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Aims and Scope

The Integral Review: A Journal of Management is a peer-reviewed academic publication focused on contemporary issues and emerging trends in business management and its broader societal implications. Its goal is to offer readers valuable insights and explore new frontiers of knowledge, benefiting both academics and industry professionals. Designed to be easily accessible and engaging, the journal ensures a reader-friendly format, making it a valuable resource for scholars,
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Editorial

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By Dr. Rajiv Ranjan, Chief Editor, Integral Review – A Journal of Management

It is with great enthusiasm that I present the June 2025 issue of Integral Review – A Journal of Management. This edition reflects the dynamic interplay between management practice and scholarship in an era marked by complexity, innovation, and evolving socioeconomic challenges. Each contribution featured in this volume encapsulates the spirit of enquiry and rigor that defines contemporary management thought, addressing themes that resonate across borders and disciplines. This lead article delves into the intricate and often contentious relationship between large multinational conglomerates and the societies within which they operate. Anchored in the trajectory of the Adani Group, this study traverses the themes of corporate ambition, ethical dilemmas, and social responsibility. By scrutinizing the Adani Group's meteoric rise and its broader societal ramifications, this article provides a critical reflection on the responsibilities that accompany corporate power, especially in a rapidly globalizing and environmentally fragile world. Technology and sustainability converge in the following study, which examines blockchain-driven carbon markets. The authors explored how blockchain transparency and real-time verification capabilities can revolutionize the issuance and trade of carbon credits. Their findings point toward a future in which digital infrastructure not only enables environmental accountability but also fosters inclusive climate action through regulatory harmonization and global cooperation. In a world increasingly driven by data, the impact of big data analytics on supply chain management has received timely attention. This systematic literature review articulates how data-driven decision-making enhances forecasting accuracy, risk mitigation, and supplier collaboration. The transformative power of analytics is clarified, enabling firms to thrive in an era of volatility by becoming more agile, resilient, and responsive. From the macro-level to the human-centric, another insightful study investigated the nexus between employee happiness and organizational effectiveness. Using empirical data from an Indian SME, the research affirms that employee well-being is not merely a moral pursuit, but a strategic imperative. Organizations that prioritize happiness through autonomy, recognition, and inclusion unlock productivity and foster a resilient culture. Equally pertinent is the discussion of mentorship and leadership succession in educational institutions. As emerging business landscapes demand agile and future-ready leadership, this study underscores the evolving role of educators in nurturing next-generation managers. It advocates structured mentoring, curriculum renewal, and strategic handholding to bridge the campus-to-corporate divide. This issue also presents a compelling exploration of financial literacy as a catalyst for financial inclusion in India. By linking personal financial competencies with broader access to financial services, this study underscores the transformative potential of targeted literacy programs. The insights gained have critical implications for policymakers seeking to enhance economic empowerment in emerging economies. Complementing this is a case-based enquiry into technology-driven empowerment at the bottom of the pyramid (BoP). Through real-world instances, from GPS-enabled food distribution to mobile banking in remote areas, this study highlights how digital innovation is not just bridging gaps but actively reshaping lives in underserved regions. Finally, the issue closes with an illuminating case study that chronicates the global evolution of Coca-Cola. From its humble origins to becoming a symbol of global consumer culture, this study captures how branding, adaptability, and strategic foresight have enabled the enduring relevance of Coca-Cola. Together, these contributions mirror the journal's commitment to showcasing research grounded in practical relevance and driven by intellectual depth. As the global management landscape continues to evolve, we remain dedicated to fostering dialogue that bridges theories and actions. Scholars, practitioners, and policymakers were invited to engage with the insights presented in this issue. May they inform, inspire, and influence decisions that shape a more sustainable, inclusive, and dynamic future.

Warm regards,

Dr. Rajiv Ranjan
Chief Editor
Integral Review – A Journal of Management

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Articles / Paper

Business-Society Relationships of Large Multinational Conglomerate Firms: Perspectives based on the Adani Group's Experience

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Abstract

This study explores the multifaceted relationships between large multinational conglomerates, such as the Adani Group, and the societies in which they operate, shedding light on the intricate interplay between business, society, and individuals. The Adani Group stands as a significant emblem of contemporary business dynamics, characterized by remarkable growth and substantial controversy. The Adani case serves as a compelling prism for examining these ethical boundaries and advocating a holistic approach to business conduct that prioritizes societal welfare and environmental stewardship. From its humble origins to its current stature, the Adani Group's journey reflects broader themes of ambition, controversy, and societal impact in the corporate landscape. This study aims to explore the intricacies driving the Adani Group's growth trajectory and its social ramifications. This study specifically focuses on analyzing the relationship between business decisions and societal effects, as well as assessing the responsibility and social obligations of the group. By delving into these themes, this study seeks to provide nuanced perspectives on the evolving dynamics of business-society relationships in the contemporary world. Furthermore, it highlights the ethical complexities inherent in accumulation-driven models, prompting reflections on the role of corporations in balancing profit motives with their responsibilities towards society and the environment.

Keywords: Adani Group, business-society relationships, multinational conglomerates, corporate responsibility, environmental stewardship.

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1. Introduction

The complex relationship between business entities and the societies in which they operate has received considerable attention and scrutiny in both academic and practical fields (Aakhus and Bzdak, 2012; Lawrence and Weber, 2020; Moon, 2005; Preston, 1975). These investigations are central to the thinking of large multinational corporations, whose activities reflect economies, societies, and ecosystems worldwide (Caves, 1996; Dunning, 1993; Sachs, 2012). In the contemporary landscape of global business, few names resonate with the magnitude and controversy of the Adani Group. The Adani Group is a major Indian multinational conglomerate with a diversified portfolio spanning several industries, such as resources, logistics, energy, and agriculture, and has recently floated new business opportunities, such as airports, toll roads, water, and data centers. From its meteoric rise in the past decade to its entanglement in societal and environmental debates, the Adani Group's journey offers a unique vantage point for exploring the intricate dynamics between business and society (Bhaskar 2022). Hence, the Adani case stands out as one of the most compelling instances of communication regarding environmental legal disputes in recent decades. This study endeavors to delve into the nuanced relationships between large multinational conglomerates, such as the Adani Group, and the societies in which they operate, shedding light on the complexities that underpin their growth trajectories and societal impacts.

What sets the Adani Group apart from its counterparts is not merely its exponential growth or expansive reach but rather the stark familiarity of its narrative within the annals of corporate history. In dissecting the Adani phenomenon, we find echoes of past conglomerates and their trajectories, each marked by a blend of ambition, controversy and societal impact. From the imperialistic endeavors of the East India Company to modern-day conglomerates like Reliance Industries and Tata Group, the Adani Group's story unfolds against a backdrop of familiar motifs, albeit with its own unique twists and turns. Moreover, as we scrutinize the Adani Group's trajectory, we are compelled to juxtapose it against the backdrop of contemporary corporate behemoths – productized service companies and new tech giants. While their modus operandi may differ, a common thread binds them all: the relentless pursuit of growth, often at the expense of societal and environmental considerations (Norman & MacDonald, 2004). In this context, the Adani Group serves as a poignant case study, emblematic of the broader tensions between corporate ambitions and societal well-being.

However, beyond the corporate facade lies a deeper narrative: that of the individual self in a society grappling with the relentless pursuit of breaking the ceiling. The Adani Group's ascent reflects not only corporate triumph but also the aspirations and struggles of individuals navigating the complex tapestry of societal expectations and economic imperatives. It is within this interplay of individual agency and societal structures that the true essence of the Adani experience unfolds, offering valuable insights into the intricate interdependencies between business, society and the individual. As we embark on this exploration of business-society relationships through the lens of the Adani Group, we are confronted not only with questions of corporate governance and environmental stewardship but also with deeper inquiries into the very fabric of our societal ethos. Through rigorous analysis and critical reflection, this study seeks to unravel the layers of complexity surrounding the Adani Group's growth story, offering nuanced perspectives on the evolving dynamics of business-society relationships in the contemporary world.

2. Review of Literature

Large multinational conglomerates wield significant influence over global economies; however, their operations often have profound implications for societal economic inequality (Bapuji et al., 2020). A plethora of scholarly literature has delved into the multifaceted dimensions of this relationship, shedding light on the mechanisms through which these conglomerates create, appropriate, and distribute value and the ethical considerations inherent in their actions. Bapuji et al. (2018) conducted a comprehensive analysis of how large firms contribute to societal economic inequality through their value creation, appropriation, and distribution strategies. Their study underscores the complex interplay between corporate actions and societal outcomes, revealing the ethical dilemmas inherent in the pursuit of profit maximization. Building on this discussion, Bowman and Ambrosini (2010) offer insights into the nuanced ways in which value is created, captured, and sometimes destroyed in conglomerates. By examining case studies and empirical evidence, the authors provide a deeper understanding of the dynamics shaping value appropriation within these organizations. Freeman (2010) advocates a stakeholder approach to strategic management, emphasizing the importance of considering the interests of all stakeholders, not just shareholders. This perspective challenges the traditional notion of maximizing shareholder value and underscores the need for corporations to adopt a more inclusive approach to governance.

Further contributing to the discourse on corporate governance, Lazonick and O' Sullivan (2000) examined the ideology of maximizing shareholder value (Khurana & Nohria, 2008). and its implications for societal and economic inequality. Their analysis highlights the role of corporate governance mechanisms in mitigating or exacerbating inequality (Neckerman & Torche, 2007), highlighting the need for regulatory reforms. In their study on corporations and NGOs, Baur and Schmitz (2012) explore the phenomenon of co-optation, where accountability mechanisms designed to promote social responsibility (Coase, 1960) inadvertently lead to the alignment of NGOs' agendas with corporate interests. This raises concerns about the authenticity of corporate social initiatives and underscores the importance of maintaining independent oversight of these initiatives.

French and Grey (1996) called for a re-evaluation of management education, advocating critical reflection on the ethical dimensions of managerial practices. Similarly, Grey (2004) emphasizes the need to reinvent business schools to address the societal implications of managerial decisions and actions. George et al. (2012) highlight innovation as a potential driver of inclusive growth. However, they caution that without proper governance mechanisms, innovation may exacerbate existing inequalities, rather than alleviate them. Tsoukas (1994) offers an outline of a metatheory of management, delving into the philosophical foundations of the discipline. His work provides a theoretical framework for understanding the societal impact of managerial decisions and actions.

In conclusion, the literature underscores the complex relationship between large multinational conglomerates and societal and economic inequality (Piketty, 2014). Understanding the ethical implications of corporate behavior is crucial for fostering sustainable development and promoting social justice in the corporate world. By incorporating stakeholder perspectives, rethinking management education, and embracing sustainable business practices, conglomerates can contribute positively to society's welfare and economic stability. However, further research is needed to explore the intricate dynamics between corporate actions, individual agency, and societal outcomes in greater depth.

3. Research Objectives

The meteoric rise of the Adani Group within India's corporate landscape represents a fascinating narrative of growth, ambition, and societal impact. From its humble beginnings as a commodities trading firm in the late 1980s, the group has evolved into a sprawling conglomerate with interests spanning sectors such as energy, infrastructure, logistics, and mining. Led by its founder, Gautam Adani, the conglomerate has capitalized on India's economic liberalization and infrastructure boom to become one of the country's largest and most influential business entities in the country. Amid its rapid expansion, the Adani Group has attracted both admiration and scrutiny for its business practices and societal implications. As it continues to expand its footprint, questions have emerged regarding the group's approach to environmental sustainability, labor rights, community engagement, and corporate governance. The dynamics between a group's corporate actions, individual agency, and societal outcomes serve as a focal point for understanding the broader interplay between large conglomerates and the societies in which they operate. The following are the focuses of this study:

1. Explore the complex interactions between corporate decisions, individual agency, and societal impacts.
2. Assess the Adani Group's accountability and societal responsibilities.

4. Data and Research Methodology

This research draws primarily from secondary sources to unravel the intricate dynamics surrounding the Adani Group, focusing on the Thakurta-Adani Saga and the extensive Hindenburg Report (Kumar and Mishra, 2023). The Hindenburg Report, a culmination of a two-year investigation, exposes alleged stock manipulation and accounting fraud within the colossal INR 17.8 trillion Adani Group. It unveils a mosaic of financial intricacies, shedding light on heavy debt loads, familial control over financial decisions, and the purported creation of offshore entities for potential money laundering and market manipulation. Furthermore, it reveals a convoluted network of offshore shell entities linked to Adani, raising concerns about undisclosed transactions and potential violations of the Indian disclosure laws. These revelations not only question the financial probity of Adani but also raise doubts about the adequacy of the existing regulations (Hindenburg Research, 2023).

The present study primarily involved gathering information from diverse secondary sources, including news reports, civil society assessments, and governmental documents. Two critical data sources are the Adani Files, curated by an Australian Civil Society Organization, and a series of documents tabled by the Bob Brown Foundation in the Queensland Parliament in October 2020, which levied allegations against the Adani Group. By synthesizing reports sourced from secondary literature, this study offers a thorough comprehension of the Adani Group's business practices and their consequential societal impact. The research methodology and design adopted was a single comparative case design (Eisenhardt, 1989; Yin, 2012). Additionally, this study utilized counterfactual data to contextualize the findings. By comparing the Adani Group with other corporate giants, such as the Reliance Group and Tata Group, known for their histories of societal conflicts and allegations, this study aims to explore the broader patterns and dilemmas inherent in business pursuits. This comparative analysis seeks to illuminate the moral dilemmas faced by businesses regarding socio-ecological responsibility.

5. Results and Discussion

The Adani Group, a prominent business firm based in Ahmedabad, India, has witnessed extraordinary financial success over the past decade, particularly in the last year. Despite its financial prowess, the group has become embroiled in controversies stemming from negative media coverage, allegations from civil society organizations, and protests by farmer groups both domestically and internationally, particularly in Australia. This dual narrative of financial success and growing scrutiny underscores the complexity of the Adani Group's trajectory.

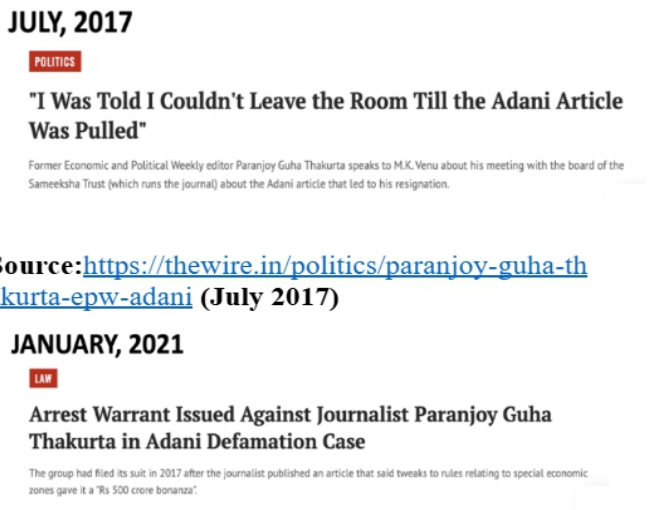
5.1 Genesis and Background: The Thakurta-Adani Saga

The meteoric rise of the Adani Group in the corporate realm has not only attracted attention due to its staggering financial success but has also ignited extensive debates surrounding the complex interplay between corporate triumph, societal equity, and environmental

stewardship. Over the past decade, this conglomerate has experienced exponential growth, especially in recent years, which has thrust it into the spotlight and raised profound ethical questions about its responsibilities towards society and the environment (Ramesh, 2015; Wani, 2023).

One pivotal episode in this ongoing narrative is the Thakurta-Adani Saga, an incident that unfolded in India beginning in July 2017 (Thakurta and Malik, 2016). Paranjoy Guha Thakurta, a distinguished researcher and journalist, found himself embroiled in controversy following his confinement and alleged coercion to retract an article detailing the Adani Group's purported tax evasion published in the Economic and Political Weekly (EPW). The saga continued, marked by an arrest warrant issued against Thakurta in January 2021 in connection with a defamation case initiated by the Adani Group (https://thewire.in/law/journalist-paranjoy-guha-thakurta-arrest-warrant-adani-defamation-case). However, this confrontation extends beyond a mere clash between a civil rights advocate advocating for socio-ecological preservation and a corporate entity pursuing financial growth. It embodies a broader and more intricate theoretical debate concerning the ethical dimensions of business conduct, especially regarding the intricate web of connections between political and bureaucratic affiliations and corporate expansion.

Figure 1. The Thakurta-Adani Saga



Source:https://thewire.in/law/journalist-paranjoy-guha-thakurta-arrest-warrant-adani-defamation-case

(January 2021)

The Thakurta-Adani Saga, illustrated in Figure 1, stands as a pivotal moment exposing purported discrepancies within the Adani Group. This saga, rife with confrontations and legal skirmishes, unveils the intricate tensions between investigative journalism's pursuit, the realm of freedom of expression, and the power dynamics inherent in corporate entities. It plunges deep into the ethical labyrinth that shapes contemporary corporate conduct. This clash between Adani and Guha encapsulates a broader narrative, resonating with the conflict between corporate ascendancy and the imperative of social responsibility. This highlights the fundamental ethical inquiries underpinning the notion of business success in the modern landscape.

Figure 2. The Exponential Growth Story of Adani

(Source: https://www.bloombergquint.com/markets/a-51-billion-wealth-surge-heralds-rise-of-india-s-next-ambani)

5.2 The Ascent of Adani Group

The Adani Group's ascent, depicted vividly in Figure 2, is deeply intertwined with its affiliations with political entities and the favourable policies it leverages to its advantage. Particularly noteworthy is the conspicuous surge witnessed during Narendra Modi's tenure as Chief Minister of Gujarat, which further accelerated as Modi ascended to the Prime Ministerial role. This symbiotic relationship signifies a confluence where governmental support has paved the way for the Adani Group's success through various advantages, such as access to inexpensive land, potential tax benefits, and perceived leniency toward addressing societal and environmental apprehensions (Oxford Analytica, 2023; Jaffrelot, 2019). The conglomerate's exponential growth during these political tenures underscores a significant interdependence between corporate entities and the political landscape. This interplay raises legitimate concerns about preferential treatment, perceived regulatory leniency, and the ethical implications of such relationships. The correlation between the Adani Group's expansion and the tenure of influential political figures has sparked discussions about the underlying motives of policies favoring corporate entities and the potential trade-offs in societal and environmental welfare.

5.3 Ethical Dimensions and Societal Implications

At its core, the Thakurta-Adani Saga encapsulates critical ethical quandaries in business operations, shedding light on the potential vulnerabilities in the nexus between corporate power and political influence. This provokes contemplation of the ethical boundaries of journalistic freedom, corporate intimidation, and the responsibilities of conglomerates towards transparency and accountability. Moreover, the saga's resonance extends beyond the immediate confrontation,

sparking broader societal discussions about the balance between corporate interests and societal well-being. This prompts inquiries into the ethical underpinnings of corporate practices, accountability mechanisms for powerful entities, and the need for regulatory frameworks that prioritize both economic growth and societal welfare.

The Thakurta-Adani Saga serves as a microcosm of the broader debates surrounding corporate conduct, societal obligations, and environmental stewardship. It highlights the intricate relationship between corporate entities and political establishments, raising questions about the ethical implications of such alliances and their repercussions on governance, transparency, and public interest. This narrative underscores the imperative for a robust ethical framework that ensures corporate accountability, promotes transparency, and safeguards societal and environmental interests. This urges a re-examination of the ethical dimensions inherent in business practices, emphasizing the need for a harmonious balance between corporate success and societal welfare. Examining the Adani Group's growth within the theoretical framework of state-market-civil society synergism reveals tensions between business pursuits and socio-ecological responsibility (Thynne and Peters, 2015). Despite the group's economic success, questions have arisen regarding its contribution to societal welfare and environmental sustainability. Business decisions often prioritize wealth accumulation over broader social and ecological concerns, as evidenced by skewed compensation mechanisms and limited corporate philanthropy.

5.4 Allegations of Societal and Environmental Destruction

The Adani Group faces numerous allegations of societal and environmental harm both domestically and internationally. From accusations of land acquisition controversies in India to environmental degradation associated with coal mining projects in Australia, the group's operations have stirred widespread concerns and opposition. The Adani Group faces a mounting wave of societal allegations and environmental concerns, expanding far beyond the solitary protestations of Paranjoy Guha Thakurtha. Accusations span continents, from Mudra Port in India's west to Jharkhand in the east, and globally, focusing on environmental repercussions, particularly in Australia, where their coal mining operations have impacted coral reefs (Rupić, 2020). Drawing primarily from secondary sources such as news reports, civil society assessments, governmental documents, and stakeholder interviews, this case interweaves the Thakurta-Adani Saga with the extensive Hindenburg Report. This report, a culmination of a two-year investigation, reveals alleged stock manipulation and accounting fraud within the colossal INR 17.8 trillion Adani Group. The Hindenburg Report paints a mosaic of financial intricacies, highlighting the heavy debt loads of key Adani companies, familial control over financial decisions, and purported creation of offshore entities for potential money laundering and market manipulation. It exposes a convoluted network of offshore shell entities linked to Adani, raising questions about undisclosed transactions and potential violations of the Indian disclosure laws. These revelations question not only the financial probity of Adani but also the adequacy of existing regulations. The report highlights the suppression of criticism through legal threats and government influence, stifling open dialogue. It culminated in 88 pointed questions, challenging Adani's professed transparency and inviting a comprehensive response (Hindenburg Research, 2023).

5.5 Counterfactual Analysis and Moral Dilemmas

The presence of societal allegations and environmental controversies is not unique to the Adani Group but is rather a common occurrence among many large corporations, especially family-run (Carney & Nason, 2018). For instance, if we scrutinize the histories of other corporate giants, such as the Reliance Group and the Tata Group, similar instances of societal conflicts and allegations emerge (Raianu, 2021; Hirway, 2022; Jhunjhunwala, 2020). The Reliance Group faced scrutiny in the infamous Reliance Krishna-Godavari Basin Case (Ranjan, 2014; Dutta, Kumar, Bhardwaj, and Sinha, 2020), while the Tata Group was embroiled in controversies such as the Tata-Singur incident and the 2G scam involving the Neera-Radia Tapes (Prakash, Joseph, and Frederick, (2011); Manikutti (2016)). While conclusive evidence may be lacking in some cases, these examples underscore the reality that major corporations often have skeletons in their closets, revealing that their ascent to prominence may not always be entirely pristine. This observation raises a pertinent moral dilemma regarding the accountability and responsibility of businesses towards society and the environment. Why are certain companies singled out for criticism, while others seemingly evade scrutiny? While some corporations, such as the Adani Group, British Petroleum, and Reliance, may be labelled as "Hard-Killers" due to their direct impact on society and the environment, others like Facebook and Google (the “Soft-Killers”), often perceived as harmless, also exert influence that can indirectly harm both societal equality and ecological balance (Zuboff, 2019). This prompts a broader reflection on the ethical dimensions of business pursuits and their implications for the collective well-being of humans. Moreover, this practice of accumulating and pursuing wealth is not confined to the realm of business alone but extends to individuals as well. In contemporary society, the accumulation of wealth beyond one's needs has become normalized, irrespective of whether it is achieved through corporate endeavours or individual pursuits. This normalization perpetuates a cycle of materialism and consumption that prioritizes personal gain over societal welfare and environmental sustainability. In essence, the presence of societal allegations, environmental controversies, and moral dilemmas surrounding corporate entities like the Adani Group underscores the need to reevaluate business practices and their broader societal implications. This prompts a critical examination of the values and priorities that guide corporate conduct and individual behaviour, dvocating for a more conscientious approach to wealth accumulation and resource

utilization for the collective benefit of society and the planet.

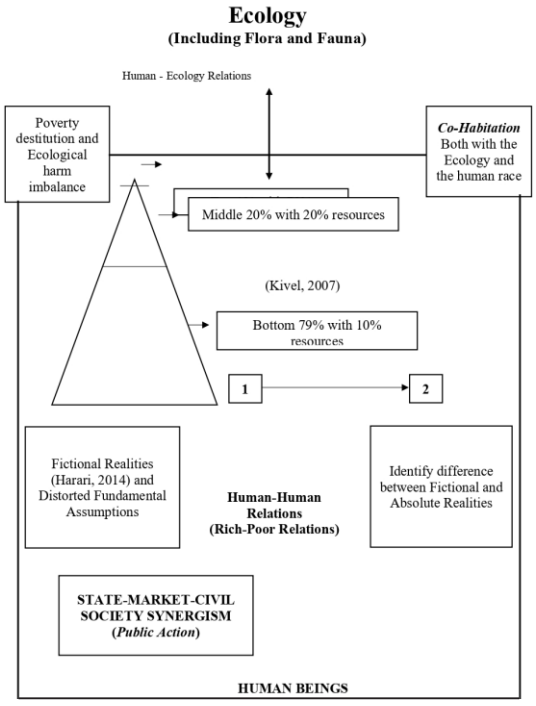
5.6 Decision Points in Corporate Ethics: Insights from the Adani Case

The Adani Group's trajectory offers profound insights into the intricate dynamics between corporate actions, individual agency, and societal outcomes, providing a compelling case study. The Adani case serves as a focal point for examining the tension between corporate responsibility and profit maximization. This prompts a re-evaluation of traditional success metrics, urging a shift towards a more comprehensive definition that considers societal and environmental impacts alongside financial gains. This study highlights the need for corporations to balance profit motives and ethical obligations to ensure sustainable outcomes for all stakeholders. An analysis of the Adani Group's relationship with political entities unveils the ethical complexities inherent in government-business alliances. This case underscores the importance of transparent and accountable governance practices to mitigate conflicts of interest and safeguard societal welfare. Discussions center on the role of governments in fostering economic growth while upholding ethical standards and environmental stewardship, especially in the context of large-scale corporate endeavors (Schumacher, 2011). The Adani case catalyzes discussions on the need for a paradigm shift in management approaches, moving towards equitable resource distribution and holistic societal impact assessment. This underscores the challenges inherent in transitioning from accumulation-driven models to more inclusive frameworks that prioritize societal well-being alongside financial objectives. This examination prompts reflection on organizational restructuring and the adoption of responsible business practices to address evolving societal expectations. By scrutinizing the Adani Group's journey, valuable lessons emerge for other corporations navigating ethical dilemmas and striving toward sustainable growth. Insights gleaned from Adani's experiences inform strategic decision-making processes and underscore the importance of upholding societal responsibilities. This analysis empowers firms to embed ethical considerations into their operational frameworks and foster a culture of accountability and transparency. In summary, the Adani case offers a rich tapestry for investigating the intricate dynamics between corporate actions, individual agency, and societal outcomes. This exploration provides a deeper understanding of the interplay between business conduct, stakeholder engagement, and broader societal implications. This investigation serves as a catalyst for advancing ethical business practices and promoting responsible corporate citizenship in the ever-evolving global landscape.

6. Conclusion, Limitations, and Future Directions

The Adani case serves as a poignant illustration of the ethical complexities inherent in accumulation-driven business models. Amidst the meteoric rise of the Adani Group, fuelled by exponential financial growth juxtaposed with mounting societal and environmental controversies, a critical examination of its practices unveils profound ethical quandaries. The firm's journey, marred by allegations of tax evasion, environmental degradation, and political entanglements, prompts a deeper exploration of the ethical boundaries of corporate conduct. Embedded within the Adani saga is a broader debate on the ethical stance of corporations. Should profit maximization remain the singular goal, or should companies balance it with their responsibilities towards society and the environment? This fundamental question underpins discussions on corporate responsibility and societal welfare, challenging the conventional notions of success in business. The intricate relationship between the government and business, exemplified by the Adani case, further complicates matters. The symbiotic alliance between political power and corporate interests raises questions regarding the ethical dimensions of this partnership. How can governments support business growth while ensuring societal and environmental well-being? Transitioning from accumulation-driven models to cohabitation-based paradigms (Refer to Figure 3 for a detailed understanding) represents a significant paradigm shift in management thinking. The imperative to re-evaluate priorities and adopt more sustainable approaches underscores the need for structural changes in organizations. By prioritizing resource distribution over accumulation, companies can navigate ethical dilemmas and contribute to societal equity and environmental stewardship. In conclusion, the Adani case serves as a prism through which ethical boundaries in business pursuits can be examined. By delving into debates on corporate responsibility, government-business relationships, and management paradigms, we gain insight into the complex interplay between economic interests and societal welfare. Embracing the principle of cohabitation offers a pathway towards a more equitable and sustainable future, challenging prevailing norms and advocating for a holistic approach to business conduct.

Figure 3. Understanding Management as Co-habitation and avoidance of Fictional Realities



7. Limitations

While this study offers valuable insights, it is important to acknowledge certain limitations. First, focusing on the Adani case may limit the generalizability of the findings to other contexts and corporations. Additionally, reliance on secondary data sources may pose challenges in comprehensively capturing the nuances of a case. Furthermore, the dynamic nature of business landscapes and evolving ethical considerations warrant ongoing research and adaptability to emerging trends and developments in the field.

8. Future Research

Future research could explore several avenues to deepen our understanding of ethical dilemmas in business pursuits. Firstly, comparative analyses across industries and geographical contexts could provide broader insights into the commonalities and variations in the ethical challenges faced by corporations. Longitudinal studies tracking the evolution of ethical frameworks and practices within organizations could offer valuable insights into the effectiveness of ethical interventions over time. Furthermore, interdisciplinary approaches that integrate perspectives from philosophy, sociology, and psychology could enrich our understanding of the underlying motivations and decision-making processes that drive ethical behavior in business contexts. Overall, continued exploration of ethical boundaries in business is essential for fostering responsible corporate citizenship and promoting sustainable societal and environmental results.

