $F(1, 186)=5.92$ ,  $p=.016$ ). However, when sustainability was framed as habitual, moral licensing effects disappeared ( $M_{\text{control}}=6.12$  vs.  $M_{\text{sustainability}}=6.09$ ,  $F(1, 186)=0.04$ ,  $p=.83$ ). These findings suggest that habit formation mitigates moral licensing, promoting consistent long-term sustainable behaviors. Study 3 examined the temporal dynamics of moral licensing by manipulating the time gap between two sequential sustainable decisions. Using a 3-factor design (immediate decision vs. short delay vs. long delay), participants first engaged in an initial sustainability-related consumption choice (solar panel systems) in a simulated setting, followed by a subsequent opportunity to act sustainably (donating to an environmental cause). Results revealed a significant main effect ( $M_{\text{control}}=5.94$  vs.  $M_{\text{immediate}}=4.78$  vs.  $M_{\text{long\_delay}}=6.38$ ,  $F(2, 198)=5.21$ ,  $p=.006$ ). Specifically, moral licensing was most pronounced when the second decision was made immediately after the first ( $p=.009$ ). However, as the time gap increased, the licensing effect weakened, and after a long delay, the effect reversed, leading to increased sustainable behavior ( $p=.041$ ). These findings highlight the temporal fluctuations in moral licensing and suggest that delayed decision-making can facilitate sustained engagement in sustainability efforts. Study 4 investigated the role of identity reinforcement in mitigating moral licensing using a 2-factor design (neutral vs. identity-salience condition) in a controlled lab setting. Participants were randomly assigned to either a neutral condition, where sustainability was presented as a general behavior, or an identity-salience condition, where sustainability was framed as central to their personal values. All participants then made an initial sustainable choice (organic food), followed by an opportunity to engage in another sustainability-related action. Results showed a significant main effect ( $M_{\text{control}}=5.91$  vs.  $M_{\text{identity}}=6.42$ ,  $F(1, 225)=5.16$ ,  $p=.024$ ). Specifically, participants in the identity-salience condition exhibited sustained engagement in sustainable behaviors, with licensing effects diminishing. These findings suggest that when sustainability aligns with consumers' self-concept, moral licensing is less likely to disrupt long-term sustainable behavior. Study 5 tested the impact of social accountability on moral licensing by varying the visibility of sustainable choices. We hypothesized that when sustainability-related decisions are publicly observed, moral licensing effects will diminish, leading to sustained engagement in sustainable behaviors. The study employed a 3-factor design (control vs. private vs. public decision) conducted in a supermarket setting. All participants first made a sustainable consumption choice (eco-friendly packaging). Participants in the control condition made no initial decision, while those in the private condition made a sustainability choice anonymously. Participants in the public condition made the same choice with their decision publicly displayed. All participants then faced a second sustainability-related choice. The results showed a significant main effect ( $M_{\text{control}}=5.92$  vs.  $M_{\text{private}}=4.80$  vs.  $M_{\text{public}}=6.48$ ,  $F(2, 204)=6.74$ ,  $p=.011$ ). Specifically, participants in the private condition exhibited moral licensing, estimating lower subsequent sustainability engagement than the control group ( $p=.014$ ). By contrast, participants in the public condition exhibited higher engagement than the control group ( $p=.028$ ), suggesting that public visibility reinforces sustainable behavior and mitigates moral licensing. Our findings establish moral licensing by incorporating a temporal perspective and identifying key mechanisms shaping the long-term trajectory of sustainable consumption. Across five studies, we show that moral licensing effects are dynamic, not



static. Initially, licensing reduces sustainable behavior, but over time, consumers either restore moral self-worth (Study 1) or form habits that mitigate moral licensing (Study 2). Temporal delays weaken licensing effects (Study 3), while identity alignment (Study 4) and social accountability (Study 5) help sustain pro-environmental engagement. These insights provide novel insights into how sustainable behaviors evolve and help policymakers and marketers design interventions that foster consistent sustainability practices rather than sporadic ethical actions.

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Submission ID: 1414

Track 12: India Marketing Conference

## Missing Out, Feeling Good: The Effect of JOMO in Shaping the Sustainable Tourism Preferences

*Dr. Rashmi Gopani and Ravi Pabari*

**Abstract:** In a culture driven by social sharing and constant connectivity, the Joy of Missing Out (JOMO) is emerging as a mindset that values digital disconnection, emotional clarity, and mindful choices. While most past studies have viewed JOMO through the lens of digital wellbeing, its influence in decision-making domains such as tourism remains underexplored. This study will examine how JOMO impacts the intention to visit sustainable tourism destinations, a growing niche in travel shaped by values of simplicity, community focus, and environmental responsibility. The global tourism industry is at a tipping point. Reports from Booking.com (2023) reveal that nearly 76% of travellers aim to travel more sustainably, yet many still face barriers to doing so. Brands like Intrepid Travel and G Adventures are responding to this shift, but deeper insight is needed to understand what internal motivators actually shape these intentions. Existing research focuses heavily on external motivators such as price and advertising. This study will fill the gap by focusing on inward emotional states linked to JOMO and how they influence sustainable travel preferences. Framed using the Stimulus–Organism–Outcome (S–O) model (Mehrabian & Russell, 1974), the research will treat JOMO as the external Stimulus. Four mediating variables, Perceived Wellbeing, Place Attachment, Destination Image, and Perceived Value, will represent the Organism, capturing internal thoughts and emotions shaped by JOMO. Word of Mouth (WOM) and Accessibility will act as moderators, influencing the relationship between internal responses and the Outcome, intention to visit sustainable destinations. The model will offer a structured explanation of how emotional satisfaction may lead to mindful tourism choices. The study will follow a positivist approach and adopt deductive reasoning. A quantitative methodology will be used, and data will be collected through a structured survey using a 7-point Likert scale. A purposive sampling method will be applied to reach 450 participants, selected based on prior interest in sustainable travel or mindful living. Data will be analysed using AMOS through covariance-based structural equation modelling (CB-SEM) to examine the relationships between variables and test the strength of the proposed model. By combining emotional, cognitive, and behavioural dimensions under a single conceptual framework, this research will offer a grounded understanding of how JOMO shapes sustainable tourism preferences. It will provide both theoretical clarity and practical insights for travel marketers, sustainability advocates, and policymakers looking to support responsible tourism through consumer psychology. Conceptual Framework Source - Developed by the Author(s)

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India Management  
Research Conference

**IIM Ahmedabad**

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