Declaration of Conflicting Interests

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References

Aakhus, M., & Bzdak, M. (2012). Revisiting the role of" shared value" in the business-society relationship. Business & Professional Ethics Journal, 231-246.

Bapuji, H., Ertug, G., & Shaw, J. (D., 2020). Organizations and societal economic inequality: A review and way forward. Academy of Management Annals, 14(1), 60-91.

Bapuji, H., Husted, B. W., Lu, J., & Mir, R. (2018). Value creation, appropriation, and distribution:

How firms contribute to societal economic inequality. Business & Society, 57(6), 983-1009.

Baur, D., & Schmitz, H. (P. (2012). Corporations and NGOs: When accountability leads to co-optation. Journal of Business Ethics, 106(1), 9-21.

Bhaskar, R. N. (2022). Gautam Adani: Reimagining Business in India and the World. Penguin Random House India Private Limited.

Bowman, C., Ambrosini, V. (2010). How value is created, captured, and destroyed. European Business Review.

Carney, M., & Nason, R. (S., 2018). Family businesses and the 1%. Business & Society, 57(6), 1191-1215.

Caves, R. E. (1996). Multinational Enterprises and Economic Analysis. Cambridge University Press.

Coase, R. H. (1960). The problem of social costs. In the Classic papers in natural resource economics (pp. 87-137). Palgrave Macmillan, London.

Dunning, J. H. (1993). Multinational Enterprises and the Global Economy. Workingham, England.

Dutta J., Kumar A., Bhardwaj N., Sinha N. (2020). Fault-related overpressure in the Krishna-Godavari Basin, India. Interpretation, 8(1), T183-T193.

Eisenhardt, K. M. (1989). Building theories from case study research. Academy of Management Review, 14(4), 532-550.

Freeman, R. E. (2010). Strategic management: A stakeholder approach. Cambridge University Press.

French, R., & Grey, C. (1996). Rethinking Management Education. Sage Publications, 2455 Teller Road, Thousand Oaks, CA 91320-2218 (hardcover: ISBN-0-8039-7782-4; paperback: ISBN-0-8039-7783-2, stock No. 4038; $

George, G., McGahan, A. M., & Prabhu, J. (2012). Innovation for inclusive growth: Towards a theoretical framework and a research agenda. Journal of Management Studies, 49(4), 661-683.

Grey, C. (2004). Reinventing business schools: The contribution of critical management education. Academy of Management Learning & Education, 3(2), 178- 186.

Harari, Y. N. (2014). Sapiens. A Brief History of Humankind, Yuval Noah Harari.

Hirway, A. Legal aspects of environmental impact assessment: A comparative study of India and the European Union.

Jaffrelot, C. (2019). Business-Friendly Gujarat Under Narendra Modi. Business and Politics in India, 211-233.

Jhunjhunwala S. (2020). Tata Sons and the Mystery of Mistry. Vikalpa, 45(3), 170-182. https://doi.org/10.1177/0256090920965420

Khurana, R., & Nohria, N. (2008). It is time to make management a true profession. Harvard Business Review, 86(10), 70-77.

Kivel, P. (2007). Social services or social change. Incite, 129-149.

Kumar, D., & Mishra, A. K. (2023). The Adani-Hindenburg Saga: A Case Study. South Asian Journal of Management, 30(1), 187-196.

Lawrence, A. T., & Weber, J. (2020). Business and Society: Stakeholders, Ethics, Public Policy. McGraw-Hill.

Lazonick, W., & O'sullivan, M. (2000). Maximizing shareholder value: A new ideology for corporate governance. Economy and society, 29(1), 13-35.

Manikutty, S. (2016). IIMA-Being Ethical: Ethics as the Foundation of Business. Random House India.

Moon, J. (2005). An explicit model of business-society relations. Corporate social responsibility across Europe, 51-66.

Neckerman, K. M., & Torche, F. (2007). Inequality: Causes and Consequences. Annual Review Sociology, 33, 335-357.

Norman, W., & MacDonald, C. (2004). Getting to the bottom of the "triple bottom line." Business ethics quarterly, 14(2), 243-262.

Oxford Analytica. (2023). The Modi government will ride out the Adani Group controversy. Emerald Expert Briefings, (oxan-db).

Piketty, T. (2014). Capital in the Twenty-First Century: A multidimensional approach to the history of capital and social classes. The British journal of sociology, 65(4), 736-747.

Prakash, J., Joseph, S. T., & Frederick, A. J. (2011). Political Risk Faced by Indian Industry: Its Repercussions and Ways of Minimizing It. Amity Management Review, 2(1),

Preston, L. E. (1975). Corporation and society: The search for a paradigm. Journal of Economic Literature, 434- 453.

Raianu, M. (2021). Tata: The Global Corporation that Built Indian Capitalism. Harvard University Press.

Ramesh, J. (2015). Green signals: Ecology, growth and democracy in India. Oxford University Press.

Ranjan, R. (2014). Energy and Environment Policy (EEP) Term Paper on Resource Allocation, Dependence, Power and Politics: RIL & the Krishna-Godavari (KG) Basin case. A Compendium of Prior Works, Preliminary Research Proposal, and Portfolio Questions, 186.

Report, H. (2023). Adani Group: How The World's 3rd Richest Man Is Pulling the Largest Con in Corporate History. Hindenburg Research.

Rupić, M. C. (2020). # StopAdani: The Landscape of Environmental Activism in Australia (Doctoral dissertation, University of Hawai'i at Manoa).

Sachs, J. D. (2012). From Millennium Development Goals to Sustainable Development Goals. The Lancet, 379(9832), 2206-2211.

Schumacher, E. F. (2011). Small is beautiful: A study of economics as if people mattered. Random House.

Thakurta, P. G., & Malik, A. (2016). How Over-invoicing of Imported Coal Increased Power Tariffs: A₹ 29,000 Crore Scam. Economic and Political Weekly, 12-15.

Thynne, I., & Peters, B. G. (2015). Addressing the present and the future in government and governance: Three approaches to organizing public action. Public Administration and Development, 35(2), 73-85.

Tsoukas, H. (1994). What is management? An outline of the metatheory. British journal of management, 5(4), 289-301.

Wani, A. A. (2023). Mapping the "Indian plutonomy": The political economy of the rise and growth of the superrich in India. India Review, 22(4), 361-396. Yin, R. K. (2012). Case study methods.

Zuboff, S. (2019). The Age of Surveillance Capitalism: The fight for a Human Future at the New Frontier of Power, Barack Obama's 2019 book. Profile books.

Blockchain-Driven Carbon Markets: Revolutionizing Real-Time Verification and Transparent Trading for Sustainable Emission Reductions

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Abstract

Blockchain technology, with its decentralized, immutable, and transparent nature, offers a promising solution to address these challenges. By using blockchain, carbon credits can be tokenized, creating a real-time, digital record of every transaction. This allows for greater transparency and accountability in carbon credit issuance, verification, and trading. This study explores how blockchain technology and cryptocurrency can facilitate real-time verification of carbon credits and create a transparent, efficient, and trustworthy carbon credit marketplace. By utilizing blockchain's capabilities for real-time tracking, smart contracts, and tokenization, it becomes possible to improve the speed, reliability, and accessibility of carbon credit systems. This innovation can not only help incentivize companies and governments to meet their emission reduction targets but also contribute to a more sustainable and equitable global effort to tackle climate change. The Study finds that blockchain-driven carbon markets can be effectively implemented and scaled and there is a pressing need for harmonized legal standards and compliance mechanisms. Governments and international organizations must work together to establish regulatory frameworks that recognize digital carbon assets and ensure their alignment with broader environmental and climate policy goals

Keywords: Blockchain, Carbon Emission, Sustainable, Climate, Carbon Credit

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1. Introduction

The global effort to combat climate change has led to the emergence of carbon markets, where companies and governments can trade carbon credits to offset their greenhouse gas (GHG) emissions Blumberg, Sibilla (2023). These carbon credits are essentially a form of compensation for emissions reductions, typically achieved through environmental projects such as reforestation, renewable energy installations, or carbon capture technologies. However, despite the growing importance of carbon markets, the system faces significant challenges that hinder its effectiveness, including issues of transparency, fraud, inefficiency in verification processes, and limited accessibility for smaller stakeholders Fang, Tian et.al.(2018).

Traditional carbon credit systems often rely on centralized verification processes that can be slow, opaque, and prone to errors or inconsistencies Calel (2013). As a result, businesses may struggle to verify the legitimacy of the credits they purchase, which undermines trust in the carbon offset market. Moreover, these systems frequently involve multiple intermediaries, leading to higher costs, delayed settlements, and limited participation, particularly from smaller businesses or individuals. Furthermore, in many cases, carbon credit projects may be difficult to monitor in real-time, creating gaps in reporting and accountability. The decentralized ledger ensures that each carbon credit is securely tracked, preventing fraud and double counting, while also making the market more accessible to a wider range of participants.

The integration of blockchain into carbon markets is not just a technological advancement; it represents a fundamental shift in how we think about carbon offsetting. This research will examine the potential benefits, challenges, and implications of blockchain technology in transforming the landscape of carbon credit trading, ultimately contributing to a more efficient, transparent, and scalable approach to addressing climate change. Yun-Cheng Tsai (2025) proposed a blockchain-based data visualization framework aimed at improving transparency and detecting fraudulent activities in carbon credit markets. This framework integrates real-time decision support tools, enabling managers to monitor carbon offset activities and streamline operations.

2. Literature Review:

Eckert et al. (2019) presented a design for a user-centric Emission Trading System (ETS) implemented as a carbon Blockchain framework for Smart Mobility Data-market (cBSMD). The system allows seamless transactions of token-equivalent GHG emissions during travel, promoting accountability and efficiency in emission monitoring and trading. Rawat et al. (2022) proposed a decentralized framework leveraging blockchain for carbon accounting, trading, and governance. Their study highlighted how blockchain's immutable ledger could ensure accurate carbon accounting, facilitate peer-to-peer trading of carbon credits, and enhance governance through transparent record-keeping. The authors underscored the framework's potential to streamline operations and reduce fraud in carbon markets

Sadawi et al. (2021) explored the role of blockchain in enhancing carbon credit market transparency by providing a secure, transparent, and traceable platform for transactions. The study highlights the potential of blockchain to improve market inclusivity, enabling smaller players to engage in carbon credit trading. However, it also notes challenges including technological, regulatory, and scalability concerns. Pan et al. (2019) explored the similarities between carbon trading mechanisms and blockchain technology. They proposed that blockchain could facilitate peer-to-peer transactions between suppliers and demanders, achieving decentralization and reducing entry barriers in the carbon trading market. Their analysis emphasized the potential of blockchain to record and transfer information reliably, thereby enhancing market efficiency. Vladucu et al. (2024) conducted a survey on the application of blockchain in environmental sustainability, classifying its use in areas such as greenhouse gas emissions, solid waste, and water management. The study highlights blockchain's role in providing verifiable and unbiased monitoring of environmental practices.

Richardson and Xu (2020) presented a model for a blockchain implementation based on the European Union Emissions Trading System (EU ETS). They discussed how such a system could improve interconnectedness, transparency, and tamper-resistance in carbon trading. The study also identified challenges to implementation, including scalability and regulatory compliance. Saraji and Borowczak (2021) proposed creating a carbon credit ecosystem using smart contracts in conjunction with blockchain technology. Their approach aimed to bring more transparency, accessibility, liquidity, and standardization to carbon markets. The ecosystem included mechanisms for tokenizing carbon credits, automating market making, and engaging various stakeholders. Abiodun et al. (2022) conducted a systematic review of blockchain applications in carbon trading. They highlighted the challenges of centralized management in traditional systems, such as lack of transparency and inefficiencies. The study underscored blockchain's potential to offer a decentralized, secure, and tamper-proof system, addressing these challenges effectively. Sharma and Singh (2023) examined how blockchain technology could enhance the carbon credit economy. They discussed the historical context of carbon credit trading and proposed that blockchain could address issues like fraud and lack of transparency, thereby boosting market credibility and efficiency. Jaffer et al. (2024) proposed a digital methodology combining remote sensing data, modern econometric techniques, and on-chain certification to create a new digital carbon asset. Their approach aims to bring scale and trust to the voluntary carbon market by providing a transparent, scalable, and efficient framework for high-integrity carbon credit transactions

3. Research Questions

- How can blockchain technology enhance the transparency and efficiency of carbon markets?
- What are the key challenges in implementing blockchain for real-time carbon credit verification?
- How does blockchain impact the credibility and security of carbon trading?
- What role do smart contracts play in automating carbon credit transactions?
- How does blockchain compare with traditional carbon trading systems in terms of cost, security, and accessibility?

4. Research Objectives

1. To analyze the role of blockchain in ensuring transparent, secure, and tamper-proof carbon trading.
2. To assess the effectiveness of smart contracts in enabling real-time verification and transactions.
3. To identify regulatory and technical challenges associated with blockchain-based carbon markets.
4. To compare blockchain-enabled carbon markets with traditional emission trading systems.
5. To propose a framework for integrating blockchain into existing carbon credit mechanism

5. Research Methodology

UNFCCC carbon market reports

Accuracy and openness are critical components of The Carbon/Hemp Blockchain, Inc. (TCB) TCB's operations. To guarantee the highest level of legitimacy for our carbon removal efforts, we have integrated blockchain technology with a strict Measurement, Reporting, and Verification (MRV) methodology. We ensure integrity and confidence in our actions by offering stakeholders a transparent and safe platform that allows them to track and validate the complete carbon removal process using blockchain technology.

The results of the information note seem to depart from the Intergovernmental Panel on Climate Change's (IPCC) existing accounting guidelines, which mean they ignore the pressing need for gigatonne-scale CDR in the next decades.

In closing, TCB conveys its sincere gratitude for the chance to give feedback and believes that our submission, which highlights the variety of CDR paths and the socioeconomic advantages they bring, will support the Supervisory Body's further work. We are unwavering in our resolve to develop sustainable solutions and promote large-scale, meaningful carbon reduction. The United Nations Framework Convention on Climate Change (UNFCCC) has explored the potential of blockchain technology to enhance carbon markets and support climate action. Blockchain's decentralized and transparent nature offers promising applications in tracking and verifying carbon credits, thereby improving the efficiency and integrity of carbon trading systems.

5.1 Key Insights from UNFCCC Reports on Blockchain and Carbon Markets:

1. **Enhanced Transparency and Trust:** Blockchain can provide an immutable ledger for recording carbon credit transactions, ensuring transparency and reducing the risk of double counting. This fosters trust among stakeholders by offering verifiable and tamper-proof records of emissions reductions.
2. **Improved Monitoring, Reporting, and Verification (MRV):** Integrating blockchain with technologies like the Internet of Things (IoT) and satellite monitoring can streamline MRV processes. Real-time data collection and automated reporting can enhance the accuracy and efficiency of tracking emissions reductions.
3. **Facilitated Peer-to-Peer Energy Trading:** Blockchain enables decentralized platforms where individuals and organizations can trade renewable energy credits directly. This can promote the adoption of clean energy solutions and democratize participation in carbon markets.
4. **Development of Global Carbon Market Infrastructure:** Initiatives like the Climate Warehouse aim to create a global public meta-data layer for carbon markets using blockchain. This infrastructure seeks to connect various carbon credit registries, enhancing interoperability and data transparency across jurisdictions.
5. **Support for Climate Finance Mobilization:** Blockchain can facilitate crowd funding and peer-to-peer financial transactions for climate projects, ensuring that funds are transparently allocated and utilized. This can help mobilize resources for mitigation and adaptation initiatives, particularly in developing countries.

While blockchain presents significant opportunities, the UNFCCC also acknowledges challenges such as regulatory uncertainties, the need for standardization, and concerns about the environmental impact of blockchain operations. Addressing these challenges is crucial for the effective integration of blockchain technology into carbon markets.

5.2 World Bank's State and Trends of Carbon Pricing

This is the ninth annual study on carbon pricing from the World Bank, which has been monitoring carbon markets for around 20 years. Only 7% of global emissions were covered by carbon taxes and Emission Trading Systems (ETS) at the time of the first report's publication. The 2024 study states that 24% of world emissions are currently covered.

The World Bank Group's institutions are all helping to achieve this goal, but more has to be done. Together, IBRD and IDA provided $31 billion in climate funding in FY24, with $10.3 billion going directly towards adaptation and resilience measures. The World Bank Group's private sector division, IFC, provided $9.1 billion in long-term climate funding. $2.5 billion in climate funding was provided by MIGA, the World Bank Group's credit enhancement and political risk insurance division.

The World Bank's "State and Trends of Carbon Pricing" reports provide comprehensive analyses of global carbon pricing mechanisms, including carbon taxes and Emissions Trading Systems (ETS). While these reports primarily focus on the implementation and impact of these instruments, they also acknowledge the role of innovative technologies, such as blockchain, in enhancing carbon market operations.

Key Insights from the Reports:

1. **Growth in Carbon Pricing Instruments:** As of 2024, there are 75 carbon pricing instruments in operation globally, covering approximately 24% of global greenhouse gas emissions. This marks a significant increase from a decade ago when only 7% of emissions were covered
2. **Record High Revenues:** In 2023, revenues from carbon pricing reached a record $104 billion, up from $95 billion in 2022. Despite this growth, the reports highlight that current carbon prices are still below the levels needed to meet the Paris Agreement targets.
3. **Emerging Economies' Participation:** Countries such as Brazil, India, Chile, Colombia, and Turkey are making notable progress toward implementing ETSs. Additionally, nations like China, Vietnam, Thailand, and Singapore are incorporating carbon crediting frameworks into their policy mixes, supporting domestic pricing instruments and extending carbon price signals to uncovered sectors.
4. **Technological Innovations:** The reports recognize the potential of new technologies and governance frameworks in shaping carbon markets. While specific mentions of blockchain are limited, the integration of such technologies is seen as a means to enhance the efficiency and transparency of carbon pricing mechanisms

5.3 Blockchain projects in carbon trading

1. Toucan Protocol

Early in 2020, Toucan developed a prototype climate action system for the Ethereum network, on Polygon They spent nine months at Deep Science Ventures after winning the Blockchain for Social Impact Incubator's carbon footprint track. It is establishing market infrastructure to help expand the carbon removal space with efficiency, integrity and speed. They have transparency in credit origin and retirement and are easily integrated with DeFi projects like KlimaDAO. Toucan has launched a plant themed NFT in August 2024, for the first time, the set of NFTs with a plant theme combines generative art with verified carbon reduction credits, making it available to the general public

2. KlimaDAO

KlimaDAO operates independently, functioning as a market maker for environmental commodities and operating autonomously. KlimaDAO is decentralized; the DAO ecosystem and community decide how the protocol develops. KlimaDAO's history, present, and future are transparent and reliable for all parties involved. The voluntary carbon market is changing as a result of a recent surge of innovation. Blockchain technology, in conjunction with new frameworks and legislation, is promoting increased efficiency, transparency, and trust. This change is crucial because if mankind is to reach its climate objectives, the VCM has to grow tenfold in the upcoming years. Making the whole carbon market infrastructure

5.4 Indian Framework on Carbon credit

The Carbon Credit Trading Scheme (CCTS) is a pivotal initiative by the Government of India aimed at establishing a structured carbon market to facilitate the reduction of greenhouse gas (GHG) emissions and promote sustainable development.

The Energy Conservation (Amendment) Act, 2022 was amended as needed to accomplish the aforementioned goals. This amendment's Clause (w) of Section 14 gives the Central Government the authority to "Specify Carbon Trading Scheme," among other things. The Energy Conservation Act modification also makes it easier for any agency chosen by the central government to issue carbon credit certificates. One tonne of CO2 equivalent (tCO2e) reduction (or removal) from the atmosphere will be represented by each certificate that is issued.

To oversee the implementation of the CCTS, the **National Steering Committee for Indian Carbon Market (NSCICM**) was established. Chaired by the Secretary of the Ministry of Power, with the Secretary of the Ministry of Environment, Forest, and Climate Change as Co-Chair, the NSCICM's responsibilities include:

- Recommending procedures for institutionalizing the Indian carbon market.
- Formulating rules and regulations for market operations.
- Setting specific GHG emission targets for obligated entities.
- Developing guidelines for trading carbon credit certificates, including international transactions.
- Monitoring the overall functioning of the carbon market.

The **Bureau of Energy Efficiency (BEE)** serves as the scheme's administrator, tasked with:

- Developing emission reduction trajectories and targets.
- Issuing carbon credit certificates based on NSCICM recommendations.
- Establishing market stability mechanisms.
- Accrediting carbon verification agencies.
- Conducting capacity-building activities for stakeholders.
- Identifying sectors with potential for GHG emission reductions.

Mechanisms under CCTS: The CCTS encompasses two primary mechanisms

1. **Compliance Mechanism:** Obligated entities are assigned specific GHG emission intensity reduction targets. Entities exceeding their targets can be issued carbon credit certificates, while those not meeting targets must purchase certificates to offset the shortfall.
2. **Offset Mechanism:** Non-obligated entities can register projects

aimed at GHG emission reduction, removal, or avoidance to earn carbon credit certificates. This encourages voluntary participation in emission reduction efforts.

6. Findings and Discussion

The integration of blockchain technology into carbon markets has the potential to revolutionize the way carbon credits are issued, verified, and traded by enhancing transparency, improving efficiency, and reducing fraud. One of the most significant benefits of blockchain is its ability to create secure, tamper-proof records that ensure complete traceability of carbon credits from issuance to retirement. This feature significantly reduces the risk of double counting and fraudulent claims, thereby building trust among stakeholders such as governments, regulatory authorities, and market participants. Moreover, the deployment of smart contracts on blockchain platforms introduces real-time verification mechanisms that automate the validation of emission reductions and the subsequent issuance of carbon credits. This reduces the need for manual intervention and minimizes delays often associated with third-party verification processes, thereby enhancing the credibility and speed of carbon transactions.

Despite these benefits, the adoption of blockchain in carbon markets is not without challenges. Regulatory uncertainty remains a major hurdle, as many jurisdictions lack comprehensive policies or legal frameworks that recognize or govern blockchain-based carbon credit systems. Additionally, the high cost of implementing secure and scalable blockchain infrastructure can deter early adoption, particularly in developing countries or small-scale projects. Scalability and environmental concerns also pose issues, especially for blockchain networks that rely on energy-intensive consensus mechanisms like Proof of Work. These technical and regulatory barriers must be addressed through cross-sector collaboration and supportive policy development. Nevertheless, the efficiency gains from blockchain integration are considerable. By eliminating the need for intermediaries such as brokers, registries, and certification agencies, blockchain facilitates direct peer-to-peer carbon trading. This not only reduces transaction costs but also enhances accessibility and participation for smaller actors, including community-based carbon offset projects. However, for blockchain-driven carbon markets to be effectively implemented and scaled there is a pressing need for harmonized legal standards and compliance mechanisms. Governments and international organizations must work together to establish regulatory frameworks that recognize digital carbon assets and ensure their alignment with broader environmental and climate policy goals. In conclusion, while the road to widespread blockchain adoption in carbon markets may be complex, the potential for innovation, efficiency, and integrity in emissions trading is immense.

7. Conclusion:

Blockchain technology holds transformative potential for global carbon markets by offering enhanced transparency, security, and operational efficiency. trading systems often suffer from a lack of trust, inefficiencies, and vulnerability to fraud or double-counting of carbon credits. Blockchain, with its decentralized ledger system, addresses these issues by providing immutable and verifiable records of carbon credit generation, ownership, and transfer. Each transaction is permanently recorded on the blockchain, ensuring accountability and enabling stakeholders to trace the origin and use of carbon credits with unprecedented clarity.

Smart contracts—self-executing agreements coded on the blockchain—further enhance this system by enabling real-time verification and automation of processes. For instance, once a specific emission reduction is independently verified, a smart contract can automatically issue a carbon credit, eliminating the need for intermediaries and significantly speeding up the process. This automation not only reduces transaction costs but also enhances trust and compliance across the supply chain of carbon trading. However, despite these advantages, the adoption of blockchain in carbon markets is not without its challenges. Regulatory uncertainty remains a significant barrier, as many governments have yet to define clear legal frameworks or standards for blockchain-based carbon credit systems. Additionally, the technological complexity of implementing blockchain solutions—along with concerns about scalability, interoperability, and in some cases, the energy consumption of certain blockchain protocols—poses hurdles that must be addressed through innovation and collaborative policy-making.

To fully realize the benefits of blockchain in carbon markets, it is essential that regulatory bodies, technology developers, and environmental organizations work together to create standards, promote interoperability, and ensure that digital carbon markets align with global sustainability goals. With these enablers in place, blockchain could serve as a powerful tool in accelerating global climate action through more credible, efficient, and transparent carbon markets.

8. Recommendations:

For blockchain-based carbon markets to gain widespread credibility and traction, it is imperative that governments and regulatory bodies establish clear and comprehensive legal frameworks. These frameworks should define the recognition, validation, and trading of tokenized carbon credits and ensures alignment with existing environmental and financial regulations. A consistent legal foundation would provide clarity to market participants, reduce uncertainty, and prevent fraudulent or unverified claims. It would also enable effective oversight, ensuring that blockchain platforms operate transparently and in compliance with global carbon accounting standards, such as those promoted by the UNFCCC and other international climate bodies.

As blockchain adoption grows, one of the key technical challenges is its ability to scale efficiently without compromising performance or increasing transaction costs. To address this, developers and project implementers should explore Layer-2 solutions, such as side chains and

rollups, which operate on top of existing blockchains to process high volumes of transactions more efficiently. Hybrid models that combine private and public blockchain features can also help balance transparency and control. These innovations are essential to ensure that blockchain platforms can accommodate growing volumes of carbon credit transactions, especially as international climate commitments and voluntary carbon markets expand.

The success of blockchain-driven carbon markets hinges on strong collaboration between multiple stakeholders, including governments, technology providers, carbon registries, NGOs, and environmental organizations. By forming strategic partnerships, these entities can pool resources, expertise, and influence to develop robust platforms that are not only technologically sound but also environmentally and socially aligned. Collaborative efforts can drive innovation, promote standardization, and ensure that blockchain tools are responsive to the real-world needs of carbon credit buyers, sellers, and verifiers.

Awareness about the benefits and functionality of blockchain in carbon trading remains limited among many key factors, including businesses, policymakers, and the general public. To bridge this gap, comprehensive educational initiatives should be launched to explain how blockchain enhances transparency, security, and traceability in environmental markets. Furthermore, governments and institutions could offer incentives—such as tax benefits, subsidies, or preferential access to carbon markets—for early adopters of blockchain-based systems. These incentives would not only encourage uptake but also accelerate innovation and scalability within the ecosystem.

The integration of blockchain with Internet of Things (IoT) sensors and Artificial Intelligence (AI) represents a major opportunity for enhancing the precision and trustworthiness of carbon credit systems. IoT devices can continuously monitor emission levels and environmental conditions in real-time, while AI algorithms can analyze this data to detect anomalies, predict trends, and validate carbon reductions. By storing this data securely on a blockchain, stakeholders can access verifiable, tamper-proof records of emissions performance. This fusion of technologies ensures more accurate, data-driven carbon credit issuance, thereby boosting market confidence and improving environmental impact assessments.

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This study does not contain any studies with human or animal subjects performed by any of the authors.

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Refrences:

Abiodun, T. P., Nwulu, N., & Olukanmi, P. (2024). Application of Blockchain Technology in Carbon Trading Market: A Systematic Review. IEEE Access.

Al Sadawi, A., Madani, B., Saboor, S., Ndiaye, M., & Abu-Lebdeh, G. (2021). A comprehensive hierarchical blockchain system for carbon emission trading utilizing blockchain of things and smart contract. Technological Forecasting and Social Change, 173, 121124.

Bureau of Energy Efficiency, Ministry of Power, GOI, available online at https://beeindia.gov.in/en/programmes/carbon-market

Carbon Credits Trading Scheme 2023, IMPR, available online at https://www.impriindia.com/insights/carbon-credits-trading-scheme-2023/#google_vignette

Chen, H. & Zhang, L. (2022) 'AI-powered MRV systems: Accuracy and efficiency in carbon leakage detection', Journal of Environmental Monitoring and Policy, 25(3), pp. 233-248.

Eckert, J., López, D., Azevedo, C. L., & Farooq, B. (2020, November). A blockchain-based user-centric emission monitoring and trading system for multi-modal mobility. In 2020 Forum on Integrated and Sustainable Transportation Systems (FISTS) (pp. 328-334)IEEE.

G. Blumberg and M. Sibilla, "A carbon accounting and trading platform for the UK construction industry", Energies, vol. 16, no. 4, pp. 1566, Feb. 2023.

G. Fang, L. Tian, M. Liu, M. Fu and M. Sun, "How to optimize the development of carbon trading in China—Enlightenment from evolution rules of the EU carbon price", Appl. Energy, vol. 211, pp. 1039-1049, Feb. 2018.

Jaffer, S., Dales, M. W., Ferris, P., Sorensen, D., Swinfield, T., Message, R.,...& Madhavapeddy, A. (2024, May). Global, robust and comparable digital carbon assets. In 2024 IEEE International Conference on Blockchain and Cryptocurrency (ICBC) (pp. 305-306). IEEE.

Mungroo Z. B. A. Tupsee R. S. Pierre (2024) CASE STUDY OF TECHNOLOGY ADOPTION IN CARBON MARKET MRV SYSTEMS'

Pan, Y., Zhang, X., Wang, Y., Yan, J., Zhou, S., Li, G., & Bao, J. (2019). Application of blockchain in carbon trading. Energy Procedia, 158, 4286-4291.

R. Calel, "Carbon markets: A historical overview", Wiley Interdiscipl. Rev. Climate Change, vol. 4, no. 2, pp. 107-119, 2013.

Rawat, V., Dahiya, N., Rai, S., & Arora, A. (2022, May). A blockchain-based decentralized framework for carbon accounting, trading and governance. In Proceedings of the 2022 8th International Conference on Computer Technology Applications (pp. 148-153).

Richardson, A., & Xu, J. (2020, October). Carbon trading with blockchain. In Mathematical Research for Blockchain Economy:

2nd International Conference MARBLE 2020, Vilamoura, Portugal (pp. 105-124). Cham: Springer International Publishing.

Saraji, S., & Borowczak, M. (2021). A blockchain-based carbon credit ecosystem. arXiv preprint arXiv:2107.00185.

Sweety Sharma, & Kiran Singh. (2023). Blockchain Boosts the Carbon Credit Economy. NOLEGEIN- Journal of Business Risk Management, 5(2), 8–13. Retrieved from https://mbajournals.in/index.php/JoDBCM/article/view/1012

Tsai, Y. C. (2025). Enhancing Transparency and Fraud Detection in Carbon Credit Markets Through Blockchain-Based Visualization Techniques. Electronics, 14(1), 157.

UNFCCC (United Nations Framework Convention on Climate Change) (2021) Article 6 of the Paris Agreement: Implementation and Future Challenges. Available at: https://unfccc.int/process/the-paris-agreement/article-6.

Vladucu, M. V., Wu, H., Medina, J., Salehin, K. M., Dong, Z., & Rojas-Cessa, R. (2024). Blockchain in Environmental Sustainability Measures: a Survey. arXiv preprint arXiv:2412.15261.

Wang, J. & Peterson, K. (2024) 'Geospatial technologies in carbon leakage detection: Real-time applications', Environmental Monitoring and Assessment, 19(1), pp. 54-70.

World Bank (2024) State and Trends of Carbon Pricing 2024, online available at https://www.worldbank.org/en/news/press-release/2024/05/21/global-carbon-pricing-revenues-top-a-record-100-billion

The Impact of Big Data Analytics on Supply Chain Management

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Abstract

The advent of big data analytics has revolutionised supply chain management, offering substantial prospects for improving decision-making, augmenting efficiency, and decreasing costs. Through the analysis of extensive data collected throughout different phases of the supply chain, enterprises can reveal patterns and insights that were previously undetectable. The effective utilisation of this data allows organisations to enhance operational efficiency, reduce risks, and attain a competitive edge in the global market. This study examines the transformative impact of big data analytics on supply chain management, emphasising its applications in demand forecasting, inventory optimisation, logistics management, risk mitigation, and supplier relationship management. Utilising a Systematic Literature Review (SLR), we consolidate previous studies to illustrate how big data analytics improves efficiency, resilience, and responsiveness throughout the supply chain, hence promoting a more adaptive and responsive supply chain. Significant studies indicate that big data analytics markedly improves supply chain efficiency and resilience, with considerable advancements in demand forecasting precision and risk management, hence offering organisations a competitive advantage in a progressively intricate market.

Key words: supply chain, big data, big data analytics, supply chain efficiency

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1. Introduction

Supply Chain Management (SCM) has become a vital area in modern business operations, influenced by the growing intricacy of global markets, technological advancements, and the increased demand for operational efficiency. No longer relegated to the logistical backwaters of organizational activity, SCM has emerged as a critical determinant of competitive advantage, influencing profitability, customer satisfaction, and overall resilience in the face of dynamic market forces. At its essence, supply chain management encompasses the orchestration and oversight of processes associated with the movement of goods, services, information, and financial resources from their source to the end consumer. The process encompasses a complete range of tasks, including procurement, production, distribution, logistics, and inventory management. Each of these components plays an important role in value creation throughout the supply chain. An effectively optimised supply chain ensures a continuous and smooth flow of products and services, while simultaneously contributing significantly to the enhancement of overall operational efficiency and profitability.

This intricate ecosystem, however, is hampered by challenges, including demand instability, geopolitical shocks, environmental uncertainty, and increasingly high consumer expectations. Conventional methodologies in supply chain management often prove inadequate in addressing these challenges. To obtain a competitive advantage in the face of these problems supply chain experts are turning to innovative technology. The integration and utilisation of cutting-edge IT and digital instruments serve as an essential asset for the enhancement of supply chain efficiency. This evolution has redefined the competitive landscape, shifting the paradigm from a focus on individual firms to a more collective rivalry among supply chains (Ketchen and Hult 2007). The adoption of big data analytics (BDA) represents a significant technological advancement with the capacity to transform the efficiency and resilience of supply chains.

Big Data Analytics (BDA) is defined as “the process of examining large, complex data sets to uncover valuable insights, patterns and trends that can help organizations make data informed decisions”. BDA is characterised as a comprehensive methodology that encompasses the management, processing,

and analysis of the five dimensions of data—"volume, variety, velocity, veracity, and value”. This strategy seeks to produce concrete findings that enable the provision of enduring value, the assessment of how they perform, and the creation of competitive advantages (Fosso Wamba et al. 2015). During the last ten years supply chain management activities have increasingly adopted a networked approach, leading to the emergence of a substantial volume of real-time data, commonly known as 'Big Data.' The concept of big data, distinguished by its substantial volume, rapid velocity, diverse variety, intrinsic veracity, and significant value, serves as a crucial element in revealing insights that have the potential to enhance supply chain management processes. The generation of data within supply chain networks can be attributed to the proliferation of advanced networking technologies. These include “embedded sensors”, “tags”, “tracks”, “barcodes”, “the Internet of Things (IoT)”, “radio-frequency identification (RFID) tags”, and an array of smart devices that enable the acquisition of such data (Gunasekaran et al. 2017). The contemporary supply chain represents a multifaceted web of interrelated components, which includes the processes of sourcing, manufacturing, transportation, and distribution. The extensive quantity and rapid pace of data produced within these operations pose a duality of challenge and opportunity. Consequently, the significance of BDA lies in its ability to manage, process, and interpret extensive data sets, thereby enabling organisations to derive practical conclusions (Tiwari, Wee, & Daryanto, 2018; Cozzoli et al., 2022). The utilisation of sophisticated analytical methodologies facilitates the extraction of significant patterns and trends from data, thereby fostering informed decision-making and enhancing overall performance within organisations.

Effective supply chain management encompasses the continuous observation and enhancement of production and distribution processes. This approach aims to elevate efficiency in the transformation of raw materials into finished products while offering prompt delivery to customers. Such practices ultimately serve to maximise value and confer a competitive edge. Conventional approaches to supply chain management frequently fall short in addressing the requirements of contemporary markets, which are marked by significant volatility, rapidly evolving customer expectations, and the complexities of global operations. The application and analytics of Big Data provide organisations with the ability to leverage available information for operational advantages. This encompasses the optimisation of supply chain expenditures, the reduction of transportation service costs via enhanced customer service, the facilitation of knowledge exchange, the promotion of transparent communication, the assistance in monitoring across networks, and improving the level of trust and collaborative performance among diverse stakeholders (Talwar et al. 2021). Furthermore, BDA offers immediate insights into demand variations alongside shifts in downstream inventories, promotions, and sales (Dubey et al. 2018; Hofmann and Rutschmann 2018). This capability enhances supply forecasting, resulting in reduced safety stock needs and improved supplier performance (Bag 2017; Roßmann et al. 2018). Furthermore, it enables data tracking and monitoring tools to assist in location and allocation optimisation, as well as improvements in the on-shelf availability across the supply chain.

The advent of big data in supply chains has created new opportunities for improving efficiency and decision-making. An optimised supply chain ensures a smooth flow of products and services while significantly enhancing operational efficiency and profitability. This intricate ecology, however, is challenged by obstacles, including market volatility, geopolitical disruptions, environmental unpredictability, and elevated consumer expectations. To gain a competitive advantage in the face of these challenges, supply chain specialists are relying on innovative technology. Big Data Analytics (BDA) stands out among these technologies as a disruptive force that

has the ability to change the way supply chains are managed and optimised.

Maintaining a competitive edge in the supply chain industry requires more than only efficient logistics in today's rapid global marketplace. It requires a comprehensive understanding of data analytics, particularly big data analytics, which has become a transformative factor in enhancing supply chain efficiency. Organisations have numerous challenges in managing their supply chains efficiently and effectively in a perpetually evolving business environment. Big Data Analytics (BDA) has developed into an effective instrument for addressing these challenges and enhancing supply chain efficiency and resilience. Big data facilitates real-time decision-making, predictive modelling, and the optimisation of supply chain processes. These capabilities can result in reduced operational costs and enhanced customer satisfaction. Consequently, supply chains may exhibit increased innovation and resilience, resulting in improved performance. In a shifting business landscape, the significant success of BDA is likely linked to the acquisition of valuable insights for understanding changes. The system's capabilities allow organisations to analyse large volumes of data to identify patterns, trends, and insights that facilitate the optimisation of supply chain operations.

Modern supply chains operate within a relationship of increasing uncertainty and competition where disruptions can have a significant impact on business results. Without Big Data Analytics (BDA), the modern supply chain is hampered by insufficient visibility, reactive decision-making, and an inability to predict and respond to disruptions in real time. This could lead to inefficiencies, increased operational costs, and lower resiliency to unexpected changes and events. The contemporary literature also seems lacking in integrating the concept of BDA used which could have had a competitive advantage about how the supply chain can be made more resilient, agile, sustainable, flexible and how the use of BDA can help to extract more value out of it. Although the value of BDA has been established in certain aspects of supply chain management, an integrated analysis that illustrates the overall effect of BDA on such vital facets is lacking. This study takes a step towards bridging that gap and provides a detailed examination of how BDA augments the multiple dimensions of supply chain management, contributing a more holistic view of the strategic importance of BDA. It also examines the significant impact of Big Data Analytics (BDA) on transforming Supply Chain Management (SCM), with an emphasis on its various applications and associated advantages. Thus, this study is guided by the following research question.

RQ1 How does big data analytics contribute to supply chain optimisation?

To address this question, this study utilises the growing body of research on Big Data Analytics (BDA) and Supply Chain Management (SCM), alongside a comprehensive examination of articles pertaining to BDA-enabled supply chains located in SCOPUS, the preeminent abstract and citation database of peer-reviewed literature.

2. Literature review

2.1 Big data analytics

Big data is the term used to describe the immense quantities of structured and unstructured data that surpass the processing capabilities of conventional data management tools. BDA is now regarded as "a significant differentiator between high-performing and low-performing organisations" due to its ability to enable firms to become proactive and innovative, as well as its ability to reduce customer acquisition costs and increase firm revenue. The tools provided by BDA are essential for the extraction, storage, analysis, and transformation of big data into valuable insights, which supports the optimisation of processes and the making of accurate decisions. Advanced tools that utilise data mining and statistical analysis to generate predictive analytics are referred to as BDA, which improves operational efficiency and strategic planning (Bagga & Chopra, 2018; Batko & Slęzak, 2022).

A company's strategic advantage may rely on its capacity to gather and analyse Big Data to derive business insights (Wong 2012) and surpass its competitors (Oh et al. 2012). In this context, McKinsey and Company claimed that “collecting, storing, and mining Big Data for insights can create significant value for the world economy, enhancing the productivity and competitiveness of companies and the public sector and creating a substantial economic surplus for consumers” (Manyika et al. 2011). Research by Tsai et al. (2013) demonstrates that organisations can identify consumer habits and wants by utilising Big Data derived from rewards programs and social media platforms.

Having emerged significantly in the past two decades, big data and big data analytics (BDA) have profoundly impacted the way companies conduct their businesses. Modern enterprises of varying scales are utilising big data analytics resources and knowledge to establish competitive advantages over rival organisations that either opt not to use BDA or are unable to implement it successfully. Undoubtedly, the utilisation of Big Data Analytics (BDA) has transitioned from being a mere luxury to an essential competitive requirement (LaValle et al, 2010). To this purpose, more innovative firms seek to advance adversaries by locating novel ways to capitalise on BDA, that includes building future-oriented goods and services, increasing information transparency and effectiveness of decision making through data digitisation and accessibility, and precisely segmenting their customer base as per the who, what, when, and where for various products and services (McGuire et al, 2012).

Recent technological advancements in data gathering, storage, and analytical tools, especially for unstructured data, have significantly transformed the nature of work and the workplace experience. The utilisation of analytics in the contemporary landscape is essential for comprehending trends and deriving significant inferences from large datasets, with the objective of enhancing organisational performance. For the companies that master this technological innovation, the knowledge and insights gleaned from the vast amount of data create competitive advantages (Gunasekaran et al., 2017).

Dubey et al. (2019) examined the impact of BDA and predictive analytics on social performance and environmental performance based on 205 samples of Indian manufacturing companies by taking into account variance-based structural equation modelling and found that manufacturing and service companies have been continually enhancing their processes to progress its operational efficiency. Gupta, Modgil, and Gunasekaran (2019) combed through the BDA and lean six sigma literature to provide predictable and assured decisions in the service and manufacturing industries.

Firms like Google and Amazon leverage data effectively, allowing them to exceed the rivals by crafting innovative business models. Barton and Court (2012) pointed out by means of Big Data, organisations may alter the manner in which they do business and provide improvements in performance akin to those accomplished in 1990s when firms transformed their core processes. Additionally, they highlighted that the implementation of data-driven strategies will soon become an important aspect of competitive differentiation. McAfee and Brynjolfsson (2012) noted that companies can improve their productivity rates and profitability by 5–6% through the integration of big data and analytics into their operations.

2.2 Big data analytics in supply chain management

Big Data Analytics in supply chain management is cutting-edge, facilitating the study of immense datasets, identifying patterns, and developing predictive models through data mining techniques. In the framework of supply chains, this data may consist of ranging from customer behaviour patterns and supplier performance metrics to logistics data and environmental factors. The supply chain sector collects enormous quantities of data using radio-frequency identification (RFID), sensory information, tracking devices, etc. (Zhong et al. 2015). The use of these data with the aid of information technology (IT), i.e. business intelligence insights, analytics and so on (Wamba et al. 2015), could help optimise existing supply chain practices, reduce costs and provide better inventory management resulting, in turn, in boosting profits in the supply chain industry.

BDA utilises various forms of analytics: descriptive, prescriptive, predictive, and diagnostic. Each type of analytics is essential for improving different facets of supply chain management, from detecting patterns in product availability to optimising resources and reducing operational risks. The Supply Chain Council's SCOR model, developed in 1996, provides a framework for analysing and improving SC performance, and using BDA boosts operational capabilities across various processes, enhancing efficiency and decreasing human errors (Nuaimi & Awofeso, 2024). This data driven approach minimises costs and promotes resilience inside SCs, enabling firms to respond to variable demand and unforeseen obstacles (Bagga & Chopra, 2018).

BDA's application in supply chain management (SCM) is thought to be revolutionary, potentially solving long-standing issues including supply chain risk management, inventory control, and demand forecasting. According to Gartner (2019), big data analytics empowers supply chain managers to optimise operations by forecasting demand patterns, minimising inventory expenses, and improving the precision of delivery schedules. Choi et al. (2018) discovered that big data analytics is especially beneficial for demand forecasting, a task historically complicated by the unpredictable nature of consumer behaviour and disturbances in the supply chain.

The impact of data analytics for SCM was underlined by Waller and Fawcett (2013) who defined 'SCM data science' as the "application of quantitative and qualitative methods from a variety of disciplines in combination with SCM theory to solve relevant SCM problems and predict outcomes, taking into account data quality and availability issues". They also stated that "supply chain professionals are inundated with data, motivating new ways of thinking about how data are produced, organized, and analysed. This has provided an impetus for organizations to adopt and perfect data analytic functions (e.g. data science, predictive analytics, and Big Data) in order to enhance supply chain processes and, ultimately, performance"

Advanced networking technologies, such as sensors, tags, tracks, and other smart devices, are crucial to supply chains today. These systems gather data in as and when it happens (Wang et al., 2016; Gunasekaran et al., 2017) and provide comprehensive insight into supply and demand (Gunasekaran et al., 2017; Srinivasan and Swink, 2017). Operations and supply chain professionals possess significant information from unstructured sources, such as digital clickstreams, surveillance footage, images, social media posts, blog/wiki entries, and forums, alongside the continuous data generated by traditional devices like POS, RFID, and GPS. It has led to a growing interest in defining a particular set of skills needed by SCM data scientists (Waller and Fawcett, 2013; Schoenherr and Speier-Pero, 2015). According to a 2014 study of supply chain data sources, 46% of businesses had used Big Data to improve demand fulfilment by 10%, 36% had increased supply chain efficiency by more than 10%, and 28% had enhanced buyer-supplier interactions (Accenture 2014). Additionally, according to a worldwide logistics survey, 70% of clients reported that supply chain Big Data management improved third-party logistics (3PL) logistics optimisation (Statista Research Department 2016).

Case studies from the real world demonstrate that big data analytics has shown advantages across multiple sectors. Amazon is a prime example of an organisation that effectively utilised predictive analytics early on, enhancing its demand forecasting, inventory management, and logistics optimisation over time. The operations of Amazon's supply chain facilitate both speed and cost efficiency, exemplified by the use of AI-driven analytics and machine learning (Chopra & Meindl, 2019).Another case is that of Walmart, which utilises real-time data analytics to monitor its inventory levels and predict fluctuations in series demand. This approach aids in reducing stockouts and excess inventory (Hazen et al., 2016). In a comparable context, Maersk has adopted big data analytics to optimise shipping routes and forecast potential disruptions within the entire supply chain, thereby enhancing efficiency and lowering costs. According to a study conducted by

Dubey et al. (2019), businesses in the manufacturing sector that utilise big data analytics have demonstrated improved resilience within their supply chains, attributed to strengthened supplier relationships and effective risk mitigation strategies. An empirical study conducted by Wang et al. (2020) revealed that the integration of big data analytics leads to a 15–20% enhancement in supply chain agility and order fulfilment accuracy for firms.

Establishing a theoretical foundation for Big Data Analytics in Supply Chain Management is crucial, and it must be congruent with theoretical frameworks such as the Resource-Based View and Dynamic Capabilities Theory. The Resource-Based View (RBV) posits that a firm can attain a competitive advantage through the possession and management of resources that are valuable, rare, and inimitable (Barney 1991). Big Data Analytics serves as a crucial asset that allows organisations to convert data into meaningful insights, thereby achieving enhanced operational performance. The implementation of data-driven supply chain strategies provides a distinct advantage in comparison to competitors. Another explanation comes from the Dynamic Capabilities Theory (Teece et al., 1997), which suggests that firms can develop agility and adaptability through continuous innovation and the ability to respond to changing market conditions. BDA adoption allows organizations to proactively reconfigure supply chain operations to react to market fluctuation, facilitating the orchestration of sensing, seizing and transforming processes. Zara's fast-fashion supply chain is a prime example of dynamic capabilities since it constantly adjusts production and distribution strategies with respect to real-time customer data analytics (Christopher, 2016).

The reliance of supply chain managers on data has been steadily increasing, as it facilitates enhanced visibility into expenditures, aids in the identification of cost and performance trends, and supports various operational functions such as process control, inventory monitoring, production optimisation, and efforts aimed at process improvement. There exists a prevailing argument that the locus of competition has shifted from individual firms to encompass entire supply chains. This has compelled managers to reevaluate their competitive strategies, as noted by Zacharia et al. (2011). Given the availability of both technology and data, it becomes imperative for organisations to determine the most effective strategies for leveraging these resources to achieve competitive advantage.

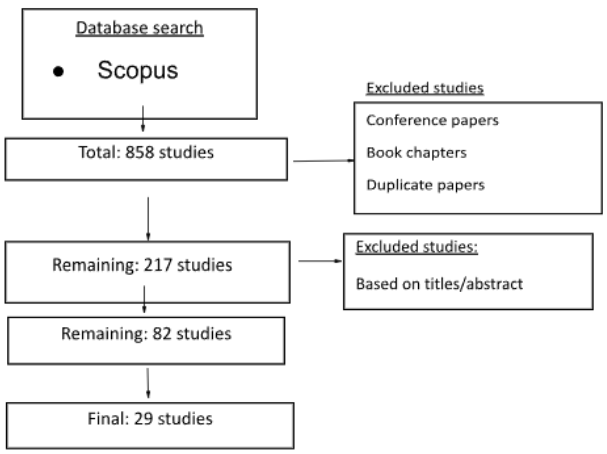
3. Research methodology

The study used the Systematic Literature Review (SLR) methodology, an evidence-based scientific technique that facilitates the identification, selection, examination, evaluation, and synthesis of published publications pertinent to the research issue. The SLR approach ensures a transparent and reproducible review process, enabling a comprehensive and unbiased evaluation of existing literature. To focus on the most recent and pertinent studies, only articles published within the last five years (2019-2024) related to supply chain management (SCM) and big data analytics (BDA) were considered.

The keyword selection strategy involved a combination of terms aimed at maximizing the relevance and breadth of the search results. Specifically, the terms 'Big Data' OR 'Big Data Analytics' were paired with 'supply chain' OR 'supply chain management' OR 'operations management'. These keywords were chosen to encompass a broad spectrum of topics related to the application of big data within supply chain management and operations, ensuring a comprehensive range of studies were captured. The inclusion of 'operations management' as a keyword was done to further broaden the search to include related studies that might not explicitly use 'supply chain'.

A comprehensive search yielded a total of 858 papers using this search strategy. Following this, inclusion and exclusion criteria were applied to ensure the selection of the most relevant and rigorous studies. Only complete articles published in English were included in the analysis, as they provide a standardized, well-documented research framework. Conference papers and book chapters were excluded from consideration due to their limited peer-review process and generally lower rigor compared to journal articles. This exclusion was necessary to maintain the study's focus on high-quality, fully peer-reviewed research that offered in-depth insights into big data analytics and its impact on supply chain management. Subsequently, studies that were duplicated or those that did not exhibit immediate relevance to the topic were excluded, culminating in a consolidated pool of 217 studies for further consideration. A second screening phase focused on the relevance of the titles and abstracts, specifically excluding studies that did not contain keywords related to big data analytics or supply chain management in either their title or abstract. The application of this screening process resulted in a reduction of the total number of papers to 82. Following that, a comprehensive screening of all abstracts was conducted to identify studies that demonstrated a direct correlation between big data analytics and supply chain management. The remaining papers underwent a comprehensive analysis to ascertain the final selection for the study. A total of 29 studies were identified and included in the review process. The whole inclusion/exclusion process done to include studies for this study has been explained with the help of the flowchart. Figure 1 shows the flowchart of inclusion and exclusion process.

Figure 1. Inclusion and Exclusion Flow chart



4. Analysis and results

4. 1 Supply chain resiliency

Supply chain resilience denotes an organization's readiness to address risks, uncertainties, and disruptions that may originate from customers, vendors, or additional company operations and supply integration strategies (Purvis et al., 2016). Contemporary supply chains function in a progressively uncertain and competitive landscape, where interruptions can substantially affect business performance. Supply chain resilience equips the system to handle unforeseen events during disruptions and facilitates prompt recovery by ensuring the intended continuity of operations. It emphasises the equilibrium between reactive techniques (post-event adjustments) and proactive strategies (preemptive efforts to address turbulence) (Agrawal & Jain, 2021; Durach et al., 2015). The application of BDA in supply chain helps the supply chain in achieving resilience in their process. Organisations already exhibit risk resilience due to institutional considerations; BDA skills can substantially enhance these existing activities. BDA can foresee and reduce disruptions and alleviate misinformation under turbulent conditions. Big data analytics is increasingly essential for organisations requiring real-time and intuitive information to address supply chain disruptions (Jiang et al. 2024). Bag et al. (2022) contended that a resource-based strategy enhances the comprehension of constructing resilient supply chain management. It enables supply chain management to discern when and how to cultivate resilience to maintain a competitive advantage. Bag et al. (2021) demonstrated that descriptive, predictive, and prescriptive analytics can facilitate real-time monitoring of supplier performance, hence enhancing supply chain resilience.

4.2 Supply chain agility

Agility denotes the capability of a supply chain to react promptly to unforeseen and unanticipated external conditions. The intrinsic unpredictability of supply and demand, along with the related risks within the supply chain, underscores the necessity for the ability to rapidly adjust supply chain operations. Big data analytics has substantial influence on supply chain agility. When a firm is able to assemble, understand, and analyse big data, it is more likely to develop effective strategies and policies that are precisely needed to enhance the supply chain in a changing external environment. BDA enhances supply chain velocity by enabling the early detection of risks and faster execution of mitigation measures (Kara et al. 2020). The capability of big data analytics allows supply chain management to swiftly comprehend the evolving market and environmental conditions, facilitating a rapid response to these changes. The application of big data analytics in supply chain management enables the identification of trends, patterns, and potential risks in real-time, thereby facilitating proactive decision-making. This facilitates the management of inventory levels, the simplification of logistics, and the improvement of overall operational efficiency. Ultimately, the application of big data analytics enables supply chain management to maintain a competitive edge and respond to evolving market demands with both agility and precision.

4.3 Supply chain sustainability

Sustainable supply chain management involves the strategic and transparent regulation of supply chain activities, incorporating sustainability goals—environmental, social, and economic—into all processes to fulfil the requirements of stakeholders. Big data analytics provides a valuable opportunity to analyse data from each member of the supply chain, along with other external sources. The capacity enables the surveillance of activities that may result in unethical behaviour, allowing for prompt remedial action (Mageto, 2021). Environmental sustainability can be attained by utilising big data analytics to minimise delivery times via the direct connection of millions of customers, facilitated by real-time information sharing, thereby decreasing energy consumption (Jose et al. 2020). BDA also facilitates the monitoring of supply chain partners' activities, enabling the identification of unsustainable or unethical practices, as well as any instances of environmental misconduct. Moreover, BDA promotes the assessment of the precise effects of particular economic activities on the environment through the monitoring of pertinent indicators. Predictive analytics hold significant importance due to their potential to yield new insights that enhance “supply chain visibility”, “resilience”, “cost savings”, and “information transparency”, all are critical for sustainable supply chain management. The implementation of BDA improves the transparency aspect of sustainable supply chain by fostering high visibility throughout the supply chain, thereby facilitating a mutually beneficial scenario for all stakeholders (Gunasekaran et al. 2016). Transparency serves to reduce unethical behaviour and misreporting, as well as to eliminate unnecessary bottlenecks. This, in turn, enhances efficiency in resource utilisation and ultimately fosters sustainability.

4.4 Supply chain flexibility

Supply chain flexibility serves as a strategic response to the challenges posed by environmental uncertainty. This approach facilitates the effective management of supply chain risks amidst uncertainties in supply and demand, specifically through improved coordination of risk mitigation strategies. The capacity of big data analytics to process and interpret extensive datasets is crucial in facilitating this flexibility. Utilising real-time data from various sources, such as sensor networks, digital platforms, and transactional systems, allows organisations to achieve a level of visibility into their supply chains that was previously unattainable. The improved visibility allows for proactive risk management, accurate demand forecasting, and a swift response to any disruptions that may occur. This capability holds significant importance in the context of a global marketplace that is becoming increasingly volatile, characterised by frequent supply chain disruptions arising from various factors, including geopolitical instability, natural disasters, and pandemics (Ivanov, 2020). The capacity to rapidly

reconfigure logistics networks, modify production schedules, and diversify supplier bases, all informed by data-driven insights, guarantees that supply chains maintain resilience and adaptability. Ultimately, the tactical use of big data analytics enables organisations to shift from reactive to predictive supply chain management, promoting a culture of perpetual improvement and enhancing overall flexibility (Queiroz et al., 2020; Hazen et al., 2021).

4.5 Value creation

Value creation refers to the systematic process of augmenting value or optimising a process to improve its overall efficiency. The utilisation of big data analytics possesses the potential to create value, thereby converting supply chains into value chains. Supply chains that leverage big data effectively can transform data into actionable insights and intelligence, providing them at the right time and place (Chen et al. 2015). The strategic use of big data goes beyond just improving operational efficiency; it enables organisations to discover new opportunities for gaining a competitive edge and enhancing customer satisfaction. Utilising the extensive data produced throughout the supply chain, spanning from procurement to delivery, organisations can extract valuable insights that guide strategic decision-making processes. For example, advanced analytics can improve demand forecasting with remarkable precision, which helps to minimise inventory holding costs and decrease stockouts, ultimately leading to enhanced customer service levels (Choi et al., 2023). Furthermore, the real-time tracking and analysis of logistics data facilitate the optimisation of transportation routes and delivery schedules, leading to considerable cost savings and enhanced delivery performance (Ghadge et al., 2022). The capacity to derive significant insights from intricate datasets enables organisations to generate value by improving operational efficiency, reducing risks, enhancing customer satisfaction, and promoting innovation across the supply chain ecosystem.

4.6 Risk mitigation

The complexities and vulnerabilities present in modern supply chains require effective risk mitigation strategies, with big data analytics proving to be an essential tool in addressing these challenges. Business Data Analytics can assist in analysing the competitive landscape of the business to reduce supply chain risks. By giving organisations real-time access into operations, it helps lower supply chain risk by enabling them to proactively manage problems, spot any disruptions early, and make data-driven decisions that reduce risks throughout the supply chain network. Predictive analytics can be utilised to examine historical data, weather patterns, and geopolitical information to anticipate potential disruptions, including natural disasters, supplier failures, or transportation delays (Ivanov & Dolgui, 2020). Three The implementation of real-time monitoring for social media and news feeds, facilitated through sentiment analysis and natural language processing, provides a mechanism for the early identification of potential risks associated with political instability, labour disputes, or reputational harm (Giannakis et al., 2020). The utilisation of big data analytics enables organisations to shift from a reactive approach to risk management towards a proactive strategy for risk mitigation, thereby fostering resilient and robust supply chains that can effectively navigate the uncertainties present in the global marketplace.

Strategic advantage

The application of big data analytics within supply chain management has developed into a significant factor for achieving competitive advantages. The significance of big data for enterprises and decision-makers is more closely related to the quality and analysis of the data rather than its sheer volume. Ample data can be utilised to assist businesses in diagnosing failures, forecasting potential system issues, generating insights on customers at the point of sale to enhance their experience, and enabling organisations to formulate strategies aimed at reducing time and costs. The entirety of this analysis hinges on the capacity to organise data and identify patterns, as well as extract other significant insights. The utilisation of big data analytics within supply chains enables companies to gain insights into customer needs and sales trends, thereby informing their decisions regarding production, inventory management, pricing strategies, and other related strategic initiatives. The proposed plans may involve various stakeholders within the supply chain and could influence the competitive advantages that these firms possess relative to others (Baqleh & Alateeq, 2022). Table 1 presents a summary of the key areas influenced by the use of big data analytics.

Table 1. Key Areas Influenced by BDA

Key Area	Authors
Supply chain resiliency	Xu & Liu (2024), Jiang et al. (2024), Bag et al. (2022), Manikas et al. (2022), Singh & Singh (2019), Bag et al (2023), Chauhan et al. (2023),
Supply chain agility	Li et al. (2024), Fosso & Akter (2019), Mandal (2018), Dubey et al (2022)
Supply chain sustainability	Dubey et al. (2019), Raj et al. (2023), Raj et al. (2024), Alkahtib (2024), Benzidia et al (2021), Alzboun (2023), Singh & El-Kassar (2019), Zhang et al. (2022), Liu et al. (2020),
Supply chain flexibility	Agrawal et al. (2023), Avinash et al. (2024)
Value creation	Chen et al. (2015), Brinch et al. (2021),
Risk mitigation	Kalbouneh et al. (2023), de Assis Santos & Marques (2022), Kramer et al. (2022),
Competitive advantage	Baqleh & Atleeq (2023), Kumar et al. (2024),

Table 2. Impact of BDA on the key areas

Supply chain aspect	Impact of big data analytics	enhancement
Resilience	Predicting and mitigating disruptions	Proactive risk management, reduced misinformation
Agility	Rapid response to changing conditions	Faster risk detection, proactive decision-making
Sustainability	Monitoring ethical practices and environmental impact	Improved transparency, resource efficiency
Flexibility	Adapting to uncertainties in supply and demand	Proactive risk management, demand forecasting
Value creation	Transforming data into actionable insights	Operational efficiency, customer satisfaction
Risk mitigation	Proactive management of potential disruptions	Early identification of risks, data-driven decisions
Strategic advantage	Gaining insights into customer needs and sales trends	Informed strategic initiatives, competitive edge

5. Discussion

The incorporation of big data analytics within supply chain management presents significant opportunities for transforming operational methodologies in companies. Organisations that effectively incorporate big data into their supply chain management practices are likely to achieve a competitive edge. Utilising data-driven insights allows organisations to help enhance decision-making, reduce inaccuracies, and elevate consumer satisfaction. Organizations are increasingly recognizing the potential of BDA to move beyond traditional reactive approaches towards more proactive and predictive strategies in areas like demand forecasting, inventory optimization, and logistics planning (Chopra & Meindl, 2016). Empirical studies suggest that companies implementing BDA in SCM have reported up to a 15% reduction in operational costs and a 20% improvement in delivery efficiency (Bag et al., 2022). Table 3 shows a comparative analysis of traditional SCM and BDA-enhanced SCM.

Table 3. Traditional SCM vs BDA enhanced SCM

Performance area	Traditional SCM	BDA enhanced SCM	Advantages of BDA
Decision-Making	Reactive, based on historical data and intuition	Proactive, data-driven, and predictive	Improved accuracy, faster response to change
Risk Management	Reactive, limited visibility, and slow response	Proactive, real-time monitoring, and early detection	Enhanced resilience, reduced impact of disruptions
Operational Efficiency	Siloed operations, limited optimization	Integrated operations, optimized processes, and resource utilization	Cost savings, increased productivity
Demand Forecasting	Less accurate, based on historical trends	More accurate, predictive, and responsive to market dynamics	Reduced inventory costs, improved customer service
Supply Chain Visibility	Limited transparency, potential for bottlenecks	End-to-end visibility, real-time tracking	Improved coordination, reduced delays
Customer Satisfaction	Less personalized, potential for stockouts or delays	Personalized service, timely delivery, and proactive communication	Increased loyalty, enhanced experience

A significant portion of the research in the domains of big data and supply chain has focused on the concept of supply chain resiliency. The importance of supply chain resilience is growing, particularly in the current context where supply chain systems face significant pressures from unconventional emergencies and disruption risks. The significance of resilience has grown in the context of supply chain disruptions caused by economic volatility, geopolitical instability, and unforeseen global disasters (Gunasekaran et al. (2017); Dubey et al. (2020)). A significant advantage of big data analytics in supply chain management is also its capacity to enhance risk resilience. The application of predictive analytics alongside real-time data processing enables organisations to identify vulnerabilities proactively, forecast potential disruptions, and implement appropriate mitigation strategies. This proactive approach mitigates the secondary effects of supply chain disruptions and enhances responsiveness to unforeseen challenges (Ivanov et al., 2019). While numerous studies indicate that BDA contributes to enhancing supply chain resilience and mitigating risks, the current focus has shifted towards value generation throughout the entire supply chain. Beyond risk mitigation, modern supply chains are evolving to generate value at every stage, necessitating a holistic view that integrates flexibility, agility, and efficiency (Wamba et al., 2017). BDA serves as a crucial catalyst in the evolving landscape of value chains, where value creation encompasses not just efficiency but also adaptability. From a comprehensive organisational perspective, Big Data aids management decisions by "visualising customer behaviour," "mitigating the ripple effect," and "enhancing information processing capabilities," thereby facilitating the assessment of critical supply chain performance metrics (Gunasekaran et al. 2017). Furthermore, research highlights the necessity of robust supply chains, where big data analytics plays a crucial role in improving their flexibility and responsiveness. Particularly, cloud-based analytics solutions that facilitate real-time data processing, scalability, and integration with existing enterprise resource planning (ERP) and supply chain management systems (Mishra et al., 2018) necessitate that organisations invest in scalable big data analytics infrastructure. Additionally, it is essential to ensure high-quality data and establish comprehensive governance systems, as the accuracy, security, and regulatory compliance of data significantly influence the effectiveness of analytics (Kache & Seuring, 2017).

However, there are challenges associated with implementing BDA in SCM. The significant initial investment required for the necessary equipment, software, and skilled personnel (Manyika et al., 2011) constitutes a primary challenge. In the context of sensitive consumer and operational data, issues surrounding data privacy and security present a considerable challenge that necessitates robust data governance frameworks and compliance measures (Wamba et al., 2017). Furthermore, a lack of internal technical expertise in data science and analytics may hinder the effective application of big data analytics. Organisations must address the talent gap by fostering collaboration among data scientists, supply chain specialists, and IT teams, in addition to investing in the ongoing skill development of their personnel (Akter et al., 2016). Moreover, ensuring data quality, consistency, and integration across various supply chain sources presents significant challenges and demands considerable time and effort (Gartner, 2023). The integration of big data analytics tools with existing legacy systems presents an even significant challenge. Numerous organisations encounter interoperability issues that lead to inefficiencies and operational bottlenecks (Addo-Tenkorang & Helo, 2016). Numerous significant technological advancements are poised to shape the future of BDA within the realm of supply chain management. The increasing implementation of Internet of Things (IoT) devices facilitates real-time tracking and monitoring of shipments, thereby enhancing visibility and optimising resource allocation, which will ultimately lead to improved supply chain operations. AI-based autonomous supply chains allow for high levels of automation of logistics, procurement and production planning, thus requiring low human interaction, which increases the operational efficiency and

responsiveness (Srinivasan & Swink, 2018). Artificial Intelligence & Machine Learning Implementation, augment the predictive analytics that in turn, improves demand planning, inventory control & forecasting accuracy. Blockchain contributes to BDA applications by acting as a decentralized immutable ledger ensuring traceability and security which strengthens trust in the supply chains (Queiroz et al., 2019). While the implementation of BDA in supply chain management presents numerous benefits, organisations must address challenges such as elevated costs, concerns regarding data security, and the complexities associated with integration. Investment in scalable technologies, the promotion of technical knowledge, and the exploration of emerging concepts such as artificial intelligence and blockchain are essential for companies aiming to develop robust, data-driven supply chains that are prepared for future challenges.

6. Conclusion

The application of big data analytics in supply chain management has garnered considerable interest for its capacity to improve decision-making in unprecedented ways. This study sought to elucidate the application of Big Data Analytics (BDA) for the enhanced management of Supply Chain Management (SCM) resources through a systematic literature review (SLR) of scientific databases and esteemed publications in operations management and business. Ultimately, 29 articles were meticulously examined to address the research issue. The findings indicate that BDA enhances decision-making, operational efficiency, and predictive capabilities in SCM. However, significant barriers to adoption persist. Kache and Seuring (2017) emphasised that data quality challenges, insufficient skilled workforce, and the intricacy of assimilating new technologies with old systems constitute substantial obstacles to adoption. Moreover, the extensive volume of data can inundate conventional supply chain systems, hindering firms' ability to extract meaningful insights promptly. For firms capable of overcoming these challenges, BDA offers substantial strategic advantages. Companies employing predictive analytics for demand forecasting and real-time data integration for logistics optimisation can reduce expenses and enhance agility. Processing and analysing large datasets enhance supply chain resilience, hence mitigating risks associated with environmental or geopolitical occurrences. Research indicates that organisations employing BDA-driven predictive maintenance can reduce equipment downtime by as much as 30%, thereby underscoring the practical benefits of the technology. To achieve a comprehensive, data-driven strategy, organisations must synchronise BDA initiatives across procurement, logistics, and sales. A robust data governance framework ensures data completeness, consistency, and quality. Efforts should also be made to collaborate with academic institutions or obtain internal expertise through BDA training programs. The establishment of training and development programs is also needed to equip staff with the skills necessary to analyse and comprehend extensive data volumes.

7. Limitations and future directions

This study also possesses certain drawbacks. Although the material collecting and selection procedure intended to be inclusive and representative, it may still have overlooked certain relevant contributions. Our analysis was grounded in the examination of literature concerning "Big Data and Supply Chain Management" published in the last five years. This research employed certain keywords and the utilisation of alternative terms or expanding the time frame might have produced different outcomes. Another limitation is the lack of empirical validation, this study synthesizes existing findings but does not include primary data collection. Additional empirical research is required to reinforce and validate the conclusions of this study. Future studies should also explore sector-specific BDA applications, such as optimizing humanitarian or perishable goods supply chains. Furthermore, comparative assessments of cloud-based versus on-premise big data analytics systems for supply chain management should be conducted to evaluate cost-effectiveness, scalability, and security. The application of artificial intelligence (AI) and machine learning (ML) techniques to automate supply chain management (SCM) decision-making must be examined, alongside an exploration of ethical implications of big data analytics (BDA) in SCM, especially with data privacy and security.

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Ethical Statement

No ethical approval was required for this study as it did not involve human or animal subjects.

Conflicts of Interest

The authors declare no conflicts of interest.

Data Availability Statement

The data used in this study were obtained from the Scopus database. Access to Scopus is subject to subscription and licensing agreements and may be accessed by individuals or institutions with appropriate access rights.

Author Contribution Statement

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References

Accenture. 2014. "Big Data Analytics in Supply Chain: Hype or Here to Stay?" https://www.accenture.com/t20160106t1944 41__w__/fi-en/_acnmedia/accenture/conversion-assets/dotcom/documents/global/pdf/digital_1/accenture-globaloperations-megatrends-study-big-data-analytics-v2.pdf.

Addo-Tenkorang, R., & Helo, P. T. (2016). Big data applications in operations/supply-chain management: A literature review. Computers & Industrial Engineering, 101, 528-543.

Akter, S., Wamba, S. F., Gunasekaran, A., Dubey, R., & Childe, S. J. (2016). How to improve firm performance using big data analytics capability and business strategy alignment? International journal of production economics, 182, 113-131.

Al Nuaimi, D., & Awofeso, N. (2024). The Value of Applying Big Data Analytics in Health Supply Chain Management. F1000Research, 13, 1237.

Bag, Surajit. 2017. "Big Data and Predictive Analysis Is Key to Superior Supply Chain Performance: A South African Experience." International Journal of Information Systems and Supply Chain Management 10 (2), 66–84.

Bagga S, Chopra R: Comprehensive Overview of Cloud-Based Big Data Analytics (BDA). Comprehensive Overview of Cloud-Based Big Data Analytics. 2018; 5(9): 311.

Bahrami, M., & Shokouhyar, S. (2022). The role of big data analytics capabilities in bolstering supply chain resilience and firm performance: a dynamic capability view. Information Technology & People, 35(5), 1621-1651.

Barton, D., & Court, D. (2012). Making advanced analytics work for you. Harvard Business Review, 90(10),78–83, 128.

Batko, K., & Ślęzak, A. (2022). The use of Big Data Analytics in healthcare. Journal of big Data, 9(1), 3.

Chopra, S., & Meindl, P. (2001). Strategy, planning, and operation. Supply Chain Management, 15(5), 71-85.

Cozzoli N, et al.: How can big data analytics be used for healthcare organization management? literary framework and future research from a systematic review. BMC Health Serv. Res. 2022; 22(1): 809.

Dev, N. K., Shankar, R., Gupta, R., & Dong, J. (2019). Multi-criteria evaluation of real-time key performance indicators of supply chain with consideration of big data architecture. Computers & Industrial Engineering, 128, 1076-1087.

Dubey, R., Gunasekaran, A., & Childe, S. J. (2019). Big data analytics capability in supply chain agility: the moderating effect of organizational flexibility. Management decision, 57(8), 2092-2112.

Engelseth, P., & Wang, H. (2018). Big data and connectivity in long-linked supply chains. Journal of Business & Industrial Marketing, 33(8), 1201-1208.

Erboz, G., Yumurtacı Hüseyinoğlu, I. Ö., & Szegedi, Z. (2022). The partial mediating role of supply chain integration between Industry 4.0 and supply chain performance. Supply Chain Management: An International Journal, 27(4), 538-559.

Gunasekaran, Angappa, Thanos Papadopoulos, Rameshwar Dubey, Samuel Fosso Wamba, Stephen J. Childe, Benjamin Hazen, and Shahriar Akter. 2017. "Big Data and Predictive Analytics for Supply Chain and Organizational Performance." Journal of Business Research 70: 308–317.

Hofmann, Erik, and Emanuel Rutschmann. 2018. "Big Data Analytics and Demand

Forecasting in Supply Chains: A Conceptual Analysis." International Journal of Logistics Management 29 (2): 739–766.

Ivanov, D., Dolgui, A., & Sokolov, B. (2019). The impact of digital technology and Industry 4.0 on the ripple effect and supply chain risk analytics. International journal of production research, 57(3), 829-846.

Kache, F., & Seuring, S. (2017). Challenges and opportunities of digital information at the intersection of Big Data Analytics and supply chain management. International journal of operations & production management, 37(1), 10-36.

Ketchen Jr, D. J., & Hult, G. T. M. (2007). Bridging organization theory and supply chain management: The case of best value supply chains. Journal of operations management, 25(2), 573-580.

LaValle, S., Hopkins, M. S., Lesser, E., Shockley, R., & Kruschwitz, N. (2010). Analytics: The new path to value. MIT Sloan Management Review, 52(1), 1-25.

LaValle, S., Hopkins, M. S., Lesser, E., Shockley, R., & Kruschwitz, N. (2010). Analytics: The new path to value. MIT Sloan Management Review, 52(1), 1-25.

Manyika, J., Chui, M., Brown, B., Bughin, J., Dobbs, R., Roxburgh, C., et al. (2011). Big Data: The Next Frontier for Innovation. McKinsey Global Institute: Competition and Productivity

McAfee A., & Brynjolfsson E. (2012). Big Data: The management revolution. Harvard Business Review, 90(10), 60–66, 68, 128

McGuire, T., Manyika, J., & Chui, M. (2012). Why big data is the new competitive advantage. Ivey Business Journal

Mishra, D., Gunasekaran, A., Papadopoulos, T., & Childe, S. J. (2018). Big Data and supply chain management: a review and bibliometric analysis. Annals of Operations Research, 270, 313-336.

Oh, L., Teo, H., & Sambamurthy, V. (2012). The effects of retail channel integration through the use of information technologies on firm performance. Journal of Operations Management, 30(1), 368–381.

Queiroz, M. M., & Wamba, S. F. (2019). Blockchain adoption challenges in supply chain: An empirical investigation of the main drivers in India and the USA. International Journal of Information Management, 46, 70-82.

Roßmann, Bernhard, Angelo Canzaniello, Heiko von der Gracht, and Evi Hartmann. 2018. "The Future and Social Impact of Big Data Analytics in Supply Chain Management: Results from a Delphi Study." Technological Forecasting and Social Change 130: 135–149.

Srinivasan, R., & Swink, M. (2018). An investigation of visibility and flexibility as complements to supply chain analytics: An organizational information processing theory perspective. Production and Operations Management, 27(10), 1849-1867.

Statista Research Department. 2016. "Big Data in Supply Chain-Important Factors for 3PLs Customers." Statista Research Department. http://www.statista.com/statistics/674797/big-data-management-in-the-supply-chain-3pls-customers.

Talwar, S., Kaur, P., Fosso Wamba, S., & Dhir, A. (2021). Big Data in operations and supply chain management: a systematic literature review and future research agenda. International journal of production research, 59(11), 3509-3534.

Tiwari, S., Wee, H. M., & Daryanto, Y. (2018). Big data analytics in supply chain management between 2010 and 2016: Insights to industries. Computers & Industrial Engineering, 115, 319-330.

Tsai, J., Raghu, T. S., & Shao, B. B. M. (2013). Information systems and technology sourcing strategies of e-retailers for value chain enablement. Journal of Operations Management, 31(6), 345–362.

Waller, M. A., & Fawcett, S. E. (2013b). Data science, predictive analytics, and Big Data: A revolution that will transform supply chain design and management. Journal of Business Logistics, 34(2), 77–84.

Wamba, S. F., Akter, S., Edwards, A., Chopin, G., & Gnanzou, D. (2015). How 'big data'can make big impact: Findings from a systematic review and a longitudinal case study. International journal of production economics, 165, 234-246.

Wamba, S. F., Gunasekaran, A., Akter, S., Ren, S. J. F., Dubey, R., & Childe, S. J. (2017). Big data analytics and firm performance: Effects of dynamic capabilities. Journal of business research, 70, 356-365.

Wong, D. (2012). Data is the next frontier, analytics the new tool: Five trends in big data and analytics, and their implications for innovation and organisations. London: Big Innovation Centre.

Zacharia, Z. G., Sanders, N. R., & Nix, N. W. (2011). The emerging role of the third-party logistics provider (3PL) as an orchestrator. Journal of Business Logistics, 32(1), 40–54.

Zhong, R. Y., Huang, G. Q., Lan, S., Dai, Q. Y., Chen, X., & Zhang, T. (2015). A big data approach for logistics trajectory discovery from RFID-enabled production data. International Journal of Production Economics, 165, 260-272.

Employee Happiness and Organisational Effectiveness: A Case Study of a Small and Medium Enterprise (SME)

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Abstract

This paper examines the relationship between employee happiness and organisational effectiveness through a detailed case study of a professionally managed small and medium-sized enterprise (SME) based in Bhopal. Drawing upon both quantitative and qualitative survey data and interviews, the research investigates how employee-centric human resource practices influence productivity, retention, engagement, and internal culture. Using validated psychological scales along with SPSS-based correlation analysis, the study finds a strong positive link between workplace happiness and organisational performance metrics.

The case reveals that initiatives focused on recognition, work-life balance, autonomy, and inclusive communication significantly enhanced employee morale, emotional well-being, and loyalty. Findings show that happier employees reported higher efficiency, stronger alignment with company goals, and better interpersonal dynamics. Notably, the organization also achieved measurable financial growth and improved retention, suggesting that happiness is not only a moral imperative but a strategic asset.

This paper contributes to the under-researched domain of workplace well-being within the Indian SME context, offering practical insights for business leaders and policymakers. It argues for embedding well-being into the core of HR strategy to foster agile, resilient, and high-performing organisations, particularly in post-pandemic work environments.

Keywords: Employee Happiness, Organisational Effectiveness, Workplace Culture, Retention, Productivity, Well-Being

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1. Introduction

In the contemporary business environment, the role of employee happiness has evolved from a peripheral concern to a critical driver of organisational success. Beyond traditional metrics such as profitability and market share, modern enterprises increasingly recognise that sustainable growth is inherently linked to the well-being of their workforce. Studies have shown that happy employees are more productive, less likely to leave their jobs, and contribute significantly to a positive organizational culture (Lyubomirsky, King, & Diener, 2005). Happiness at work, encompassing emotional well-being, job satisfaction, and engagement, correlates directly with enhanced creativity, innovation, and cooperation - qualities essential for competitive advantage in today's knowledge-driven economy.

Despite global interest in workplace happiness, much of the existing research is centred on large multinational corporations, with limited attention to the experiences of small and medium-sized enterprises (SMEs) in emerging markets. This paper addresses that gap through a case study of Ashkom Media India Pvt. Ltd., an ISO 9001:2015-certified HR consultancy firm based in Bhopal, India. Known for its People-Service-Profit (PSP) philosophy, Ashkom has adopted progressive HR policies aimed at maximising employee well-being, from flexible leave schemes to educational support and inclusive team engagement practices.

The purpose of this study is to explore how such policies impact the internal culture and overall organisational effectiveness of Ashkom. By examining both quantitative survey data and qualitative management perspectives, the study seeks to uncover actionable insights into how happiness can serve as a strategic resource in human resource management. The findings contribute to the growing body of literature that positions workplace happiness not merely as a moral imperative, but as a measurable determinant of organizational performance.

Moreover, in a post-pandemic environment where hybrid work, emotional fatigue, and generational expectations are reshaping corporate priorities, the pursuit of workplace happiness has acquired new urgency. Companies are now expected not only to be profitable but also to be psychologically safe and socially responsible. Against this backdrop, Ashkom's model provides relevant, scalable practices that combine emotional well-being with tangible business results.

Further, as organisations face challenges such as mass resignations and workforce burnout, happiness at work is no longer just an aspirational value; it has become a strategic necessity. Companies with higher levels of employee well-being are increasingly seen as more resilient, agile, and competitive. Research from Deloitte (2021) emphasises that integrating well-being into work design can lead to improved outcomes in areas such as customer satisfaction, organisational brand reputation, innovation, and adaptability. Thus, embedding happiness into the core of corporate governance and operational strategy is no longer optional but essential.

2. Literature Review

Employee happiness has garnered increasing academic and corporate interest over the past two decades, evolving from a subjective well-being discourse into a measurable construct influencing organisational performance. Seligman's PERMA model (2011), which frames well-being through Positive Emotion, Engagement, Relationships, Meaning, and Accomplishment, serves as a foundational theory in the understanding of happiness in organisational settings. Parallel to this, Herzberg's Two-Factor Theory (1959) outlines motivators such as recognition and responsibility as essential to job satisfaction, a critical component of happiness.

Organisations like Google, Salesforce, and Zappos have institutionalised employee-centric policies, demonstrating how workplace satisfaction can drive innovation, talent retention, and customer loyalty. Google is renowned for its "people operations" strategy, as documented in Bock (2015), which emphasises data-driven HR practices to foster autonomy and development. Salesforce consistently ranks among the top companies for employee happiness, with initiatives like the "Ohana Culture" that promote inclusivity and purpose (Salesforce, 2023). Zappos, through its emphasis on delivering happiness and its unique onboarding processes, has linked employee culture directly to customer experience and business outcomes (Hsieh, 2010)

Empirical studies support these outcomes. Lyubomirsky et al. (2005) found that happier employees are 12–15% more productive, while research by Oswald, Proto, and Sgroi (2015) demonstrated that happiness significantly enhances productivity in experimental and real-world settings. Gallup's (2023) workplace report further quantified the economic value of engagement, a byproduct of happiness, estimating that employees who are not engaged or who are actively disengaged cost the world $8.8 trillion in lost productivity. That's equal to 9% of global GDP.

Cable and Gino (2020) identify key drivers of workplace happiness: autonomy, purpose, personal growth, and value alignment. They argue that when these conditions are met, organisations experience higher productivity, lower turnover, and stronger financial performance.

Several Indian corporations also exemplify this shift. The Tata Group promotes employee happiness through initiatives like Tata Steel's wellness and family programs, which boost retention and morale. Capgemini India (2023) integrates emotional and social well-being into its culture with targeted initiatives such as its menopause sensitivity campaign. Infosys (2022) supports mental health via counselling and hybrid work policies under its Happiness@Work banner. Mahindra & Mahindra's "Rise for Good" strategy aligns employee well-being with business goals, fostering both purpose and productivity (internal reports, 2024).

Additionally, recent meta-analyses (e.g., Fisher, 2010) have confirmed the direct influence of affective well-being on job performance, particularly in knowledge-intensive sectors.

The rise of Chief Happiness Officers (CHOs) in several global firms also signals a formal institutionalisation of happiness within organisational hierarchies. These trends point to a systemic evolution in HR management where metrics like Net Promoter Score (NPS) and Employee Net Promoter Score (eNPS) are now joined by regular happiness audits and pulse surveys.

Emerging research also emphasises the role of psychological capital, which comprises hope, optimism, resilience, and self-efficacy in mediating the relationship between workplace happiness and job performance. Luthans et al. (2007) found that employees with higher psychological capital exhibit more proactive behaviour and stronger commitment to organisational goals. Additionally, literature from behavioural economics highlights that emotional rewards and social recognition often outperform financial incentives in sustaining long-term engagement (Ariely, 2010). These findings have practical relevance for SMEs that may lack financial bandwidth but can still compete through culture.

Employee happiness significantly influences organisational success, shaping performance, culture, behaviour, and the overall work environment. A positive work culture, as Schein (2010) and Pink (2009) argue, thrives when employees feel respected, intrinsically motivated, and aligned with purpose - conditions that drive collaboration and innovation. Indian leaders like A.P.J. Abdul Kalam (2005) and Narayana Murthy (2009) emphasise that meaning, ethics, and purpose are foundational to building a happy, committed, and high-performing workforce - principles that remain deeply relevant in today's organisational landscape.

Happiness also boosts organisational effectiveness. Drucker's (2006) management philosophy shows that recognition, purpose, and meaningful work enhance engagement and productivity. Prahalad (2004) underscores the necessity for businesses to foster innovation through collaboration and empowerment, which are closely tied to employee satisfaction and engagement. Gupta (2019) highlights the importance of cultivating a workplace environment rooted in trust and empowerment, linking employee satisfaction directly to enhanced performance and innovation.

Behaviourally, happiness is the precursor to success, not merely the result, and that happiness and optimism fuel performance and achievement (Achor, 2010). Amabile and Kramer's studies (2011) confirm that happier employees collaborate better and perform more creatively. Bruch & Ghoshal (2003) emphasise how emotional well-being and leadership climate directly impact an organisation's ability to retain talent and perform sustainably. Traditional wisdom from Chanakya echoes this: ethical, empowered workers contribute more meaningfully to collective outcomes. According to Chanakya, a good leader realises that his/her whims and preferences come secondary to the real needs and issues of the organisation. He should give due consideration to the needs of his employees and keep them happy. An organisation with happy employees usually leads to happy customers. (The People's Management)

On the workplace level, happiness enhances morale and retention. Grant (2013) links supportive environments to psychological safety. Modern research supports these claims. Extensive research by Saïd Business School, in collaboration with British multinational telecoms firm BT, has found (Oxford, 2019) a conclusive link between happiness and productivity and found that workers are 13% more productive when happy.

Ghoshal (2003) and Gallup (2024) warn that disengagement costs the global economy $8.9 trillion, while engaged employees boost profitability by 21%.

In sum, the literature confirms that happiness is not only a psychological construct but a strategic business variable. The integration of well-being into HR practices is increasingly being recognised as a catalyst for resilience, innovation, and sustainable organisational growth. This paper builds on this literature by examining an Indian SME, thereby contributing to the under-researched intersection of happiness and organisational development in emerging markets.

3. Research Objective

- The primary objective of this study is to evaluate the impact of employee happiness and well-being initiatives on organisational effectiveness and internal culture. Specifically, the research aims to:
- Assess how HR policies focused on well-being influence employee engagement, retention, and job satisfaction.
- Examine the relationship between employee happiness and organisational productivity.
- Identify the role of management practices in sustaining a culture of happiness.
- Explore the perceptions of employees and management toward existing happiness-related initiatives.
- Provide actionable recommendations for replicating such models in other Indian SMEs.

4. Hypotheses

Based on the review of existing literature and preliminary observations from Ashkom's organisational practices, the following hypotheses are proposed:

H1: There is a positive correlation between employee happiness and organisational productivity.

H2: Employee-centric HR policies significantly improve employee retention and job satisfaction.

H3: A supportive and inclusive work culture positively influences the emotional well-being of employees.

H4: Employees in organisations with structured happiness and well-being programs demonstrate higher levels of interpersonal cooperation and lower conflict.

H5: Positive perceptions of top management's attitude towards employee welfare enhance organizational commitment and alignment with corporate goals.

5. Methodology

This study employed a mixed-methods approach, integrating both quantitative and qualitative techniques to evaluate the relationship between employee happiness and organisational effectiveness at Ashkom Media India Pvt. Ltd.

In addition to statistical methods, anecdotal narratives from interviews were thematically mapped against constructs in the PERMA model to provide deeper psychological insights. The triangulation of subjective responses and performance indicators helped mitigate bias and capture a more comprehensive picture of organisational health.

5.1 Research Design

A case study design was selected to allow an in-depth examination of the company's HR practices and their impact on employee well-being and organisational outcomes.

5.2 Data Collection

5.2.1 Employee Surveys

A structured questionnaire comprising 74 items was administered to all 20 employees across various departments at Ashkom's Bhopal office. The questionnaire covered dimensions such as life satisfaction, emotional well-being, workplace relationships, motivation, and perceived fairness of organisational policies. Responses were anonymous to ensure candor.

5.2.2 Psychological Scales

The survey included standardised tools such as the Life Satisfaction Scale, the Positive and Negative Affect Schedule (PANAS), and a custom well-being checklist designed to capture emotional and physical health indicators.

5.2.3 Structured Interviews

Key management personnel, including the Managing Director, Executive Director, and Senior Managers, were interviewed to understand leadership perspectives on employee happiness, HR policies, and organisational culture.

5.2.4 Sampling

All 20 full-time employees at the Bhopal office participated in the survey, providing a 100% response rate. Demographic details were recorded, including age, gender, marital status, and tenure with the company.

6. Data Analysis

Survey data were analysed using SPSS Version 26 to identify patterns in employee responses and correlations. Thematic coding was applied to qualitative interview transcripts to extract insights related to management philosophy, employee development, and work culture.

6.1 Ethical Considerations

Participants were informed of the purpose of the study, assured confidentiality, and participation was entirely voluntary. Informed consent was obtained before data collection.

This comprehensive methodology enabled the triangulation of employee perceptions, psychological well-being indicators, and leadership insights, ensuring the robustness and credibility of the research findings.

7. Employee Survey Findings

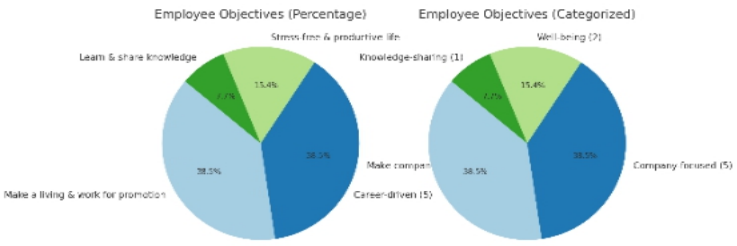
7.1 Purpose of the company

13 out of 20 respondents said that the purpose of the company was to provide efficient manpower to the clients, 3 felt that it was a mix of profit and providing efficient manpower, and 3 employees added that the company also worked for society and the less privileged.

7.2 Employee's objective

5 employees said that their objective was to make a living, and work hard for a promotion, an equal number added that they want to make the company the best in its field, and 2 said that, in addition, they want to lead a stress-free and productive life. Only 1 responded, adding that he would like to learn from others and share his knowledge for the betterment of the company.

Figure 1: Employee Objectives



7.3. The company's ability to Satisfy Clients' Requirements

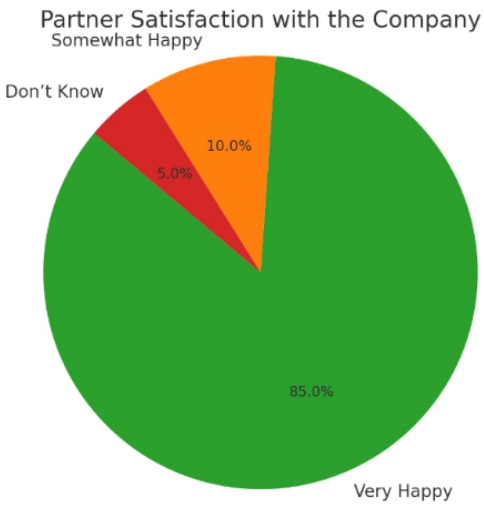
All respondents felt that the company meets the client's requirements to the extent of 75 to 100%

Clients, in the opinion of most of the employees, receive the highest priority among all the stakeholders.

7.4 Happiness and Well-Being Related Questions

17 out of 20 respondents felt that all the partners, like Banks, financial institutions, and social groups, etc., are very happy with the company. 2 felt that they are somewhat happy, and one didn't know.

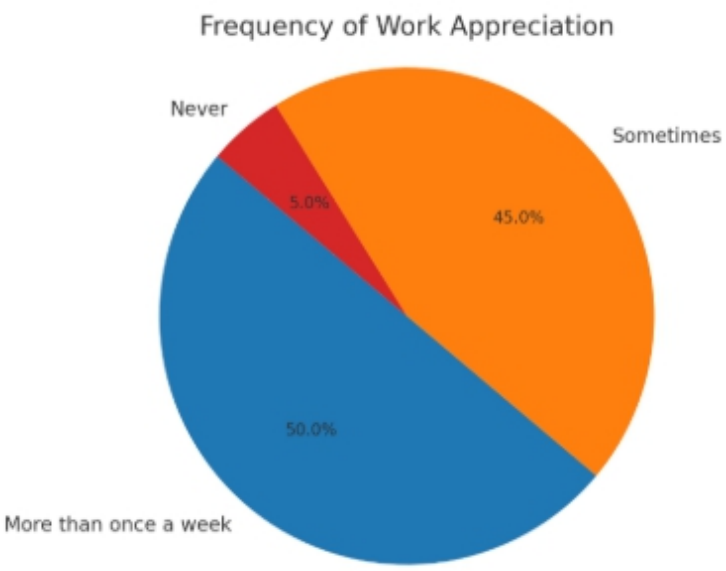
Figure 2: Partner Satisfaction with the Company



7.5 Appreciation and Recognition

50% of respondents said that they received appreciation for their work more than once a week. 9 said sometimes, only 1 said never.

Figure 3: Frequency of Work Appreciation



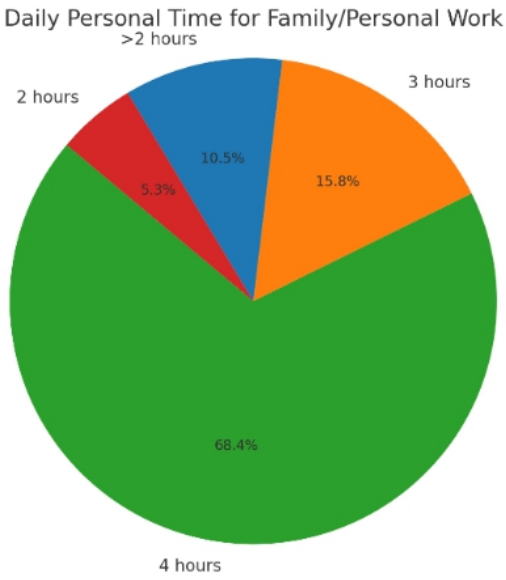
7.6 Incentives and Compensation

All employees confirmed receiving various financial and non-financial benefits, including performance-based incentives, medical coverage, sponsored lunches, and recreational activities.

7.7 Perceived Productivity Increase Over 5 Years

work more than once a week. 9 said sometimes, only 1 said never.

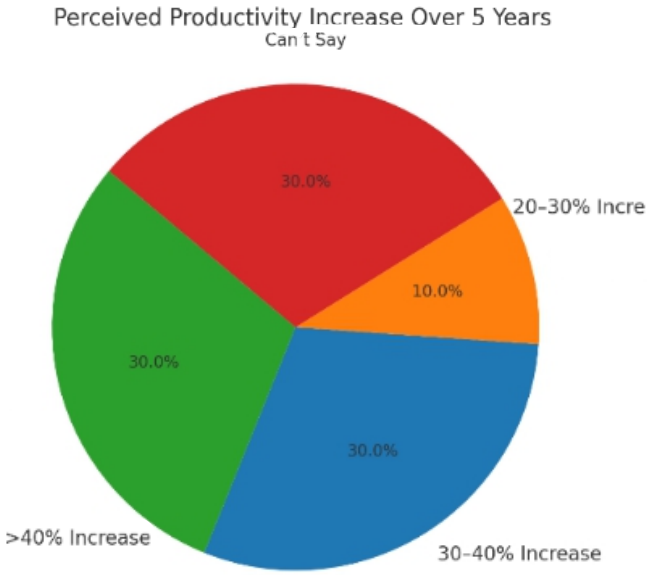
Figure 4: Daily Personal Time for Family/Personal Work



7.8 Work-Life Balance

13 respondents said that they get 4 hours for family and their work. 3 said 3 hours, 2 said they get more than 2 hours, and 1 said 2 hours. All except 2 respondents said that they were not required to work on holidays. 6 respondents felt that their productivity/efficiency has increased above 40% during the last five years. 6 respondents felt it was 30 to 40%, 2 said 20 to 30%. 6 respondents said they couldn't say.

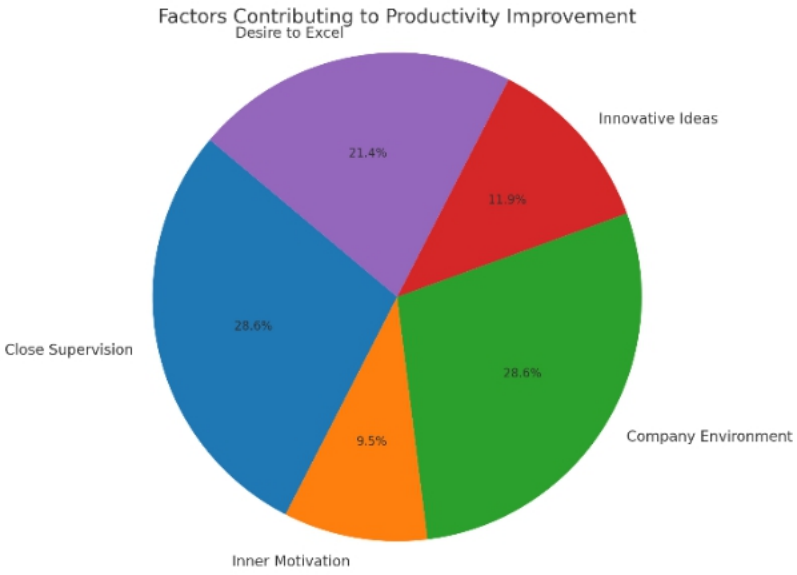
Figure 6: Perceived Productivity Increase Over 5 Years



7.9 Factors Contributing to Productivity Improvement

12 said that close supervision of their seniors was responsible for improvement in their productivity/efficiency. 4 respondents thought that it was their inner motivation. 12 respondents said it was the company's environment, 5 respondents attributed it to their innovative ideas, and 9 respondents felt that it was also due to their desire to excel.

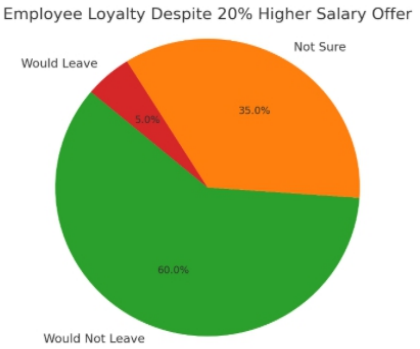
Figure 7: Factors Contributing to Productivity Improvement



7.10 Retention Indicators

60% of employees expressed unwillingness to leave the company even for a 20% salary hike elsewhere. Only one employee indicated they would leave, highlighting strong organisational loyalty.

Figure 8: Employee Loyalty Despite 20% Higher Salary Offer



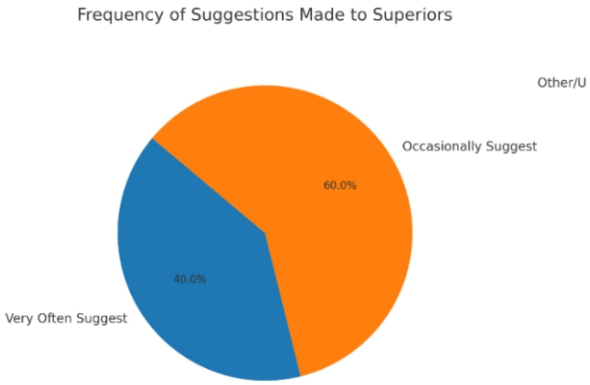
7.11 Response to Employee Suggestions

8 respondents said that they very often made suggestions to their superiors about improving their work and solving problems. The other 12 respondents occasionally made such suggestions. 17 respondents said that these suggestions were discussed, considered, and accepted. Remainder gave answers like "Never faced this solution", "Not given any suggestion yet", and "it is a team development scenario of ideas-putting across ideas, coming to conclusions, and implementing; ticked Yes and No both"

7.12 Response to Employee Suggestions

Response to Employee Suggestions

Figure 9: Frequency of Suggestions Made to Superiors



7.13 Heated Arguments and Perception of Unfair Favours

8 respondents said that sometimes they had heated arguments with colleagues, and 12 never had any heated arguments.

Figure 10: Incidence of Heated Arguments Among Colleagues

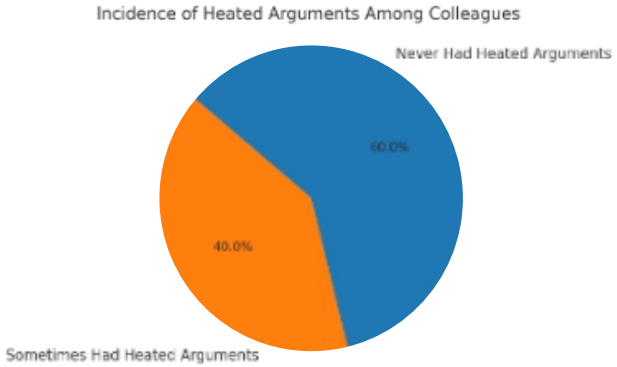
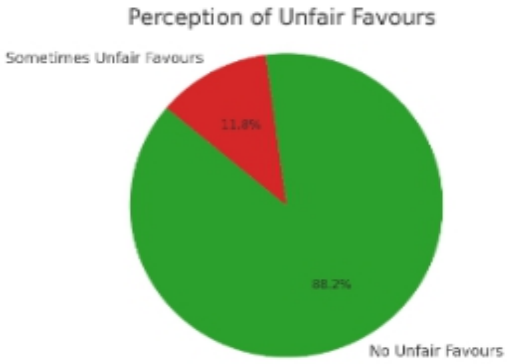


Figure 11: Perception of Unfair Favours



7.14 Unresolved disputes and Overall Happiness Level

17 out of 20 respondents reported that there was never a dispute that remained unresolved. However, 3 respondents said that sometimes disputes remained unresolved.

Figure 12: Occurrence of Unresolved Disputes

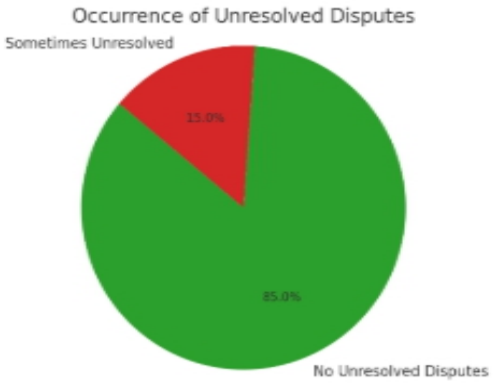
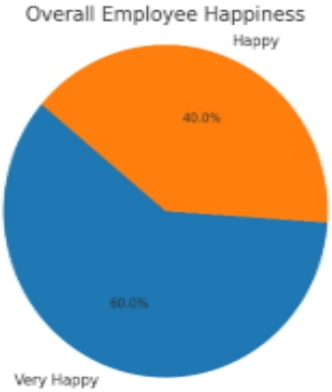


Figure 12: Occurrence of Unresolved Disputes



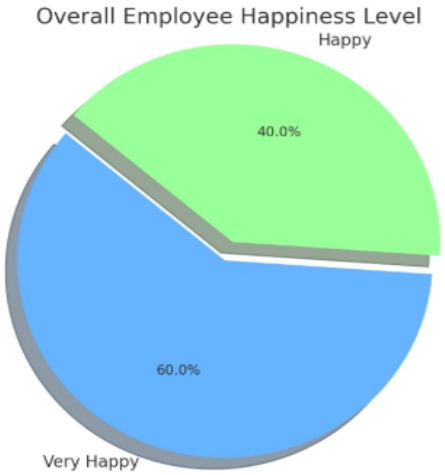
7.15 Conflict and Fairness

A majority (75%) had never experienced serious conflict or perceived favouritism, indicating a positive and inclusive work culture.

Happiness level

In a one-to-one unstructured conversation with the employees, they were asked to describe their overall working experience in the company. 12 said that they were very happy with the work environment, while the remaining said they were happy.

Figure 14: Overall Employee Happiness Level



7.16 Happiness Measures

PANAS and well-being checklists showed high scores on positive affect and minimal scores on negative affect among the majority of respondents.

. **12. Hypothesis Correlation Results**

Hypothesis	Correlation Coefficient (r)	p-value
H1: Happiness vs Productivity	0.919	0.0
H2: Fairness vs Retention	0.707	0.0005
H3: Fairness vs Happiness	0.707	0.0005
H4: Culture vs Happiness	0.688	0.0008
H5: Unresolved Disputes vs Culture	-0.813	0.0

Quantified correlations for five hypotheses:

H1: There is a positive correlation between employee happiness and organizational productivity.

- Correlation coefficient: $r = 0.92$, $p < 0.001$
  Strong positive correlation. Happier employees report significantly higher productivity.

H2: Employee-centric HR policies significantly improve employee retention and job satisfaction.

- Fairness vs Retention: $r = 0.71$, $p < 0.001$
- Fairness vs Happiness: $r = 0.71$, $p < 0.001$
- Strong positive correlation. Fair, employee-focused HR policies drive both retention and job satisfaction.
- H3: A supportive and inclusive work culture positively influences the emotional well-being of employees.
- Culture vs Happiness: $r = 0.69$, $p < 0.001$
  Moderate to strong positive correlation. A positive work culture boosts emotional well-being.

H4: Employees in organisations with structured happiness and well-being programs demonstrate higher levels of interpersonal cooperation and lower conflict.

- Unresolved Disputes vs Culture: $r = -0.81$, $p < 0.001$
- Unresolved Disputes vs Fairness: $r = -0.73$, $p < 0.001$
  Strong negative correlation. Fewer unresolved disputes (i.e., better well-being programs) are linked with better cooperation and fairness.

H5: Positive perceptions of top management's attitude towards employee welfare enhance organisational commitment and alignment with corporate goals.

- Org Effectiveness vs Retention: $r = 0.71$, $p < 0.001$
- Org Effectiveness vs Objective Alignment: $r = 0.90$, $p < 0.001$
  Strong positive correlation. Perceived effectiveness of leadership correlates with both retention and employee alignment.

10. Management Interview Insights:

- Leadership emphasised open-door communication, emotional support, and employee empowerment.
- Unique practices included taking meals together, short leave policies, family education sponsorship, and celebration of employee milestones.
- Management perceived their HR approach as aligned with ethical values and long-term strategic goals, consistently reinforcing their PSP (People-Service-Profit) model.

11. Organisational Growth Metrics:

- Ashkom's revenue grew from ₹1.2 million in 1999 to ₹400 million in 2024. The reserves and surplus increased by over 50% over the last five years.
- The company scaled from a small team to over 9,000 outsourced employees across India, with 86 in-house staff.

These findings strongly support the hypotheses that employee happiness positively correlates with organisational productivity, retention, and cultural strength. The quantitative and qualitative data converge to validate that a well-structured happiness strategy is integral to sustainable organisational success.

12. Results and Discussion

Employee surveys and management insights at Ashkom Media India Pvt. Ltd. reveal how happiness-focused HR practices drive performance and resilience. Employees align with the company's mission of efficient manpower delivery and show a strong commitment to both client satisfaction and organisational growth. A culture of regular recognition boosts morale. Most employees enjoy over four hours of daily personal time and rarely work on holidays, highlighting a balance between

performance and well-being. Transparent, merit-based incentives foster innovation and productivity, with most employees reporting notable improvements over five years. Loyalty is high; many would not leave even for a 20% salary hike, valuing autonomy, appreciation, and belonging. Open daily communication encourages teamwork, and reports of conflict or unfairness are rare. Around 85% say their suggestions are considered and implemented, reflecting a culture of collaboration and initiative.

Employees anticipate promotions, value flexibility and meaningful perks, and express high emotional well-being with low negative affect. Longer-serving staff report the highest satisfaction, and minimal gender differences indicate equitable policies.

Ashkom's approach shows happiness as a strategic lever—boosting retention, teamwork, and effectiveness. Low-cost initiatives like flexible leave and peer appreciation strengthen emotional bonds. Financially, the company grew driven by a culture rooted in loyalty and performance.

This Indian SME case reinforces that employee happiness and well-being are not optional but essential for sustained organisational success.

13. Conclusion

Ashkom's case confirms that happiness-centric, employee-focused policies enhance productivity, retention, and workplace culture. Wellness benefits, recognition, and communication have led to tangible business gains.

The study shows SMEs can embed happiness into strategy, cultivating trust, collaboration, and innovation. As work evolves, organisations that treat happiness as a strategic priority will be better positioned to attract talent and stay agile.

There is a need for standardised SME happiness indices that blend retention and productivity with subjective metrics like fairness and autonomy. Governments and industry bodies should help institutionalise happiness as a core performance metric. In today's world, happiness is not just a value—it's a sustainability driver.

References

Achor, S. (2010). The happiness advantage: The seven principles of positive psychology that fuel success and performance at work. https://psycnet.apa.org/record/2010-22071-000

Amabile, T. M., & Kramer, S. J. (2011). The progress principle: Using small wins to ignite joy, engagement, and creativity at work. Harvard Business Review Chapter 1 and 2 (pp. 17–38)

Ariely, D. (2010). Predictably irrational: The hidden forces that shape our decisions (Rev. ed.). Harper Perennial. Chapter 4 (pp. 67–72) and Chapter 12 (pp. 203–209)/.

Bock, L. (2015). Work Rules! Insights from Inside Google That Will Transform How You Live and Lead. New York: Twelve. (pp 7,8, 232–250)

Bruch, H., & Ghoshal, S. (2003). Unleashing Organizational Energy. MIT Sloan Management Review, 45(1), 45–51.

Cable, D. M., & Gino, F. (2020). What makes employees happy at work. Harvard Business Review. (May 6, 2020)

Capgemini. (2023). Fostering menopause sensitivity at work: Inclusion & wellbeing. https://www.capgemini.com/in-en/about-us/csr/diversity-and-inclusion/happiness-wellbeing/

Deloitte. (2021). 2021 Global human capital trends: The social enterprise in a world disrupted. Deloitte Insights.(2021) https://www2.deloitte.com/content/dam/insights/us/articles/6935_2021-HC-Trends/di_human-capital-trends.pdf?utm_source=chatgpt.com

Drucker, P. F. (2006). Knowledge-worker productivity: The biggest challenge https://www.researchgate.net/publication/3228419_Knowledge-worker_productivity_The_biggest_challenge

Gallup. (2023). State of the global workplace report. Gallup, Inc. https://www.gallup.com/workplace/393497/world-trillion-workplace-problem.aspx

Grant, A. (2013). Give and take: Why helping others drives our success. Viking.

Gupta, R. (2019). Mind Without Fear: The Extraordinary Story of the Rise and Fall of a Global Business Icon. RosettaBooks (p112).

Herzberg, F., Mausner, B., & Snyderman, B. B. (1959). The motivation to work (2nd ed.). Wiley.

Hsieh, T. (2010). Delivering happiness: A path to profits, passion, and purpose. Business Plus.

Infosys. (2022). Happiness@Work initiative: Enhancing employee experience. https://www.inventiva.co.in/trends/infosys-implements-hybrid-model/ Kalam, A. P. J. (2005). Ignited Minds: Unleashing the Power Within India p. 81).

Luthans, F., Avolio, B. J., Avey, J. B., & Norman, S. M. (2007). Positive psychological capital: Measurement and relationship with performance and satisfaction. Personnel Psychology, 60(3), 541–572. https://doi.org/10.1111/j.1744-6570.2007.00083.x

Lyubomirsky, S., King, L., & Diener, E. (2005). The benefits of frequent positive affect: Does happiness lead to success? Psychological Bulletin, 131(6), 803–855. https://doi.org/ 10.1037/0033-2909.131.6.803

Mahindra Group. (2023). Rise for Good: Employee wellbeing and social impact. https://www.mahindra.com/riseforgood

Murthy, N. R. N. (2009). A better India: A better world. Penguin Books. (p. 45)

Oswald, A. J., Proto, E., & Sgroi, D. (2015). Happiness and productivity. Journal of Labor Economics Volume 33, Number 4 https://www.journals.uchicago.edu/doi/10.1086/681096

Pink, D. H. (2009). Drive: The surprising truth about what motivates us. Riverhead Books. (pp. 87–88, 132–137)

Prahalad, C. K. (2004). The Fortune at the Bottom of the Pyramid (p 25)

Salesforce. (2023). Salesforce culture and values. https://www.salesforce.com/company/careers/values/

Schein, E. H. (2010). Organizational Culture and Leadership (4th ed. pp. 36–41).). Jossey-Bass.

Seligman, M. E. P. (2011). Flourish: A visionary new understanding of happiness and well-being. Free Press.

Tata Steel. (2023). Employee wellness and family initiatives. https://www.tatasteel.com/media/newsroom/in-the-news/2024/tata-steel-launches-wellness-portal-and-apps-for-employee-wellbeing/

The People's Management Addressing the Needs of the Organization and Keeping Employees Happyhttps://thepeoplemanagement.com /essence-of-chanakya-niti-for-success-hr/

University of Oxford (2019), Happy workers are 13% more productive https://www.ox.ac.uk/news/2019-10-24-happy-workers-are-13-more-productive

Next Generation Leadership through Mentorship and Succession Planning: Challenges and Their Solutions for Educators

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Abstract

As Father of Modern Management Peter F. Drucker stated, "You must be bold and make courageous decisions for a successful business." With startups and mushrooming unicorns creating disruption, the next generation's leadership demands change. The next generation of leaders must be resilient and develop a balance between short-term and long-term goals. Educational institutions must enhance the latest technological skills in budding future managers. Quality education is a bouquet of knowledge, skillsets and attitudes that need proper guidance from educators. They need proper mentoring and hand-holding from educators, alums, and industry experts so that, as new entrants, they can firmly solidify their positions. The course content should revamp the obsolete information and replace it with the latest knowledge resources. It must help the learners enrich their lateral thinking process and support continuous learning with a positive mindset. Therefore, the role of present educators is more challenging. To develop leadership succession planning, educators must ensure ways of developing leadership skills with a pragmatic approach, then proceed towards the smooth and effective transfer of responsibilities, mitigating potential disruptions and ensuring continuity in organizational performance in the transition from campus to corporate.

This paper highlights the difficulties learners and educators face in nurturing leadership skills. What are the challenges that learners face, and how should educators bring transformation in their roles? The source of the data is primary.

Keywords: Leadership, Succession Planning, Mentoring, Educators

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1. Introduction

It is the prime responsibility of educational institutions to understand the skill gap and address the potential crisis of changing leadership that is needed in the professional world by including it in the curriculum of higher education succession planning [3]. Therefore, well-defined succession planning is required to address leadership shortages and to meet organisational sustainability. These professionals will be held responsible for their various stands in problem-solving and decision-making. They may hamper their future roles and responsibilities without helping them hone these skills during their learning phase. A research review presented by [4] revealed how experienced and seasoned leaders could cooperate with academicians and learners to answer the leadership challenges they face by redefining and bringing changes in the content of learning, opening new avenues of regular interaction and mentorship that facilitate the ability of leadership and may result in significant progress in student's employability skills. Based on this thought, an effort is put forward to understand and explore the current application of teaching modules and pedagogy and their impact on learners. Are the faculty members helping the future professionals develop the required 21st-century employability skills or not? If yes, how is it done? Otherwise, what steps should be taken to implement the required steps to fill the gap appropriately? Research also suggests that succession planning supports the learner in understanding their course curriculum, using the techniques of assessment for recruitment and applying suitable retention practices for future leaders [8]. For this, there is a need to obtain relevant support to address leadership succession, promote quality improvement, and address cultural high-performance issues Succession planning (SP) studies has been completed to evaluate the lack of SP at higher education [10]. Formal SP has been found in previous studies to suffer from lack of communication, lack of knowledge, gender inequality, lack of leadership, low priority, and lack of talent as barriers to establishing a formal succession plan [1]. Professionals obtaining the degree are found either tight-lipped or poor in their expressions. It is observed that they lack the art of articulation, leading to a communication gap. The communication gap can also happen due to unawareness, shortage of knowledge and rote learning. In a country like India, where males dominate society, females get rare opportunities to continue their studies. The gap between the gender education ratios is significant, which can act as a hurdle in future. According to the 2011 census, only 63% of the female population is literate. There is a huge literacy gap of 17% between males and females. However, the lack of knowledge will have a higher impact on SP education than philosophy and strategy. The American Association of Community Colleges (2021) sees the need to prepare pre-emptive actions to reduce leadership losses in higher education. However, the onus falls on the educators to teach and train them as per the corporate fitment. Leaders of organisations may influence both parties through role creation and knowledge transfer through modelling, role creation, reflexive activities, processes, and insights. Academic internal leadership promotion may be based on an identified faculty member's identification through the development of his or her teaching abilities rather than one's leadership and management abilities. A faculty member selected for completion from administrative leadership using this lack of assurance would not be an effective leader [5]. Another barrier to internal SP identified in academia is the inference that internal candidate commitments cannot always be retained. Whether higher education chooses internal or external successors is controversial [6]. The lack of effective SP at higher education institutions may limit organisational knowledge transfer and contemporaneous predictions of leadership shortages regarding organizational effectiveness. With this in mind, the research paper analyses the factors influencing how succession planning is managed in private education institutions, particularly in B-Schools. A massive change in the mushrooming of private educational institutions was seen after Liberalisation, Globalisation and Privatisation. Education emerged as an industry in India after 1990. After a decade, due to the entry of deemed universities, a wave of transformation in the education sector was witnessed again in the country. Most of the private institutions running now are still owned by the veterans or the baby boomers, and the transformation of leadership through succession planning has yet to be carried out, or the passing of the baton has not taken place to the next generation. In some cases, transfer of ownership is not possible because of change in interest areas of work. As the problem of succession planning directly impacts the institution and its working officials [9], this research is entirely focused on knowing the factors that have influenced succession planning in the education sector in Bihar State and how the educators need to add their wisdom to help in enhancing required knowledge and skills. For this, the researcher has done primary research, which will help analyse the various factors in mentorship, transformation of leadership in the next generation and succession planning to meet the future requirements of educators and learners mentored by the educators.

2. Literature Review

Leadership development and succession planning have emerged as strategic priorities in the educational sector. Research underscores that succession planning is often underdeveloped in academia due to insufficient communication, a lack of training, gender inequality, and an absence of structured leadership pathways (Fusarelli et al., 2018). Effective succession planning not only ensures institutional continuity but also supports the development of future-ready professionals equipped to take on leadership roles (Eddy & Garza Mitchell, 2017).

Cuthbert (2014) emphasizes that national-level developments in education policy and global economic pressures necessitate institutional practices that incorporate long-term planning, including leadership grooming. However, educational institutions, especially in developing nations, often face systemic barriers to formalizing such plans (Bano, Yang, & Alam, 2022).

Studies also suggest that mentorship plays a critical role in bridging the leadership gap. Kumar (2017) and Hillman and Baydoun (2019) highlight the necessity of academic institutions fostering strong mentor-mentee relationships to guide students beyond academic learning. Moreover, Upadhyaya and Lele (2022) provide a systematic review showcasing how structured succession planning can positively influence organizational knowledge continuity and student employability outcomes.

Despite these insights, many educators lack the necessary industry exposure to offer practical mentoring, which hampers their ability to bridge the academic-industry divide (Griffith, 2012). This disconnect is a barrier to achieving transformational leadership among students who must transition to corporate roles post-graduation.

Thus, the literature strongly advocates for a collaborative model of leadership development involving educators, alumni, and industry experts. This model must be integrated within the academic framework to ensure sustainability and relevance in leadership education.

2.1 Theoretical framework

he theoretical underpinning of this research integrates the concepts of Transformational Leadership Theory and the Mentorship-Succession Integration Model (MSIM). Transformational Leadership Theory emphasizes the role of visionary leadership in inspiring and empowering followers to achieve exceptional outcomes. When aligned with structured mentorship practices and succession planning, transformational leadership creates a sustainable ecosystem of continuous leadership development in educational institutions.

The Mentorship-Succession Integration Model (MSIM) proposed in this study combines three core constructs:

- Mentorship Engagement – Active and consistent involvement of educators, alumni, and industry professionals.
- Leadership Skills Development – Empowerment through curriculum, projects, and guided exposure.
- Succession Planning Readiness – Institutional processes enabling transition, leadership grooming, and continuity.

These constructs interact synergistically to produce a new generation of adaptable, ethical, and professionally skilled leaders. The model is visually represented below.

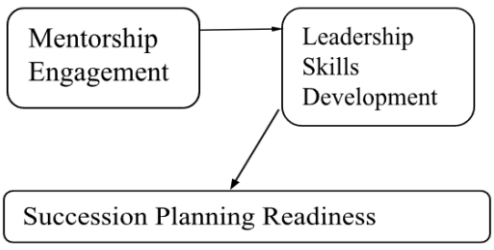


Figure 1: Mentorship-Succession Integration Model (MSIM)

his model illustrates how guided mentoring, when systematically linked to leadership training and institutional planning, can create a continuum of leadership transformation from campus to corporate.

3. Research Methodology

This section outlines the research design, participant profile, and data collection instruments used for primary research into the role of educators in mentoring and succession planning in management education.

3.1 Research design

A descriptive and empirical research design was adopted, focusing on quantitative data collection through structured Google Forms, complemented by qualitative insights from telephonic interviews. The small sample size facilitated direct interaction for clarity and depth.

3.2 Participants

Primary data was collected from PGDM/MBA students who studied at six different institutions in Patna:

- International School of Management Patna
- Patna Women's College
- Amity University
- Chandragupt Institute of Management Patna
- Patna University
- Indian Institute of Business Management

Fifty respondents who completed their PGDM/MBA courses within the past two years and transitioned into the corporate sector were selected. These professionals began as Management Trainees and were promoted to Middle-Level Managers after a six-month probation period. The respondents were chosen as they had been mentored by faculty members and had at least one year of industry experience by FY 2023.

3.3 Instruments

A structured questionnaire was developed and distributed via Google Forms to the target group. The questionnaire included both Likert-scale and dichotomous (Yes/No) questions designed to assess: Perception of leadership skill development, Mentorship by educators, alumni, and industry experts, Exposure to simulation-based and practical learning methods etc.,

Responses were validated through follow-up telephonic interviews. Quantitative data were analysed using the ANOVA single-factor method to identify statistically relevant patterns among the variables.

4. The analysis revealed the following key findings

Leadership Skills Development: 88% of respondents agreed that their managerial capabilities were enhanced through PGDM/MBA education, yet 12% felt the curriculum needed significant upgradation with industry-specific content.

Mentorship Roles: 64% identified educators as the most reliable mentors, while 36% preferred alumni and industry experts, citing real-world insights as more relevant.

Simulation Practices: A considerable gap was found in the application of simulation activities. Respondents expressed that simulations were rare and not effectively integrated into pedagogy.

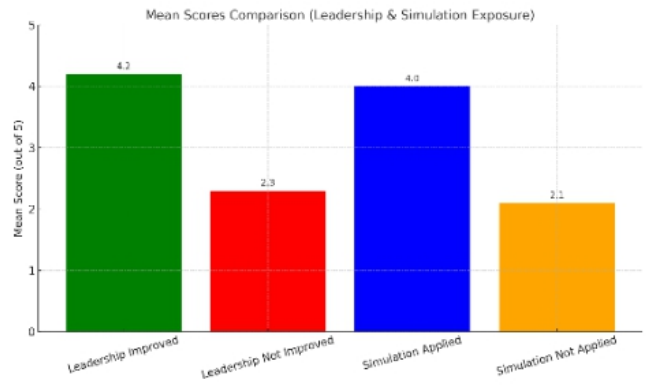
Blind Trust in Educators: Despite limited industrial exposure, most students placed unconditional trust in their faculty, valuing their notes over published academic resources.

Alumni & Industry Mentoring: Alumni and industry experts played a significant but underutilized role in mentoring, especially in providing job referrals and practical exposure.

The findings suggest disconnect between theoretical learning and practical corporate requirements. Educators are highly trusted, but many lack current industry exposure, resulting in a delivery gap. Alumni and industry experts have shown potential in enhancing mentorship effectiveness but are not formally integrated into the educational model.

Group	Mean Score	Std. Dev	Sample Size
Leadership Improved	4.2	0.5	44
Leadership Not Improved	2.3	0.7	6
Simulation Applied	4	0.6	40
Simulation Not Applied	2.1	0.8	10

The curriculum needs restructuring with active participation from industry stakeholders. Simulation exercises must be mainstreamed to prepare learners for real-time challenges. There is also a need for capacity building among educators through FDPs and industry immersion programs. A hybrid mentoring model—blending educators, alumni, and industry professionals—would offer students' balanced and practical guidance.



5. Conclusion

Educators must go beyond conventional teaching to include mentoring and succession planning as a part of their academic responsibilities. The research underlines the importance of experiential learning, strategic mentoring, and integrated leadership development. By creating structured platforms for simulation, industry exposure, and alumni interaction, educational institutions can prepare future leaders who are agile, skilled, and resilient. A redefined role of educators—acting as facilitators of leadership readiness rather than mere deliverers of content—will ensure that learners are not just employable but also equipped to evolve into future leaders.

6. Recommendations

To bridge the gap between academic instruction and corporate expectations, it is essential to embed real-time mentoring and succession planning within the educational framework. Institutions should integrate simulations, case-based learning, blended learning and alumni-industry engagement into the curriculum, while also offering faculty regular exposure through development programs. A structured mentorship calendar, curriculum updates aligned with market needs, and institutional support for leadership development will collectively empower students to evolve into agile, industry-ready professionals.

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Ethical Statement

This study was conducted in accordance with ethical research standards. Participation was entirely voluntary, and respondents were informed about the purpose of the study. No personal or sensitive data was collected, and all responses were anonymized. There was no physical, psychological, or emotional harm to participants during or after the research.

Conflicts of Interest

The author declares no conflict of interest in conducting and presenting this research.

Data Availability Statement

The data supporting the findings is available on request from the corresponding author.

Author Contribution Statement

Author Contributions: Conceptualization, NK; Methodology, [NK]; Software; Validation, [PD, NK]; Formal analysis, [PD]; Writing—original draft preparation, [NK]; Writing—review and editing [NK, PD]; Supervision, [NK]; Funding acquisition, [NIL]. Both authors have read and agreed to the published version of the manuscript.

References

Bano, N., Yang, S., & Alam, E. (2022). Emerging challenges in technical vocational education and training of Pakistan in the context of CPEC. Economies, 10(7), 153.

Cuthbert, R. (2014). The impact of national developments on institutional practice. In The Effective Academic (pp. 32-48). Routledge.

Eddy, P. L., & Garza Mitchell, R. L. (2017). Preparing community college leaders to meet tomorrow's challenges. Journal for the Study of Postsecondary and Tertiary Education, 2, 127.

Fusarelli, B. C., Fusarelli, L. D., & Riddick, F. (2018). Planning for the future: Leadership development and succession planning in education. Journal of Research on Leadership Education, 13(3), 286-313.

Griffith, D. A. (2012). Advanced spatial statistics: special topics in the exploration of quantitative spatial data series (Vol. 12). Springer Science & Business Media.

Hillman, J. R., & Baydoun, E. (2019). Quality assurance and relevance in academia: a review. Major challenges facing higher education in the Arab world: Quality assurance and relevance, 13-68.

Kumar, K. (2017). Routledge Handbook of Education in India. Taylor & Francis.

Mohd Ghazali, Z., Wan Yaacob, W. F., & Wan Omar, W. M. (2023). LGCM and PLS-SEM in Panel Survey Data: A Systematic Review and Bibliometric Analysis. Data, 8(2), 32.

Moussa, A. A., & Elgiziry, K. (2019). The impact of family involvement in business on capital structure decisions: a literature review. Investment Management and Financial Innovations, (16, Iss. 1), 258-266. (Moussa, A.A &Elgiziry, K., 2019)

10. Upadhyaya, A., & Lele, A. (2022). Factors influencing the succession planning in the education sector: a systematic literature review. Journal of Higher Education Theory and Practice, 22(12).

A Study on the Impact of Financial Literacy to Accelerate Financial Inclusion: Evidence from India

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Abstract

This paper investigates the influence of financial literacy on financial inclusion in India with a particular focus on savings behaviour, debt management, investment decision making and financial planning. A structured questionnaire was used to collect data from 380 respondents, SPSS was employed to analyze the data using descriptive statistics, factor analysis and multiple linear regression. The results indicate that all four components of financial literacy significantly and positively affect financial inclusion. The overall model account for 73.1% of the variance in financial inclusion, indicating financial literacy has a robust predicting power. The integrity and validity examinations indicate robustness of the measurement model. The results highlight the need for targeted financial literacy programmes to promote access to formal financial institutions. Individual competencies in saving, credit management, investing, and planning can all help to accelerate financial inclusion, especially in a varied and fast-growing country like India.

Keywords: Financial Literacy, Financial Inclusion, Saving Practices, Investment Behavior, Debt Management

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1. Introduction

In today's global economy, financial inclusion is emerging as a key enabler of long-term development, economic empowerment and poverty reduction. It is the approach which aims at ensuring that all individuals and businesses have access to suitable, cheap and timely financial products, with a special attention to the ones who did not have access to the formal financial system until recently. While such possibilities exist, a large percentage of the population in several emerging economies, including India, is excluded from financial services. Low financial literacy has been identified as one.

Financial literacy – a broad term used to describe effective management of one's financial resources, personal budgeting and investment decision making - is one of the critical capabilities that contributes to individuals' ability to access and effectively interact with the formal financial system. It provides people the knowledge and confidence they need to make savvy financial decisions, avoid debt pitfalls and increase their financial well-being over time. The Reserve Bank of India (RBI) and the Securities and Exchange Board of India (SEBI) have emphasized on financial literacy in nation's financial inclusion programmes.

India has seen tremendous progress when it comes to financial inclusion over the past few years. Government schemes, such as Pradhan Mantri Jan Dhan Yojana (PMJDY), enabling millions of previously unbanked populations to enter the formal banking fold; the Unified Payments Interface (UPI) for digital transactions; higher presence of microfinance institutions (MFIs) and SHGs, all led to enhanced access. But access is not synonymous with effective use of financial services. Most consumers are also not yet empowered to use financial products in a convenient manner. Account ownership is growing but is skewed in favour of urban and privileged sections of the society, data released by the RBI in 2021 revealed that while there is increased share of account ownership, active usage of these accounts is particularly low among the rural and marginalised population. The so-called "passive inclusion" does not bode well for the depth and quality of mobile financial inclusion.

The literature shows that there is a positive relationship between financial literacy and better financial attitudes and access. Financial literacy is related to savings, investment decisions and the wise use of formal credit services. However, the majority of these research have been undertaken in western or high-income countries. In India, the cultural, social, and economic aspects that influence financial behaviour are distinct and complicated. As a result, context-specific research is critical for understanding whether and how financial literacy promotes financial inclusion in India.

This study seeks to close that gap by investigating the primary research question: "Does financial literacy accelerate financial inclusion in India?".

It tries to determine whether people with more financial awareness and planning abilities are more likely to obtain and use formal financial services. The study looks at different aspects of financial literacy, such as savings behaviour, debt management, investment knowledge, and financial planning, and how these affect markers of financial inclusion such account ownership, credit use, insurance, and digital banking.

2. Literature Review

2.1 Financial Inclusion in India

Financial inclusion, or providing all persons with affordable access to formalized financial services, has emerged as a significant policy goal in India. The government's push for schemes such as PMJDY, digital payment infrastructure, and microfinance networks has significantly enhanced access. However, the disparity between access and active use of financial services remains an issue. Saxena and Panwar (2022) show that financial inclusion makes a considerable contribution to India's GDP, particularly through savings accounts and digital transactions. Likewise, Sharma and Sharma (2022) emphasize its benefits in agriculture and MSMEs and to make inclusion as overall economy development approach.

But there are substantial differences by region. Literacy and pace of urbanisation are very significant on participation rate, and the south regions consistently surpassed other regions (Nautiyal and Ismail, 2022). Barot (2017) argued that inclusivity should be one of several development initiatives that are convergent to address urban-rural disparity.

2.2 Financial Literacy: Foundation for Inclusion

Financial literacy is the ability to understand and use various financial skills, including personal financial management, budgeting, and investing. Ghosh (2019) highlights the significant positive relationship between financial literacy programs, such as for the rural unbanked, and the associated enhancement of financial inclusion, particularly in rural areas, which subsequently lessens the dependence on informal lenders. Das and Pattanaik (2024) discuss how financial inclusion has increased among new users under the Digital India program.

According to Mahandule et al. (2024), income, education, and digital access are essential drivers of financial literacy, and any effective strategy must address all three. Kapadia (2019) agrees, stating that poor rural households frequently fall into debt traps due to a lack of understanding about secure financial alternatives.

2.3 Saving Practices and Financial Inclusion

Savings behaviour is a fundamental pillar of financial inclusion, sometimes reflecting people's first encounter with the official financial system. Financial knowledge, income levels, and access to digital financial infrastructure all have a significant impact on saving

decisions, particularly the use of formal financial instruments. Several research support this link. Shamim et al. (2024) used data from the 2021 Global Findex Database to evaluate the influence of digital financial inclusion on India's savings behaviour. They found that individuals with higher income, education and the participation in digital payments increased the probability of people saving and using formal channels. Digital money, including government transfers, helped the shift from informal to formal saving behaviour.

Das and Maji (2023) studied more than 10,000 Indian farmers and found that financial literacy and confidence were the most important factor in the likelihood of having a regular saving. Interestingly, while only 43% of the farmers saved on a regular basis, this was a substantial contrast and it shows that with better financial education a greater take-up of savings could have been achieved.

Mohanta and Dash (2022) examined rural population and found that financial advisors can moderate savings behaviour. Their results suggested that financial counselling should be included in formal avenues of advice in order to help consumers handle multiple savings schemes, especially among semi-literate population.

2.4 Debt Management and Financial Inclusion

Debt management is a critical component of financial resilience and inclusion. It protects people from certain financial hardships, and from exploitative lending cycles, while also improving its users' credit scores and access to formal loans. India What's more, in a country like India, which still witnesses informal lending widely in rural India, it becomes even more important to ensure that financial literacy is imparted in a manner to promote responsible credit usage and debt repayment habits. Harshith and Ishwara (2024) studied the impact of financial literacy in improving loan repayment performance under the Mudra Yojana scheme. Their results showed that debtors with higher financial literacy budgeted better, repaid timely, and made significant business decisions. Financial education has been associated to lower loan defaults and greater financial inclusion among micro-entrepreneurs.

Sikarwar et al. (2020) used a macroeconomic lens to highlight how rising family debt, particularly mismanaged informal debt, might stifle financial inclusion and economic growth. Their regression research revealed a negative association between family debt and GDP, and they advised for incorporating debt literacy initiatives into India's financial inclusion strategy. Kumar and Joshi (2016) also offered evidence from rural India, demonstrating that even basic financial literacy instruction resulted in 40% greater loan repayments than individuals who did not receive such training. Their study supports government activities such as the RBI's Financial Literacy Week, which are critical interventions in improving debt management behaviour.

2.5 Investment Practices and Financial Inclusion

Investment literacy—the ability to identify, compare, and manage investment risks—is a sophisticated aspect of financial inclusion. Because of their unfamiliarity with or distrust of official investment goods, the majority of Indians continue to rely on traditional and informal routes (for example, gold, property). Arora and Chakraborty (2022), utilising FII survey data from nearly 47,000 Indian respondents, discovered that enhanced financial literacy, particularly in urban regions, significantly increased participation in equity markets, SIPs, and pension plans. They also mentioned that influence from family or peers who invest in the stock market was a significant motivator.

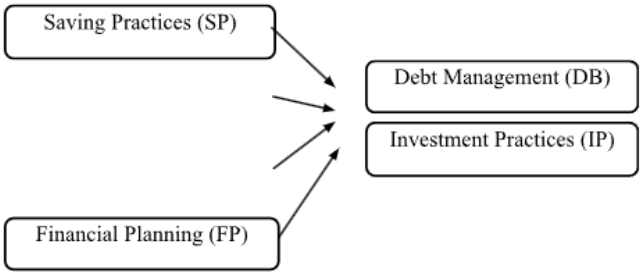
Shroff and Paliwal (2024) confirmed that, despite high awareness of savings products, genuine participation in varied investment instruments was low, owing to risk aversion and a lack of knowledge of product features. Desai et al. (2022) argue that FinTech platforms, when combined with investment literacy, can democratise access to mutual funds and insurance for semi-literate and low-income individuals. Their research found that digital nudges, video lectures, and gamified content increased participation in financial products, particularly among first-time users.

2.6 Financial Planning and Financial Inclusion

Budgeting, goal setting, and expenditure management are all examples of financial planning activities that have been linked to better financial behaviour and more participation in financial markets. In India, where day-to-day financial survival frequently trumps long-term planning, developing these skills is critical to attaining actual financial inclusion. Agarwal et al. (2015) conducted one of India's first large-scale evaluations, finding that those who could properly answer questions about interest rates and inflation were more likely to engage in structured financial planning. This resulted in increased insurance uptake and informed investment behaviour.

Das and Pattanaik (2024) emphasise that financial planning entails more than just saving and budgeting; it also includes recognising long-term trade-offs and risk mitigation. They emphasise that a lack of planning frequently leads to over-indebtedness and underinsurance, especially among rural populations new to formal banking. In research conducted in Ahmedabad and Vadodara, Shroff and Paliwal (2024) discovered that while broad financial literacy was reasonably strong, in-depth comprehension of planning topics—such as emergency fund generation and debt restructuring—was low. Their findings also revealed that financial planning behaviour significantly predicted financial resilience, particularly during income disruptions like the COVID-19 pandemic.

Figure 1: Research Framework



Source: Zahid et al., 2024

3. Research Methodology

This study uses a quantitative survey research approach to investigate the association between financial literacy aspects and financial inclusion in India. The study population includes Indians of all ages, economic levels, and employment types, representing a wide cross-section of society. A structured questionnaire with five-point Likert scale items was used to obtain primary data from 380 respondents using purposive sampling. Saving Practices, Debt Management, Investment Practices, Financial Planning, and Financial Inclusion are the constructs measured. Each dimension was assessed with five items modified from previously validated scales. The data was entered and evaluated with SPSS. The constructs' reliability and validity were assessed using Cronbach's alpha, the Kaiser-Meyer-Olkin (KMO) test, and Bartlett's Test of Sphericity. The discriminant and convergent validity were tested using correlation and loading measures.

The key statistical approaches employed for analysis include descriptive statistics, correlation analysis, and multiple linear regression. These methodologies were chosen due to their ability to identify predictive associations and test hypotheses about the impact of financial literacy on financial inclusion.

3.1 Objectives of the Study

- To examine the influence of savings practices on financial inclusion in India.
- To assess the relationship between effective debt management and financial inclusion.
- To analyze the effect of investment practices on the level of financial inclusion.
- To evaluate the role of financial planning behavior in promoting financial inclusion.

3.2 Hypothesis Formulation

- H_1: There is a significant positive relationship between savings practices and financial inclusion.
- H_2: There is a significant positive relationship between debt management practices and financial inclusion.
- H_3: There is a significant positive relationship between investment practices and financial inclusion.
- H_4: There is a significant positive relationship between financial planning behavior and financial inclusion.

4. Results

4.1 Respondents' Profile

The study comprised 380 respondents from various demographic backgrounds. The majority of the sample (65.78%) was between the age of 25 and 44, with 23.15% under the age of 25 and 11.07% older than 45. The gender distribution was fairly balanced, with 56.31% men and 43.69% women participating. The majority of responders were highly educated, with approximately 90% possessing at least a bachelor's degree. The average monthly income ranges from ₹15,000 to ₹50,000. In terms of employment, more than half (53.42%) worked full-time, while the remainder were students, part-time employees, or business owners. This demographic diversity makes the study's conclusions more relevant and applicable.

Table 1: Demographic Characteristics

Characteristic		Frequency	Percentage (%)
Age	Below 25 years	88	23.15
	25-34 years	127	33.42
	35-44 years	123	32.36
	Above 45 years	42	11.07
Gender	Male	214	56.31
	Female	166	43.69
Income (Monthly)	Less than ₹15,000	48	12.63
	₹15,000-₹30,000	134	35.26
	₹30,000-₹50,000	144	37.89
	More than ₹50,000	54	14.22
Education Level	Diploma/Associate Degree	14	3.68
	Bachelor's Degree	148	38.94
	Master's Degree	193	50.78
	Doctorate	25	6.6
Employment Status	Student	40	10.52
	Permanent Part Time Job	77	20.26
	Permanent Full Time Job	203	53.42
	Own Business	60	15.8

4.2 Factor Loads

All individual elements in each construct had high factor loadings ranging from 0.618 to 0.699. These values are substantially over the acceptable threshold of 0.60, showing that each item has a strong impact on its corresponding latent variable. This lends credence to the measurement model's construct validity and shows that the survey items are effective indicators of the conceptual qualities meant to be measured.

Table 2: Factor Load

	Variables	Factorial Load	Average Factorial Loads
Saving Practices	SP1	0.697	0.682
	SP2	0.669	
	SP3	0.664	
	SP4	0.689	
	SP5	0.692	
Debt Management	DM1	0.686	0.678
	DM2	0.657	
	DM3	0.686	
	DM4	0.669	
	DM5	0.692	
Investment Practices	IP1	0.668	0.67
	IP2	0.661	
	IP3	0.69	
	IP4	0.655	
	IP5	0.675	
Financial Planning	FP1	0.65	0.654
	FP2	0.699	
	FP3	0.669	
	FP4	0.633	
	FP5	0.618	
Financial Inclusion	FI1	0.631	0.661
	FI2	0.65	
	FI3	0.691	
	FI4	0.682	
	FI5	0.651	

4.3 Convergent Validity

The Kaiser-Meyer-Olkin (KMO) measure and Bartlett's Test of Sphericity were used to evaluate the sample adequacy and suitability of factor analysis. The KMO values for all structures surpassed 0.82, indicating that sampling was adequate. Bartlett's test results were statistically significant ($p < 0.001$), indicating strong correlations among variables suitable for factor analysis. These findings support convergent validity, which means that the items within each construct are closely connected and effectively measure the same underlying concept.

Table 3: Convergent validity

	Kaiser-Meyer-Olkin Measure	Bartlett's Test of Sphericity
SP	0.839	0.000
DM	0.835	0.000
IP	0.828	0.000
FP	0.825	0.000
FI	0.829	0.000

4.4 Discriminant Validity

The discriminant validity of the components was confirmed by correlation analysis. Although moderate to high correlations were found between Saving Practices and Debt Management (0.804) and Investment Practices and Debt Management (0.796), none of the inter-construct correlations above critical levels indicating redundancy or multicollinearity. This indicates that the constructs are statistically distinct and conceptually separate, which meets the criteria for discriminant validity.

Table 4: Discriminant Validity

	SP	DM	IP	FP	FI
SP	1				
DM	0.804	1			
IP	0.815	0.796	1		
FP	0.777	0.781	0.778	1	
FI	0.784	0.792	0.792	0.771	1

4.5 Reliability Analysis

Cronbach's alpha values were used to determine each construct's internal consistency. The findings revealed good dependability across all constructs: Saving Practices (0.7968), Debt Management (0.7932), Investment Practices (0.7816), Financial Planning (0.7768), and Financial Inclusion (0.7790). Each of these values exceeds the suggested minimum threshold of 0.70, demonstrating that the items within each construct accurately measure their respective dimensions and that the scales are reliable.

Table 5: Reliability

Factor	Cronbach's Alpha
Saving Practices	0.797
Debt Management	0.793
Digital Literacy	0.782
Financial Planning	0.777
Financial Inclusion	0.779

4.6 Model Fit

The regression model produced a multiple correlation coefficient (R) of 0.855, indicating a significant association between the independent variables and financial inclusion. The four characteristics of financial literacy (saving practices, debt management, investment practices, and financial planning) explain 73.1% of the variation in financial inclusion, according to the coefficient of determination (R^2) of 0.731. This high explanatory power supports the model's resilience and theoretical relevance.

Table 6: Model Fit

Model	*R*	*R Square*
Financial Inclusion	0.855	0.731

5. Hypothesis Testing

The four hypothesis about the impact of financial literacy factors on financial inclusion were confirmed by statistics. Saving Practices (3.756), Debt Management (5.056), Investment Practices (4.842), and Financial Planning (4.369) all had t-values that were significantly higher than the 1% threshold for significance. Similarly, all p-values were considerably below 0.01, indicating that these predictors are statistically significant. These findings demonstrate that each factor of financial literacy makes a relevant and positive contribution to financial inclusion. Thus, empirical data clearly supports the hypothesis that improving financial literacy in these domains can increase financial inclusion in India.

Table 7: Hypothesis Testing

Hypothesis	*t-value*	*p-value*	*Result*
H_1: There is a significant positive relationship between savings practices and financial inclusion	3.756	<0.01	Accepted
H_2: There is a significant positive relationship between debt management practices and financial inclusion.	5.056	<0.01	Accepted
H_3: There is a significant positive relationship between investment practices and financial inclusion.	4.842	<0.01	Accepted
H_4: There is a significant positive relationship between financial planning behavior and financial inclusion	4.369	<0.01	Accepted

6. Discussion

The study's findings support a substantial, positive link between financial literacy components and financial inclusion among Indian participants. All four characteristics of financial literacy—saving practices, debt management, investing strategies, and financial planning—had statistically significant effects on financial inclusion. The strong R^2 value (0.731) from regression analysis supports the model's explanatory strength and highlights the importance of financial capabilities in encouraging inclusive behaviour. These findings are similar with prior studies (e.g., Ghosh, 2019; Arora & Chakraborty, 2022), which underscored the relevance of financial literacy in shifting from access to successful use of formal financial services. Individuals who practice prudent saving and debt management, for example, are more inclined to use formal banking institutions. Similarly, knowledge with investment instruments improves portfolio diversification and retirement readiness, whereas financial planning promotes risk management and economic stability. In India, where financial exclusion is frequently caused by behavioural inertia, distrust of financial institutions, and informational gaps, our study reinforces the policy narrative that financial literacy is not only complementary, but also necessary for achieving comprehensive inclusion. The data also show that, even when infrastructure improves through programs such as PMJDY and UPI, demand-side readiness is still dependent on knowledgeable and confident financial behaviour.

7. Conclusion

This study adds to the enhancing body of literature on financial inclusion by empirically demonstrating the importance of financial literacy in promoting financial inclusion in India. By breaking down literacy into its essential components—saving, debt, investing, and planning—the study provides detailed insights into how each factor contributes to increased engagement in formal financial systems. The findings show that financial literacy not only correlates with, but also plays an important role in achieving financial inclusion.

Given the statistically significant associations found, the study recommends integrated financial literacy programs that are user-friendly, context-specific, and behaviourally focused. Policymakers should think about integrating financial education into many touchpoints—schools, workplaces, and digital platforms—to create a financially literate populace capable of using formal services to improve long-term well-being.

8. Recommendations

To promote financial inclusion, financial literacy should be included in school teachings and given through specific initiatives for rural and excluded areas. Financial education can be made more accessible and interesting through digital resources such as apps and videos. Training bank and microfinance workers to educate consumers will have a greater impact. Furthermore, programs should be evaluated for efficiency, and behavioural tools such as budgeting apps can promote

better planning. All efforts should be coordinated with national programs such as PMJDY and Digital India to ensure both access and effective use of financial services.

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Ethical Statement

The authors did not conduct any investigations with human or animal subjects.

Conflict of Interest

The authors state that there are no conflicts of interest in the publishing of this work.

Author Contribution Statement

Conceptualization, [VD,& AS]; Methodology, [AS, A K S]; Software, [A K S]; Validation, [VD,& AS]; Formal analysis, [AS]; Writing—original draft preparation, [VD]; Writing—review and editing, [VD, AS, A K S]; Supervision, [AS]. All authors have read and approved the manuscript in its published form.

References

Agarwal, S., Amromin, G., Ben-David, I., Chomsisengphet, S., & Evanoff, D. D. (2015). Financial literacy and financial planning: Evidence from India. Journal of Housing Economics, 27, 4–21. https://doi.org/10.1016/j.jhe.2015.02.003

Arora, J., & Chakraborty, M. (2022). Role of financial literacy in investment choices of financial consumers: an insight from India. International Journal of Social Economics, 50(3), 377–397. https://doi.org/10.1108/ijse-12-2021-0764

Barot, P. (2017). Financial inclusion in India. Imperial Journal of Interdisciplinary Research (IJIR), 3(4), 1098-1104.

Das, R. K., & Pattanaik, A. (2024). From inclusion to literacy: A financial journey in the Indian landscape. Journal of Investment, Banking and Finance.

Das, S., & Maji, S. K. (2023). Impact of financial literacy and financial confidence on the savings behaviour of the farmers: the Indian scene. Agricultural Finance Review, 83(4/5), 845–861. https://doi.org/10.1108/afr-05-2023-0056

Desai, K., M, U., & S, P. (2022). FinTech: Answer for financial literacy and financial inclusion in India. ECS Transactions, 107(1), 15317–15327. https://doi.org/10.1149/10701.15317ecst

Ghosh, S. (2019). Financial inclusion through financial literacy: Some recent initiatives in India. E-Commerce for Future & Trends, 6(2), 30–33.

Harshith, B. P., & Ishwara, P. (2024). Exploring the relationship between financial literacy and repayment of Mudra loans.

Kapadia, S. (2019). A perspective on financial literacy and inclusion in India. SSRN Electronic Journal. https://doi.org/10.2139/ssrn.3396241

Kumar, S., & Joshi, D.H. (2016). Financial Inclusion through Financial Literacy in India: Issues and Challenges. Bonfring International

Journal of Industrial Engineering and Management Science, 6, 200-203.

Mahandule, V., Patil, H., Padghan, P., & Temgire, S. (2024). Financial literacy in India. International Journal of Advanced Research in Science, Communication and Technology.

Mohanta, G., & Dash, A. (2022). Do financial consultants exert a moderating effect on savings behavior?A study on the Indian rural population. Cogent Economics & Finance, 10(1). https://doi.org/10.1080/23322039.2022.2131230

Nautiyal, T., & Ismail, S. (2022). Financial inclusion in India: a regional and district level analysis. Asian Journal of Economics Business and Accounting, 280–290. https://doi.org/10.9734/ajeba/2022/v22i2230732

Saxena, A., & Panwar, V. (2022). Significance and impact of financial inclusion on Indian economy: an empirical study. NMIMS Management Review, 30(04), https://doi.org/10.53908/nmmr.300405

Shamim, T., Ahmad, N., & Zeeshan, M. (2024). An Investigation of Digital Financial Inclusion and its impact on Saving Behaviour: Empirical Evidence from India. Sylwan. https://doi.org/10.59879/zgmih

Sharma, T., & Sharma, S. (2022). ROLE OF FINANCIAL INCLUSION IN ECONOMIC GROWTH OF INDIA. ShodhKosh Journal of Visual and Performing Arts, 3(2). https://doi.org/10.29121/shodhkosh.v3.i2.2022.3350

Shroff, S. J., & Paliwal, U. L. (2024). Understanding Financial Literacy, Financial Resilience and Investment Decisions: A Case of Two Cities from India. Journal of Commerce and Accounting Research, 13(1), 90–101. https://doi.org/10.21863/jcar/2024.13.1.009

ikarwar, T., Goyal, A., & Mathur, H. (2020). Household Debt, Financial Inclusion, and Economic Growth of India: Is it Alarming for India? Asian Economic and Financial Review, 10(2), 229–248. Shttps://doi.org/10.18488/journal.aefr.2020.102.229.248

Zahid, R. M. A., Rafique, S., Khurshid, M., Khan, W., & Ullah, I. (2023). Do Women's Financial Literacy Accelerate Financial Inclusion? Evidence from Pakistan. Journal of the Knowledge Economy, 15(1), 4315–4337. https://doi.org/10.1007/s13132-023-01272-2

Tech-enabled Solutions for Bottom of Pyramid: Success Stories from India

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Abstract

The realization of self-reliant and prosperous India would not be accomplished if a major chunk of its population is left behind. Prahlad & Hart (1998) referred to this major chunk as "the bottom of the pyramid". The needs and requirements of BOP differ significantly from those of other segments. To realize the potential of this major chunk of the market their needs and priorities need to be identified and addressed. For ensuring sustaining profitability of BOP, companies need to facilitate them to come out of the viscous cycle of poverty and deprivation. The focus should be on educating, empowering and enlightening them. New technologies are enabling lower-cost distribution models, with the use of technology like internet for things, products and services may be delivered to the hinterland, which otherwise would have been financially unviable. The research paper explores five cases where technology and the internet had not only made products and services available to BoP consumers but also made their lives better in many ways. As the topic of the research addresses the question "How technology and internet can help in empowerment of the bottom of the pyramid in India" it is quite logical to employ case study method wherein three cases are studied where technology has led to a better life for bottom of the pyramid. The first case is based on an initiative whereby a public distribution system tracking system facilitated by global positioning system(GPS) in Krishnagiri, a small-town bordering Andhra Pradesh and Karnataka improved the efficiency of the public distribution system, plugged leakages and benefited millions. The second case discusses a mobile based technology innovation, E-Mamta, an initiative of the Gujrat which led to reduction in mortality rate and better healthcare of expecting mothers and newborn babies. The third case discussed is about the opening of "Tiny Branch" by Zero Mass Foundation in association with State Bank of India in villages. The bank branch operates entirely with the help of mobile phones and finger scanners. With the help of the technology branches of bank have been opened in areas such as Naxal hit Dantewada and in far flung hilly region of Seiling in Mizoram, which otherwise were thought of as dangerous and financially unviable zones. The fourth case discusses how smart meters is preventing electricity theft and the fifth case discusses how technology intervention during Covid in education sector continue to make education more accessible and inclusive.

Keywords: Tech-enabled Solutions, Bottom of the Pyramid, Empowerment, Inclusion, India, Technology.

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1. Introduction

The bottom of pyramid (BOP) is the term given to those 4 billion people whose annual per capita income, based on purchasing power parity in U.S. Dollars is less than $ 1,500, the minimum considered essential to live a respectable life [1]. Experts believe that there was tremendous opportunity at the bottom of the pyramid. Realizing the market potential of bottom of the pyramid, companies shifted their focus on it. They started targeting this untapped market with cheaper versions of their existing products. The terms like generic version, no frill model, etc. came into being. This approach had a major drawback as it assumed that the only difference between the high income and mid income group customers and customers belonging to bottom of pyramid was that of buying capacity, which was often not the case. The needs and requirements of BOP differ significantly from those of other segments.

In the words of G Sundaram, Vice President, Corporate Development, Godrej & Boyce, "it is unlikely that BOP consumers will use refrigerator to store frozen peas or butter". Thus, bringing down the cost of product simply by reducing the features is not an answer to the needs of BOP consumers. There is a need to study and understand the market segment and provide customized solutions to their problems.

To enhance the profitability of customer groups belonging to BOP efforts must be made to uplift them. The upliftment should take place in all aspects including education, empowerment and active participation in policy formulation. However, all this must have a business sense also. After all the purpose of business is business. Marketing low-cost products with high-cost business models makes little sense for most companies [1]

One of the major reasons for the divide between the haves and haves-not is the inability of the poor to access products and services. Access to products and services can be ensured for the consumers belonging to BOP by employing different strategies. Selling various products ranging from toothpaste to health drinks in sachets is perhaps one of the most successful ways of making things accessible to the poor. New technologies are enabling lower-cost distribution models, with the use of technology products and services may be delivered to the hinterland, which otherwise would have been financially unviable [2]. The research paper explores five cases where technology and internet had not only made products and services available to BOP consumers but also made their lives better in many ways.

2. Literature Review

Bottom of the pyramid has been often viewed as an unprofitable and uncertain market [3]. The marketers believe that BOP population does not have the buying power to justify investment. The low price of goods and services targeted towards them does not leave much scope for profits. It is assumed that the population is unaware of and unused to advanced technologies. These myths have kept BOP devoid of products and services to a large extent.

To actively involve the poorest strata of the society, it is necessary to ensure access and availability of goods and services to them through innovation [4]. A report published by the World Resources Institute and International Finance Corporation observed that there is enough information about BOP markets, and sufficient field experience to justify more attention as well as business investment [5]. There is ample business opportunity in bringing more of the BOP into the formal economy and in improving the delivery of essential services to this large population segment.

Addressing the problems of the large, fast growing and diverse BOP market segment offers a big challenge to the business institutions as well as the government institutions and demands out-of-box thinking [6]. Serving the BOP market segment often requires awareness generation and market development. For example, companies manufacturing oral care products need to teach the importance of hygiene and cleanliness to the BOP market segment before promoting their respective brands. The inadequate facilities and appalling infrastructure are other constraints that need to be dealt with [7]. Projecting BOP as a profitable market segment in one's own organization is difficult (8,9). Due to these reasons BOP has remained underserved and ignored [10, 11, 12].

The BOP population is characterized by unmet basic needs (access to basic healthcare, water and sanitation, financial services, education, etc.) The condition is so grim primarily because of local monopolies, inadequate access, poor distribution and strong traditional intermediaries. According to a report, "The Next 4 Billion -Market size and business strategy at the base of the pyramid "published by World Resource Institute and International Finance Corporation, Washington D.C.[5]. BOP markets are often rural, especially in emerging countries like India, are poorly served, dominated by local informal economies and consequently relatively uncompetitive and inefficient. They starkly contrast with wealthier mid-market population segments that are largely urban, relatively well-served and extremely competitive.

Although BOP market is quite a challenging and underexplored market segment, the opportunities are immense. Technology can play a very important role in serving the BOP. Accessibility is one of the thrust areas in catering to the needs of BOP. Distribution networks in emerging markets are different and not well connected; India is no exception [13]. As C. K. Prahalad categorically highlights in The Fortune at the Bottom of the Pyramid, "Distribution systems that reach the BOP are critical for developing this market. Innovations in distribution are as critical as products and process innovations". In this research paper five cases are discussed where technology and internet have been effectively employed to make services available to the BOP. The paper also discusses how deployment of technology has also led to transparency and curtailment of corrupt practices.

3. Research Methodology

3.1 Research design

The methodology adopted for the research was CASE STUDY METHOD. The researcher studied five cases to explore the benefit of employing technology for the empowerment of the bottom of the pyramid. Case study research is conducted to gain in-depth understanding of a case set in real word context. The case study method may be defined as follows:

"An empirical inquiry about a contemporary phenomenon (e.g., a "case"), set within its real-world context—especially when the boundaries between phenomenon and context are not clear [14]".

Case studies are pertinent when research is either descriptive or explanatory. The research is said to be explanatory when it aims to explain a phenomenon and attempts to find out why or how a thing happened. As the topic of the research addresses the question "How technology and internet can help in empowerment of the bottom of the pyramid in India" it is quite logical to employ case study method wherein five cases would be studied where technology and internet has led to a better life for bottom of the pyramid.

3.2 Participants

The research paper explores five cases where technology and the internet had not only made products and services available to BoP consumers but also made their lives better in many ways.

The first case is based on an initiative whereby a public distribution system tracking system facilitated by global positioning system (GPS) in Krishnagiri, a small-town bordering Andhra Pradesh and Karnataka improved the efficiency of the public distribution system, plugged leakages and benefited millions.

The second case discusses a mobile based technology innovation, E-Mamta, an initiative of the Government of Gujrat which led to reduction in mortality rate and better healthcare of expecting mothers and newborn babies.

The third case discussed is about the opening of "Tiny Branch" by Zero Mass Foundation in association with State Bank of India in villages.

The fourth case discusses how smart meters is preventing electricity theft.

The fifth case discusses how technology intervention during Covid helped in continuing education and thereafter making education more accessible and inclusive.

Every case is discussed under four headings: Background, Problem Statement, Technology Intervention and Turnaround and Challenges.

4. CASE 1: PLUGGING THE LEAKAGES IN PUBLIC DISTRIBUTION SYSTEM

4.1 BACKGROUND

India's Public Distribution System (PDS) is the largest distribution network of its kind in the world. PDS is operated jointly by the Centre and the state governments. It has a network of 4.99-lakh fair-price shops, making it the largest in the world. PDS aims to provide subsidized food and fuel to the poor. Food grains such as rice and wheat that are provided under PDS are procured from farmers, allocated to states and delivered to the ration shop where the beneficiary buys his entitlement. The Centre and states share the responsibilities of identifying the poor, procuring grains and delivering food grains to beneficiaries. While the procurement, storage, transportation and bulk allocation of food grain is looked after by Centre, the state government monitors distribution [15].

It is not easy to manage such a large and widely dispersed distribution network. There are many vested interests and intermediaries who with their corrupt practices, defy the basic purpose of the system. The PDS often find itself in the news for all the wrong reasons. With scams of magnitude of crores of rupees defaming the system, the government is under public scanner to run it smoothly and ethically. According to the SP Pal report to the Planning Commission — a comprehensive government report on PDS compiled in 2005 — over 36% of the budgetary subsidy on food has disappeared in the qualms of corruption and 21% reaches the above poverty line households. Of the estimated 45.41 million below poverty line households, targeted PDS has reached only 57%. The report identifies targeting errors and ghost cards/ bogus cards as the major challenges to the targeted public distribution system. These, as well as some other flaws in the delivery mechanism, have led to large-scale leakages (36.38%) and diversion (21.45%) of subsidized grains to unintended beneficiaries. Another report — the Justice Wadhwa Committee report on PDS compiled in 2009 — had indicated four major reasons for inefficiency in food rationing system: many ration cards under a single name, erroneous records, specious distribution and inadequate monitoring system. The committee recommended an effective and efficient monitoring system starting from the top to the bottom encompassing transactions at all levels and transport. The panel also observed that the system must be web-enabled as it would enhance the transparency of the system.

4.2 PROBLEM STATEMENT

Krishnagiri which is a small-town bordering Andhra Pradesh and Karnataka has been facing the problem of deficit of food grains and other essential items allocated to poor sections of the society through public distribution system. The shortage arises because of the large-scale cross border smuggling. According to the official data in 2010, over 30 trucks carrying goods worth Rs. 20 lakhs were seized. Rice which was to be sold at Re 1 per kg under PDS used to be smuggled and sold at Rs. 13 or even more per kg.

4.3 TECHNOLOGY INTERNVENTION

The solution to the problem was found in Geographical Positioning System (GPS). The trucks loaded with food grains and other commodities for public distribution were fitted with GPS. The GPS was designed and manufactured by EI (Experience Innovation) Labs in Bangalore. These trucks would leave the FCI (Food Corporation of India) godowns. The GPS was connected to the main server to which

the officials have access. With the help of the GPS device the location of every truck could be traced. One could also keep track of the time taken to reach the destination, which was the various fair price shops. The real-time tracking software installed in the GPS, the trucks could be tracked continuously through a webpage. The moving trucks are indicated by green pointers and the trucks which are not moving are shown by red ones. The movement of the trucks right from the stockyards to the point where the commodities are distributed among the cardholders viz. below the poverty line (BPL cardholders) and above the poverty line APL card holders) is under the surveillance of officers of co-operative department. If the officer finds that a truck is stopped somewhere longer than usual or the truck is following a route different from the intended one, the field officer may be alerted to check the vehicle, and the driver of the truck may be contacted on phone. This is how the goods reach the fair price shops safely. In order to avoid any malpractice at the end of the shopkeeper, the administrators have installed electronic weighing machines at the fair price shops. To ensure accurate billing at the time of sale, a general packet radio service (GPRS) enabled handy billing machine is used. These machines have been installed by an organization, Coromandel Infotech. It prevents any manipulation in records. The machine prints the bill in local language i.e. Tamil so that the cardholder is aware of the purchases made by him and spurious bill is not generated in his name. The billing details are fed in the central database and reports on the opening and closing stock are generated on a regular basis. It reduces the chances of theft at the shopkeeper's end.

4.4 TURNAROUND AND CHALLENGES

In the words of V Arun Roy, District Collector, Krishnagiri, "there has been a noticeable difference. For example, when we go for inspection, we have advance information on opening and closing stock. That way we can check pilferage effectively." C Rangarajan, who headed the prime minister economic advisory panel under the UPA government appreciated the technology-based initiatives of states like Tamil Nadu, Chattisgarh, Uttar Pradesh and Madhya Pradesh to address the wrong practices marring the PDS. However, more needs to be done in this field as there are many challenges. The vested interests are trying their best to outsmart the technology and find new ways of smuggling the commodities meant for PDS. For example, in Chattisgarh the truck drivers have taken out the GPS systems from the trucks and fit them on the motorcycles. However, despite the challenges technology has done a lot in making the ration meant for poor reach its rightful beneficiaries.

5. CASE 2: E-MAMTA, NURTURING MOTHER AND THE CHILD

5.1 BACKGROUND

According to the UN report, India had the highest number of under-five deaths in the world in 2012, with 1.4 million children in the country dying before age five. The figures a distressful considering the remarkable decrease in the under-five mortality rate since 2000 in underdeveloped countries such as Bangladesh, Ethiopia, Malawi, Nepal, Niger, Rwanda, Uganda and the United Republic of Tanzania. Where on one hand the global maternal mortality ratio (MMR) dropped by 45 per cent between 1990 and 2013, on the other hand India still accounts for 17 per cent of maternal deaths. The UN has laid an ambitious Millennium Development Goal (MDG) 4 -which aims to reduce Under-Five Mortality (U5MR) by two thirds between 1990 and 2015[16]. India would lag if the related socio-economic; maternal and demographic; and environmental determinants are not aligned with the goal.

In the words of Thomas Chandy, CEO of 'Save the Children','We need to focus all services for maternal health and infant health, but we are not investing enough as of now. The services are not reaching the most marginalized sections of the society."

5.2 PROBLEM STATEMENT

Reduction in the health indicators like Infant Mortality Rate (IMR) and Maternal Mortality Rate (MMR) is among the leading challenges in public health domain in India. Three main causes of all neonatal deaths in India are: prematurity and low birth weight, neonatal infections and birth asphyxia and birth trauma [17]. Each of the major causes of neonatal deaths can be prevented or treated with known, highly effective and widely practicable interventions such as improvements in prenatal care, intrapartum care (skilled attendance, emergency obstetric care and simple immediate newborn care), postnatal family-community care (preventive post-natal care, oral antibiotics management of pneumonia), 24 and tetanus toxoid immunization. However, one of the major challenges before public health in India is unawareness among major chunk of population. Many deaths can be prevented if the expecting mothers are taken care of. Tracking pregnant mothers and children is the prerequisite for providing effective healthcare services to this group. This in turn can have a large impact on reducing IMR and MMR [18].

5.3 TECHNOLOGY INTERNVENTION

E-mamta is a mobile phone-based technology application implemented by the Government of Gujrat since 2010. It is web-based software application accessed through http://e-mamta.guj.nic.in/. Under this program rural health worker, trained by the National Rural Health Mission (NRHM) conduct door-to-door survey collecting information about pregnant women and mothers of newly born infants and send it using their mobile phone to State Rural Health Mission (SRHM). SHRM which is the government body, collates the data into a centralized database. System generated unique Health IDs is provided to such females. This data is then used to alert rural health workers - through SMS to ensure they keep on reminding the pregnant women and mothers of newly born infants of immunization dates and precautions to be taken and facilitate the process. In addition, timely SMS is sent to beneficiaries directly, if they have a phone, for uptake of services. The state office regularly monitors the data entry at each

facility. Reporting system has been developed to monitor timely registration of pregnant women and infants. Training is provided by state to grass root workers for name-based tracking of mother and child as well as for maternal and child health related issues.

To take prompt and timely policy decisions it is essential to look at the overall statistics of all the district level hospitals holistically. It requires an integrated information system across the hospital processes. The Health Management Information System (HMIS) has been developed to help the administrators to have better monitoring and control of the functioning of hospitals across the state using correct and timely data. It also assists the doctors and medical staff to improve health services with readily available case history of the patient. It ensures smooth workflow with less paperwork and formalities. It also alerts doctors through parameterized alarms and triggers during patient treatment cycle.

5.4 TURNAROUND AND CHALLENGES

The initiative has among its admirers Dr. Devi Prasad Shetty, founder of Narayana Health, a multi-specialty hospital chain in India, headquartered in Bengaluru. The business model of Narayana Health also accorded a place in the Global Healthcare and Harvard Business School Case Study. In the words of Dr Devi Prasad Shetty, ,"E-Mamta has been a great success in reaching out to rural families. In recent years, many developing countries have combined mobile technology with public health delivery to communicate with even the most remote person.

With the success in Gujarat, NRHM is piloting the model in other states. States such as Himachal Pradesh, Uttarakhand, Jammu & Kashmir, and Jharkhand have rolled out E-Mamta with the help of the National Informatics Council. The plan is to take it national eventually [19].

In Andhra Pradesh, the program is called Amma Lalana, which stands for mother's care in the local dialect. The program tracks the status of health of all pregnant women and infants through a mobile based system. In addition, it also to enroll these women to avail services of public health centers free of cost instead of having to pay hefty fees to a private hospital.

However, merely disseminating the health-related updates and information via SMSs to pregnant women and mothers of newly born infants may not be an effective mode of communication. The absence of local script support for low-end mobile phones is a major challenge. The messages sent are in the local language but typed in English alphabet. This may hamper the message to some extent. To solve the problem, Gujarat is considering sending recorded voice messages. It is easier to understand recorded messages chances for misinterpretation are also lessened. In addition, the NRHM is also developing an automated voice response system that will respond to the callers in their regional languages and may connect them with the experts through a mobile hotline.

The National Association of Software and Services Companies (NASSCOM), a trade association of Indian Information Technology (IT) and Business Process Outsourcing (BPO) industry felicitated E-Mamta with the Social Innovation Honours Awards for its great potential in combining a network of trained health-workers along with mobile technology. E-Mamta may go a long way in ensuring a healthier and brighter future.

6. Case 3: BANKING ON THE BARREN LANDS

6.1 BACKGROUND

In India, making formal financial services and products accessible to all has been a problematic area for banking policy for many years. According to the report of a committee constituted by Reserve Bank of India, the Committee on Medium-term Path on Financial Inclusion (CMPFI), the number of branches per 100,000 of population in rural and semi-urban areas is still less than half of that in urban and metropolitan areas [20]. While demographic penetration has increased one-and-a-half times during 2006-15, the north-eastern states as also states such as Bihar, Jharkhand, Uttar Pradesh, West Bengal and Madhya Pradesh are less penetrated in terms of the number of branches in relation to their population. CMPFI concluded that although a significant improvement has been observed in banking access, there is still a large gap in some regions for various reasons that need to be addressed. Such regions mainly lie in the north-eastern, eastern and central states. The banking facility in these areas is meager due to topographical inaccessibility and security concerns. Mobile banking can largely solve such problems. In some of the areas, mobile connectivity may not be commercially viable and may not attract banks and telecom service providers financially. However, the telecom service providers may be encouraged to use their corporate social responsibility (CSR) funds for this purpose.

6.2 PROBLEM STATEMENT

State Bank of India wanted to open branches in the naxal-hit district of Dantewada in Chhattisgarh and the hilly region of Seiling in Mizoram. The market was untapped and had a lot of potential. However, Dantewada was a risky location for security reasons as it was a naxalite-hit area. Seiling, on the other hand, was a hilly region and had a scarce population. Therefore, a banking solution was required that was not only financially viable but user-friendly and foolproof as well.

6.3 TECHNOLOGY INTERNVENTION

A Little World (ALW) is a company with a vision to “Touch a billion people through innovative technologies and alliances at the bottom of the pyramid for delivering multiple financial services at the lowest cost.” ALW has many innovations to its credit. ALW runs a foundation in the name of Zero Mass Foundation (ZMF), which makes available banking services in far-flung areas and remote villages, under pre-defined service agreements with Banks and fulfills all front-end operations on behalf of the banks for ensuring financial inclusion at grass root level. ZMF manages the field force, account creation, appointment of Customer Service Points (CSPs), management of cash

and other logistics in such areas. For this purpose, ZMF collaborates with influential local organizations, district and state administration to ensure seamless functioning and operations. One of the praiseworthy brainchildren of ZMF is "Tiny Branch" which provide banking facility to places like Dantewada and Seiling [21].

The Tiny Branch costs just Rs 15,000 per installation and requires just a mobile phone and a fingerprint scanner. ZMF in collaboration with Nokia has designed a handset which can identify RFID tags for identification and tracking purposes; it also has an inbuilt application that helps in opening of new account and performing banking transactions. The phone can store data of up to 50,000 customers for a period of five years. The phone has a camera which can be used for taking pictures of the customer for making an account card. The name of the customer is recorded in his own voice as a voice tag, which is used for verification purposes to avoid any banking fraud. Enhancing the security a step further the five fingers are also scanned and the fingerprints recorded. This is in addition to the written details of the customers. The equipment can record details in 11 languages including Arabic.

Once a bank has identified a remote village or a far-flung area where starting a regular branch may not be possible because of various constraints it enters into an agreement with ZMF to open a Tiny Branch in such areas. ZMF with the help of the senior people in such areas or the Panchayat appoints Customer Service Points (CSPs). CSPs are equipped with mobile phone and fingerprint scanners and are given the responsibility to open bank accounts, spread awareness and popularize the concept. They are also entrusted to perform the banking transactions. The Tiny Branch receives the cash from the nearest local branch.

Lack of electricity is not an obstruction as the devices work on a battery that can be charged using a solar panel. There is no need for internet connectivity or for enrolling customers or carrying out transactions. However, transactions must be recorded on an hourly basis through GPRS. This is how banking services are made available to customers for whom banks were inaccessible earlier.

6.4 TURNAROUND AND CHALLENGES

In the words of Anurag Gupta, founder and director of the Zero Mass Foundation, "The Tiny Branch is one of our most important creations and I had to let go of others in order to concentrate on this." While the cost of installing Tiny Branch is low, Gupta is striving to lower it further. He targets to install 250,000 of these Tiny Branch's across Indian villages. This would make banking, insurance and other such services reach the un-banked population, which is otherwise unfeasible for the institutions to provide directly. Zero has enabled many villages and rural areas to overcome the menace of poverty and inequality.

7. Case 4 : STREAMLINING THE CURRENT FLOW

7.1 BACKGROUND

Power distribution in India is marred by the problem of electricity theft. People use different methods for the purpose which include meter altering, unlawful associations, and bypassing meters. This unlawful or unapproved utilization of electricity without appropriate installment and payment, causes lots of financial loss to state-owned power distribution companies (discoms). In 2024, Uttar Pradesh Power Corporation Limited (UPPCL) flagged 37 of its 40 zones where the revenue recovery rate per unit decreased since the last year despite it selling 24% more energy to users during the same period. A recent report prepared by UPPCL shows that while the corporation has sold more electricity to consumers this year, it's per unit through rate decreased compared to what it was in the last financial year. The low through rate in UP is attributed to several factors including rampant theft of electricity, high technical and commercial losses and inefficient billing, among others. In the annual revenue requirement (ARR) for FY 2024-25, UPPCL has projected its revenue requirement to be Rs. 1,01,785 crore and the revenue (at existing tariffs) as ₹75,561.62 crore. Despite the state government's subsidy of Rs. 15,019.99 crore, the corporation expects a revenue gap of Rs. 11,203.00 crore in 2024-25. In these circumstances discoms find it difficult to invest in the sector. Therefore, research and development may take a backseat and opportunities may be lost.

7.2 PROBLEM STATEMENT

Power theft is a problem faced by all state-owned power distribution companies all over the country. Illegal electricity connections and theft of power lead to commercial loss which affects the financial health of the distribution companies with consequential effects like poor quality of power. Electricity losses are majorly divided into two main categories: technical losses and non-technical losses. Technical losses are the losses which are caused at the power stations or during transmission and distribution etc. Electricity theft falls under non-technical losses as they are caused by the actions of third party [22]. Further the Electricity theft can be categorized in different kinds as per the electrical equipment used to carry out this offence. Mishandling of electricity meter is one of the most widely used methods for electricity theft. An electricity meter, also known as an energy meter, is a device that measures the amount of electricity consumed by a building, tenant space, or electrically powered equipment. It's typically installed at the customer's premises by the power company. Meters can be used in different ways to carry out the electricity theft. Tampering of meters and preventing the mechanical disc from moving by sealing it, bypassing the meter illegally by connecting it to the fuse which prevents the movement of rotating disc and thereby preventing the recording of consumption of energy and opening of meter without damaging its seal and reversing the dials are some of the common methods used to tamper the meter. Electronic meters can also be tampered by a sudden electrostatic discharge which causes latent or permanent damage. Such acts have an adverse effect on the economy, as huge revenue losses owing to electricity theft amount to billions annually. In developing countries like India around 50% of generated electricity is lost through theft which result in scarcity in electricity supply and unsatisfied

consumers [23]. The AT&C (Aggregate Technical and commercial) losses range from 15% to 65% across India with an average of 34% annually [23]. Electricity theft disturbs the local area's supply of electricity, leading to overloading of transformers creating blackouts or brownouts. It also leads to damage of property and utility and increases the transmission and distribution losses due to tampering of wires and cables [24]. Heavy losses due to electricity theft have prevented the reduction of tariffs and subsidies provided for agriculture. Eliminating these losses are needed to improve the standard of living by allowing economically weaker sections to access electricity [25].

7. 3 TECHNOLOGY INTERNVENTION

As a solution to the problem, smart meters were introduced. A smart meter links an electricity supplier and user by providing information on demand and voltage. It helps discoms collect real-time data on electricity usage and faults. Users of smart prepaid meters, a variant, pay for electricity by recharging the meter-like they do for a prepaid mobile phone subscription. Smart meters help prevent electricity leakages and make billing efficient, reducing the aggregate technical and commercial (AT&C) losses of discoms. "Prepaid" gives an upfront revenue channel for discoms, which are required to improve their demand-side management. Smart meters also provide real-time data, which could be utilized to prevent power theft further. The Noida Power Company Limited (NPCL), the power distribution company in Greater Noida, successfully utilized advanced data analysis techniques to identify power theft amounting to ₹96 lakh. The deployment of high-tech data analysis tools has enabled the power discom to effectively monitor and analyze electricity consumption patterns across its network. By comparing actual usage with expected demand, the technique enables the company to identify discrepancies that point to illegal activities.

7. 4 TURNAROUND AND CHALLENGES

Launched in 2021, the 3 trillion Revamped Distribution Sector Scheme (RDSS) aims to improve discoms' operations and finances. A major part of RDSS's first phase was installing smart meters. The overall target is to install 250 million smart meters by 2025. Discom's AT&C loss on an aggregate basis declined to 15.4 per cent in financial year 2022-23from 20.73 per cent in FY20, according to a CareEdge report published in March. The first tenders to install smart meters were given out in FY22, starting in Uttar Pradesh and Haryana. But it is Bihar that has the largest number of smart meters installed. It has 3.1 million smart meters installed (National Smart Grid Mission). Bihar's efforts have helped as the billing of discoms improved to 83.11 percent in FY24 from 75.68 percent in FY21. AT&C losses reduced to 21.74percent in FY24 from 29.77 percent in FY22. Revenue collection was 15,108 crores in FY24, making a 13.09 percent rise from the previous year. The incidents of electricity theft were reduced [26]. Smart meters provide automated, accurate and real-time data on electricity consumption, reducing human errors associated with manual meter reading. It also led to operational cost reduction giving more time to focus on customer service and maintenance. The real-time data also gave an insight into the consumption pattern of power. Customers were also better informed as they received detailed information about their electricity usage, which inspired them to check their energy consumption. Energy consumption decreased in divisions where smart meters were installed.

Grid resilience and grid flexibility are the critical elements of any smart grid, which can be built through digitization in the grid led by smart meters. Success of digitization initiatives would depend on provision of adequate infrastructure and large-scale adoption by consumers.

8. Case 5: EVERY CLOUD HAS A SILVER LINING

8.1 BACKGROUND

India has the world's second-largest school system, after China [27]. During the COVID-19 crisis, one of the toughest challenges was to ensure the continuation of the education of children as schools were closed to contain the virus. Shutting schools to maintain social distancing during the COVID-19 crisis was the most logical solution to avoid community transmission in the initial response to COVID-19, given uncertainty over transmission rates among school-aged children and the potential impact of the virus. All educational institutions in India were temporarily closed in March 2020. As India went into lockdown at the end of March 2020, most schools were wrapping up the 2019–20 academic year. By May, amidst the upsurge in COVID-19 cases across the country, it became clear that it would not be possible to resume in-school classroom sessions for the new academic year. Therefore, new ways of imparting knowledge and education needed to be explored so that the future of the nation would not at a loss.

8.2 PROBLEM STATEMENT

Since the national lockdown and school closure in March 2020, teachers have played a critical role not only in imparting education but in reaching out to the community as well. The teachers had to quickly switch gears to distance learning and improve their digital skills with little or no training. Issues such as the challenges of accessing digital tools by students and teachers, and the unmonitored quality of distance learning were also there. Many a time the students belonging to the lower strata of society do not have anybody at home to tutor and guide them. Their parents and elders lack such skills. Moreover, the young children may be provided with some help at home but as the level of class increases, such assistance becomes even less available. According to the ASER 2020 survey, close to three-quarters of all schoolchildren received school-related help from family members. This was more pronounced for younger children, with 82 per cent of children in Grades 1 and 2 receiving help from family members as compared to 68 per cent of children in Grade 9 and above. As expected, parents with higher education levels were better equipped to help their children than parents with lower educational attainments. Lack of digital devices, sufficient infrastructure, and affordability were other major concerns.

8.3 TECHNOLOGY INTERNVENTION

In April 2020, the Ministry of Human Resource Development (renamed the Ministry of Education in July 2020 in line with the NEP) presented the Alternative Academic Calendar for Students, AAC guidelines on continuing formal school education online (NCERT Alternative Academic Calendar). The AACs are a set of four documents – one each for primary, upper primary, secondary, and higher secondary schooling – that outline measures for educators to ensure continuity in curriculum learning from the safety of students' homes through a blend of online and offline activities.

India's education sector has witnessed a surge in solutions to support the continued learning of students during the COVID-19 lockdown.

To support continuous learning while schools are closed, the Ministry of Education shared various free digital e-learning platforms in their press release [28]. The government has made a strong effort to create a repository of learning content and has implemented EdTech interventions in partnership with several NGOs such as EkStep, Khan Academy, and Azim Premji Foundation. Access to the following resources is free:

DIKSHA: Digital Infrastructure for Knowledge Sharing (DIKSHA) is an open-source national platform for learners and teachers to enable educational autonomy. Learners can access more than 80,000 e-books (including school textbooks for all grades) in multiple languages – the content supports homework and exam preparation with the help of 'question banks. Teachers can undergo training on the platform, access tools to help them with their lesson plans and content explanation, as well as assessment of their students. The content can also be viewed through a QR code on textbooks. This app can be downloaded from the iOS and Google Play Store. Website: https://diksha.gov.in or https://seshagun.gov.in/shagun

e-PATHSHALA: In this portal, the National Council for Education Research and Training (NCERT) has deployed 1,886 audios, 2,000 videos, 696 e-books (e-Pubs), and 504 Flip Books for Grades 1–12 in different languages. A mobile app is available. Website: http://epathshala.nic.in or http://epathshala.gov.in National Repository of Open Educational Resources (NROER): This portal has a total of 14,527 files, including 401 collections, 2,779 documents, 1,345 interactive, 1,664 audio, 2,586 images, and 6,153 videos in different languages. Website: http://nroer.gov.in/welcome

SWAYAM: Is the national online education platform hosting 1,900 courses covering both school (Grades 9–12) and higher education (undergraduate and postgraduate program in all subjects, including engineering, humanities and social sciences, law, and management). A unique feature of SWAYAM is that it is integrated with conventional education. Credit transfers are possible for SWAYAM courses (up to a maximum of 20 per cent). Website: swayam.gov.in

SWAYAM PRABHA: Has 32 D2H TV channels transmitting educational content on a 24/7 basis. These channels are available for viewing across the country using Doordarshan (the government-run national television channel) free dish, set-top box and antenna. The channel schedules and other details are available in the portal. The channels cover both school education (Grades 9–12), out-of-school children, higher education (undergraduate and postgraduate), vocational courses, and teacher training in arts, science, commerce, performing arts, social sciences and humanities subjects, engineering, technology, law, medicine, and agriculture. Website: https://swayamprabha.gov.in

The education sector's response to providing continuing access to learning during school closures varies by state. Each state government is responsible for delivering a solution appropriate for that context. For example, Gujarat has focused on distributing QR-coded textbooks; Bihar and Uttar Pradesh have focused on learning programs on TV to expand access; Assam has been distributing worksheets along with midday meals to ensure continuity of learning; Kerala has also focused on textbook distribution and WhatsApp groups [29]. Odisha has turned to radio as online classes failed to reach all students due to poor mobile connectivity [30].

8.3 TURNAROUND AND CHALLENGES

The closures have affected millions of learners across India from pre-primary through secondary levels of schooling. Although a lot of digital content has been generated and transmitted to help children continue to learn from home, there is limited evidence on the extent to which this content is reaching children, whether they are engaging with it and the impact it is having on their participation and learning. The 2020 Annual Status of Education Report (ASER)40 survey was adapted to a phone survey format that could be conducted in multiple waves, to capture the effects of the pandemic on different aspects of children's education. It explores the provision of, and access to, remote education mechanisms and materials in rural parts of the country, and how children, families, and educators are engaging with these from their homes.

According to the UNICEF survey, the most-used channel for remote learning (by children aged 5–13 and adolescents aged 14–18) is WhatsApp: among students who have used at least one remote learning opportunity, WhatsApp is used by 47 per cent of students aged 5–13 and 55 per cent of those aged 14–18. The next-most used channels are textbooks (46 per cent and 42 per cent, respectively) and home visits by teachers (33 per cent and 31 per cent, respectively). Radio is used the least (1 per cent of students from both age groups) – most students do not typically listen to the radio, and radio learning content is often neither interactive nor tailored to meet students' needs. However, the government intends to reach the marginalized and remote student population (especially in the early grades) by expanding the use of radio and setting up 289 community channels [28].

9. Conclusion

Technology and the internet can go a long way in empowering people in India. Accountability, transparency, and accessibility are enhanced manifold with the use of technology. It can bring a revolution in India,

where many good policies are unsuccessful because of rampant corruption and red tape. The most striking feature of the five cases discussed is that in all cases, technology was used in a very simple manner. The success of the cases discussed lies in the smart deployment of technology. There is no rocket science involved in any of the cases. We need to think of other such applications, especially in the field of public services, where simple and everyday technology can change the scenario.

10. Recommendations

Technology must be deployed to enhance productivity, and the emergence of an egalitarian society where resources are made available to all. The future seems to be bright as the penetration of smartphones is on a continuous rise. According to a report by the Internet and Mobile Association of India (IAMAI), the number of smartphone users in India is expected to exceed 1 billion by 2025. The report also highlights that by 2025, around 56 per cent of all new internet users in India will come from rural areas [31]. This shift represents a significant change in the digital landscape, as rural regions become a major source of new internet users.

The emphasis should not be on inventing novel technology but on the benefits and value received. One of the major challenges would be to make people use technology. To remove their doubts and inhibitions and make them learn new technology. The process needs to be user-friendly. For example, everybody today can operate a mobile phone even though they may not understand the technology on which it works.

Deployment of technology would require a robust infrastructure. The government would have to do a lot in this regard. However, India needs to create an entrepreneurial environment where people may be driven towards technology-based solutions on their own. We need many more organizations like A Little World to bring a remarkable change in society. India has a young population that has a great willingness to accept technology. So, we have a demographic dividend working in our favor.

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Conflicts of Interest

The authors declare that they have no conflicts of interest to this work.

References

Christensen, C.M. and Bower, J.L. (1996). 'Customer Power, Strategic Investment, and the failure of leading firms'. Strategic Management Journal, 17 (3):197-218.

Bakshi, H. 2010, October 25. Asset-sharing model to service rural consumers. Economic Times Bureau.

Prahalad, C. K., & Hart, S. L. (2002). The fortune at the bottom of the pyramid. Strategy+Business, (26), 54-67.

Jimenez, C. N., & Castellanos, O. F. (2013). Technology and its value at the Bottom of the Pyramid Journal of Technology Management & Innovation, 8, 92–103. https://doi.org/10.4067/S0718-27242013000300008

Hammond, A. L., Kramer, W. J., Katz, R. Z., Tran, J. T., & Walker, C. (2007). The next 4 billion: Market size and business strategy at the base of the pyramid. World Resources Institute/International Finance Corporation/World Bank Group.

Ricart, J.E., Enright, M.J., Ghemawat, P., Hart, S.L. and Khanna, T., (2004). 'New frontiers in international strategy'. Journal of International Business Studies, Volume 35 (Number 3):175-200.

London, T., & Hart, S. L. (2010). Next Generation Business Strategies for the Base of the Pyramid: New Approaches for Building Mutual Value. Delhi: Pearson Education India.

Halme M., Lindeman S., Linna P. (2012) 'Innovation for Inclusive Business: Intrapreneurial Bricolage in Multinational Corporations.' Journal of Management Studies49 (4): 743–784.

Olsen, M., & Boxenbaum, E. (2009). Bottom-of-the-pyramid: Organizational barriers to implementation. California Management Review, 51(4), 100–125. https://doi.org/10.2307/41166507

1Jaiswal, A.K. (2008). 'The Fortune at the Bottom or the Middle of the Pyramid?' Innovations: Technology, Governance, Globalization, 3 (1):85-100.

Prahalad, C.K. and Lieberthal, K. (2003). 'The End of Corporate Imperialism'. Harvard Business Review (August):109-118.

Christensen, C.M. and Bower, J.L., (1996). 'Customer Power, Strategic Investment, and the failure of leading firms'. Strategic Management Journal, 17 (3):197-218.

Dawar, N., & Chattopadhyay, A. (2002). Rethinking marketing programs for emerging markets. Long Range Planning, 35(5), 457–474. https://doi.org/10.1016/S0024-6301(02)00109-9

Yin, R.K. (1994). Case Study Research – Design and Methods 2ND Edition. California, Sage Publications

Jayadevan, P. K. and Iyer, S.2011, January 18. Every day, Tech Can Help Food Reach 260m More. Economic Times Bureau.

MDG Report 2014: India among worst performers in poverty reduction, maternal death and sanitation, Moushumi Sharma, Wednesday 09 July 2014

Bassani D, Jha P. Causes of neonatal and child mortality in India: nationally representative mortality survey. Lancet. 2010;376(9755):1853–1860. doi: 10.1016/S0140-6736(10)61461-4.

Darmstadt GL, Bhutta ZA, Cousens S, Adam T, Walker N, de Bernis L. Evidence-based, cost-effective interventions: how many newborn babies can we save? Lancet. 2005; 365:977–88.

Nandakumar I and Sabharwal, S. 2012, March 22. Gujarat's Health Tracking Tool Goes National Now. Economic Times Bureau.

Committee on Medium-term Path on Financial Inclusion. (2015). Report of the Committee on Medium-term Path on Financial Inclusion. Reserve Bank of India.

The age of frugality, Brand Equity, The Economic Times, 19 May 2010

Deotale, P. R. (2023), "Electricity Theft in India: An Analysis", International Journal for Legal Research & Analysis, Volume 2, Issue 7

Smith, B.T. (2022), "Electricity theft: a comparative analysis", http://www.provedor.nuca.ie.ufrj.br/eletrobras/estudos/smith1.pdf , (last visited June 21, 2022).

Ram B, (2022), "Power Theft", https://www.cag.org.in/newsletters/public-newsense/power-theft (last visited June 21, 2022).

"Anti-power theft campaign fetches Jaipur Discom Rs 91 crore", ECONOMIC TIMES, https://energy.economictimes.indiatimes.com/news/power/anti-power-theft-campaign-fetches-jaipur-discom-rs-91-crore/71868097 (last visited June 21, 2022).

Khan, M. (2024, September 6). Advanced tech helps NPCL identify power theft of ₹96 lakh in Greater Noida. Hindustan Times. https://www.hindustantimes.com/cities/noida-news/advanced-tech-helps-npcl-identify-power-theft-of-96-crore-in-greater-noida-101725562706535.html

World Economic Forum (2020).

Indian National Commission for Cooperation with UNESCO Response to COVID-19, Ministry of Education circular

UNICEF, Rapid Assessment of Learning During School Closure in the Context of COVID-19, October 2020.

Barik, S. (2020), Now Odisha turns to radio for classes - The Hindu, accessed December 2020. September 27, 2020

http://www.statista.com/statistics/467163/forecast-of-smartphone-users-in-india/

Fizzing to the Top: The Evolution and Global Triumph of Coca-Cola

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Abstract

This case study explores Coca-Cola's transformation from its modest inception in 1886 to its status as the world's most iconic beverage brand. It delves into the company's innovative strategies in marketing, brand development, and product expansion, which propelled its growth in international markets. This study highlights crucial milestones, including Coca-Cola's ability to weather economic challenges, its responsiveness to shifting consumer trends, and its impactful advertising initiatives that influenced cultural discourse. Furthermore, it evaluates the company's commitment to sustainability, embrace of digital technologies, and strategic positioning in today's competitive landscape. Through this thorough examination, this study offers valuable insights into the elements that have solidified Coca-Cola's lasting success and impact within the global beverage sector.

Keywords: Global Expansion, Branding Strategies, Marketing Innovation, Consumer Trends, Sustainability.

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1. Introduction

"Stories have the power to transform, inspire, and connect us in ways that facts alone cannot (Smith, 2015).

As one of the world's most recognizable brands, Coca-Cola has a rich history dating back to 1886, when Dr. John S. Pemberton created it in Atlanta, Georgia. Over time, the company has grown into a global powerhouse in the beverage industry and is renowned for its flagship soft drink and diverse range of beverages. Coca-Cola's ascent to worldwide prominence can be attributed to its effective marketing strategies, commitment to innovation, and ability to respond to changing market demands. This analysis examines the key factors contributing to Coca-Cola's remarkable success and its path to becoming a dominant, global brand.

Table:1.1 Journey of Coca-Cola

S. No.	Year	Milestone	Impact
1	1886	Coca-Cola invented by Dr. John Stith Pemberton in Atlanta.	Birth of the world's most iconic soft drink.
2	1892	The Coca-Cola Company was officially incorporated by Asa Candler.	Expansion begins with aggressive marketing.
3	1915	The contour bottle was introduced.	Became a global design icon.
4	1928	Coca-Cola became a sponsor of the Olympic Games.	Strengthened global visibility.
5	1941-1945	Coca-Cola supplied beverages to U.S. troops during WWII.	Helped establish Coca-Cola worldwide.
6	1950	First Coca-Cola TV commercial aired.	Marked the beginning of mass media marketing.
7	1982	Diet Coke was introduced.	Revolutionized the low-calorie beverage market.
8	2005	Coca-Cola Zero launched.	Expanded to health-conscious consumers.
9	2016	"One Brand" global marketing strategy launched.	Unified branding across all Coca-Cola products.
10	2020	Coca-Cola introduced a 100% recycled plastic bottle.	Emphasized sustainability efforts.

Source: Researcher Contribution

2. Theoretical framework:

The origins of Coca-Cola lie in its initial development as a medicinal elixir, promoted to alleviate conditions such as headaches and nervous disorders. The brand's trajectory changed significantly when businessman Asa Candler acquired it in 1888. Recognizing Coca-Cola's potential, Candler made substantial investments in advertising. In 1893, the product was reintroduced to the public as a refreshing drink, moving away from its medicinal origins. As the 20th century dawned, Coca-Cola expanded its presence across the United States through an assertive marketing approach that aimed to forge emotional bonds with its consumers. The brand's early success can be attributed to its pioneering use of innovative promotional techniques, including billboards, radio advertisements, and sponsorships. Coca-Cola also leveraged the growing popularity of automobiles by establishing bottling facilities nationwide, ensuring the beverage's availability in virtually every corner of the United States.

Figure:1.1 Journey of Coca-Cola

A key factor in Coca-Cola's enduring success has been its exceptional branding and marketing approaches. The company has consistently maintained a timeless image throughout its history by employing memorable ad campaigns and iconic taglines. A prime illustration of this is the "Share a Coke" initiative, launched in 2011, which proved to be a marketing success. This campaign involved customizing bottles with individual names, motivating customers to seek out and buy bottles with their names. This strategy was innovative and fostered social engagement, as consumers shared images of their personalized bottles on various social media platforms, generating substantial viral publicity. The company's emphasis on emotional branding has been crucial to its success. Coca-Cola advertisements frequently highlight themes of happiness, joy, and unity, fostering a positive brand image. For example, the company's seasonal marketing featuring the renowned Coca-Cola trucks and Santa Claus has established an emotional bond with consumers, further solidifying Coca-Cola's status as a symbol of celebration and happiness.

Coca-Cola's international growth commenced in the early 1900s with the establishment of bottling operations beyond U.S. borders. By the 1920s, the beverage was available in more than 30 countries, including Canada, Cuba, and the Philippines. The company's expansion strategy involved leveraging local bottling franchises,

enabling Coca-Cola to cater to regional tastes while preserving a unified global brand identity. A pivotal moment in Coca-Cola's global expansion occurred during World War II, when the company distributed complimentary bottles to overseas troops, fostering goodwill and enhancing the brand's worldwide presence. Following the war, Coca-Cola continued its international growth, and by the 1980s, the beverage was available in over 100 countries worldwide. The company's worldwide success can also be attributed to its adeptness in managing local market conditions in the host countries. Coca-Cola customizes its product offerings to align with regional taste preferences. For instance, in response to increasing health awareness in the 1980s and the 1990s, the company introduced low-calorie alternatives, such as Diet Coke. Additionally, Coca-Cola offered locally tailored beverages, such as the introduction of Fanta in certain markets. The company's proficiency in understanding and adapting to local consumer preferences has been instrumental in maintaining its global market leadership.

3. Adapting to Changing Consumer Trends:

Coca-Cola has demonstrated impressive flexibility in adjusting to evolving consumer preferences throughout its history. As health awareness grew in the late 1900s, the company expanded its offerings to include more nutritious options, such as water, fruit drinks, and herbal beverages. By acquiring brands such as Minute Maid and Dasani around the turn of the millennium, Coca-Cola strengthened its position in the noncarbonated drinks market. The corporation has also taken steps to address environmental concerns and improve sustainability practices. Efforts have been made to enhance packaging and reduce water consumption during manufacturing processes. Additionally, Coca-Cola has committed to making all its packaging recyclable by 2025 and aims to decrease its overall carbon emissions. To maintain its leadership in the global beverage market, Coca-Cola has continually adjusted to shifting consumer preferences in recent years. In response to growing health-conscious trends, the company expanded its offerings to include reduced-calorie and sugar-free drinks, such as Diet Coke, Coke Zero, and Coca-Cola Life. Acknowledging the increasing demand for natural and functional beverages, Coca-Cola purchased brands such as Smart Water, Innocent Smoothies, and Vitamin Water to meet the evolving consumer tastes. The company has also prioritized sustainability by developing eco-friendly packaging solutions and pledging to reduce plastic waste. Furthermore, the increasing importance of digital engagement has led Coca-Cola to enhance its marketing approach through social media platforms and customized experiences. By remaining responsive to consumer needs and embracing innovation, Coca-Cola has continued to flourish in a dynamic marketplace. Coca-Cola's brand and business plan are powerful, as demonstrated by its financial success. With a market valuation of more than $200 billion as of 2021, the company has continuously generated billions of dollars in sales annually. Coca-Cola, PepsiCo, Nestlé, and Danone are referred to as the "Big Four" non-alcoholic beverage businesses. By consistently introducing new products, broadening its global reach, and innovating in the beverage industry, Coca-Cola has maintained its market leadership.

Coca-Cola's ability to sustain a strong brand identity while consistently changing its product line has been one of its fundamental advantages. To satisfy the needs of health-conscious consumers while maintaining the iconic Coca-Cola flavor, the company introduced Coca-Cola Zero Sugar in 2005.

PepsiCo has long been Coca-Cola's largest rival. The fierce competition between the two companies, both of which aimed to control the soft drink market, characterized the "Cola Wars" of the 1980s and the 1990s. Coca-Cola has maintained a dominant position in the global beverage market owing to its marketing initiatives and wide distribution networks. PepsiCo is a strong rival, owing to its expansion into snacks and noncarbonated drinks.

Coca-Cola has recently faced difficulties owing to shifting customer preferences and a worldwide drop in soda consumption, especially among younger consumers. Coca-Cola has been compelled to reconsider its business strategy and expand its range of products owing to health concerns, sugar taxes, and changing dietary habits. To counter these challenges, Coca-Cola has continued to focus on innovation, sustainability, and expansion into emerging markets.

4. Conclusion:

In conclusion, Coca-Cola's success can be ascribed to several important elements, including creative marketing, international growth, flexibility in response to shifting consumer preferences, and a steadfast dedication to its brand identity. Despite its rivals and shifting consumer tastes, Coca-Cola remains one of the most valuable and well-known brands in the world. Its position as a leader in the global beverage business has been secured by its capacity to innovate, adapt, and remain relevant in an ever-evolving market.

References

Banks, H. (2016). The business of peace: Coca-Cola's contribution to stability, growth, and optimism. Business Horizons, 59(5), 455-461.

Du Plessis, C. (2015). Brand storytelling: The case of Coca-Cola's journey corporate website.

Gieryn, T. F. (1987). Science and Coca-Cola. Science & Technology Studies, 5(1), 12-31.

Pendergrast, M. (2000). For God, Country, and Coca-Cola: The Definitive History of the Great American Soft Drink and the Company That Makes It. New York: Scribner.

The Coca-Cola Company. (2022). Annual Report 2022. Retrieved from https://www.cokecorporation.com/investors/annual-reports/

“Coca-Cola Share a Coke Campaign." Coca-Cola Journey. (2014). Retrieved from https://www.coca-colacompany.com/stories/share-a-coke-returns

Lutz, A. (2021). "How Coca-Cola Responds to Market Changes." Forbes. Retrieved from https://www.forbes.com/sites/andrewlutz/2021/01/12/coca-cola-strategy/

"Coca-Cola's Brand Success and Global Expansion." Marketing Week. (2020). Retrieved from https://www.marketingweek.com/coca-cola-global-expansion-success/

Pendergrast, M. (2000). For God, Country, and Coca-Cola: The Definitive History of the Great American Soft Drink and the Company That Makes It. New York: Scribner.

The Coca-Cola Company. (2022). Annual Report 2022. Retrieved from https://www.cokecorporation.com/investors/annual-reports/

Lutz, A. (2021). "How Coca-Cola Responds to Market Changes." Forbes. Retrieved from https://www.forbes.com/sites/andrewlutz/2021/01/12/coca-cola-strategy/

"Coca-Cola Share a Coke Campaign." Coca-Cola Journey. (2014). Retrieved from https://www.coca-colacompany.com/stories/share-a-coke-returns

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