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Focus on outcomes rather than outputs

Organizational agility refers to an organization's ability to rapidly adapt and evolve in response to changes in the market, technology, and customer demands. It's about moving quickly and easily through a combination of flexible strategies, structures, processes, and a culture of continuous improvement. It extends to the organization's capacity to be resilient, innovative, and forward-thinking, ensuring it can not only withstand the challenges of a volatile business environment but also seize new opportunities that arise. It is not just about speed but about strategic responsiveness and adaptability. It involves a holistic transformation that spans across leadership styles, team dynamics, decision-making processes, and the very culture of the organization. It requires a shift from traditional hierarchical structures to more decentralized, empowered agile teams which have the autonomy to make decisions and respond to customer needs quickly.

The essence of organizational agility lies in its focus on outcomes rather than outputs, emphasizing the delivery of value to customers through iterative development, feedback loops, and a relentless pursuit of improvement. Agile organizations are characterized by their ability to learn and pivot, embracing change as a constant and integrating it into their strategic planning and execution. It champions adaptability, resilience, and customer-centricity, leveraging these as core competencies to navigate the uncertainties of the modern business landscape. Organizational agility is fundamentally important because it equips businesses with the capacity to navigate the rapidly changing, complex marketplace of today with resilience, adaptability, and speed. The essence of organizational agility lies in its ability to foster environments where innovation flourishes, responsiveness to customer needs is heightened, and continuous improvement is part of the organizational DNA.

In the context of increasing market uncertainty and complexity, organizations that embody agility can pivot more swiftly and effectively, ensuring they remain competitive and relevant. This agility enables organizations to not only withstand but thrive amidst the challenges posed by rapid technological changes, shifting consumer behaviour, and evolving competitive landscapes. Moreover, organizational agility enhances internal dynamics, promoting a culture of collaboration, empowerment, and transparency. Jeff Anderson in an article on Organizational Agility asserts that this cultural shift leads to improved employee engagement and satisfaction, driving higher levels of innovation and productivity. It also facilitates a deeper alignment with customer needs, resulting in improved customer satisfaction and loyalty. Crucially, organizational agility is not just about the ability to change; it's about the ability to learn from those changes and integrate those learnings into the very fabric of the organization's operations.

It involves a holistic transformation that impacts leadership styles, decision-making processes, and the organization's approach to risk and failure. By fostering a culture that embraces change as an opportunity for growth, organizations can navigate the complexities of today's business environment with confidence and strategic foresight. Thus, organizational agility is not merely a tactical approach but a strategic imperative that underpins the long-term sustainability and success of an organization in the face of constant and unpredictable change. Improving organizational agility involves a multifaceted approach that focuses on creating a culture conducive to agility, restructuring teams to enhance autonomy and decision-making, and adopting practices that enable rapid response to market changes. Here's how organizations can enhance their agility: Cultivate a culture that promotes psychological safety, purpose-driven learning, and self-managing practices. Encourage an environment where employees are comfortable taking risks, challenging decisions, and working collaboratively towards shared outcomes.

Place people in long-lived, multidisciplinary teams, maximizing their autonomy to deliver based on intimate market contact. This approach requires a rethink of the traditional organizational structures, steering away from departmental divisions towards teams focused on delivering complete pieces of functionality. Embrace incremental change and use continuous feedback loops to learn and adapt strategies and tactics. This approach allows organizations to pivot quickly in response to new insights without committing to large-scale, irreversible changes upfront. Ensure the organization's values and the behaviour of its members are aligned with the principles of agility. This alignment supports flexibility, collaboration, and responsiveness, which are key to thriving in a volatile and complex business environment. Transition towards a decentralized, outcome-oriented structure where teams have the autonomy to make decisions based on their direct understanding of customer needs and market dynamics. This shift enhances the organization's ability to respond swiftly and effectively to external changes.

The readers of AJM are requested to go through the contents of the journal and help us in improving the academic value of this publication by offering suggestions based on their critical review and constructive observations. The prospective contributors to this journal are advised to follow APA pattern (Latest Edition) for presenting the references.

Prof (Dr) Upinder Dhar
Chairman
Editorial Board – AJM

A Systematic Review of Industry 4.0 Maturity Models for Assessing Industry Readiness

Vikram Bansal, Deepthi. B**

Abstract

With the advent of the fourth industrial revolution, popularly known as Industry 4.0, the overall transformation of the manufacturing industry with digital integration and intelligent engineering has taken a giant leap forward in the direction of futuristic technology. However, the maturity models used to assess organizations' readiness to implement Industry 4.0 technologies are ambiguous because enterprises' aims, size, and scalability vary. This paper aims to examine the prevalence and trend of studies evaluating the maturity models to assess the enterprises' readiness in Industry 4.0. Furthermore, the purpose of this article is to identify research gaps in the existing body of knowledge and outline potential new directions for investigation. A systematic review of the literature was done to discover articles that propose or evaluate maturity models for determining the enterprise's readiness to embrace the fourth industrial revolution. The retrieved papers were then processed using a combination of descriptive and content analysis approaches to generate new conclusions, identify gaps in the literature, and identify novel research avenues.The number of publications has expanded dramatically during the last three years, and the highest number of articles were published in 2021.

Keywords: Content Analysis, Publication Patterns, Standard Features, Structural Constraints, Web of Science.

Introduction

The fourth industrial revolution, or Industry 4.0, is one of the most researched topics in both industrial and academic spheres (Chiarello et al., 2018; Liao et al., 2017). Following industrialization (Industry 1.0), assembly lines (Industry 2.0), and digitalization (Industry 3.0), "Industry 4.0" is the next phase of automation and information sharing in manufacturing processes (Kagermann et al., 2013 and Matt et al. 2020). However, this new industrial stage is plagued by a technology architecture of production systems that is exceptionally complex (Lee et al., 2015). Systems integration, augmented reality, additive manufacturing, cyber-security, cloud

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computing, autonomous systems, simulation, the Internet of things, and big data are the nine pillars that support Industry 4.0's advancements. Implementing the technologies mentioned above enables companies to undergo a dramatic transformation into Cyber-Physical Systems (CPS). To stay alive in today's competitive market, organizations must constantly modify their operations to meet the ever-changing needs of their customers. Therefore, firms need the right tools and tactics to cope with and benefit from these new and sometimes disruptive technologies.

A maturity model is a conceptual structure made up of components that define the maturity or development state of a particular topic of study. Several of them depict and outline the processes that an organization should implement to achieve a desired future state. To identify competencies in specific focus areas, maturity models reflect characteristics of reality that can be utilized for internal analysis, competition research, and comparisons with industry standards. Dimensions and levels are often taken into account in these models (Donovan et al., 2016). By examining present conditions, these maturity models can be used to identify areas for improvement. Digital capabilities in manufacturing have increased significantly as a result of Industry 4.0, which has a ripple effect throughout a business. A thorough planning and implementation process is expected to take several years, with gradual stages, so that the benefits of efficiency gains can be reaped over time.

Each business must determine which stage of growth best balances the costs and advantages of the change, given the specific conditions of the business, and with an eye toward a desirable future state at the conclusion of the transformation process. This research aims to conduct a systematic literature review on the various maturity assessment models in the domain of Industry 4.0. As a result, research gaps and future directions are discovered in research trends, publication outlets, and country-wise scientific production. To do this, a thorough examination of the most widely used Industry 4.0 maturity models was performed. Given this, the literature review's primary research objectives are:

1. To Investigate publication patterns in Industry 4.0 maturity model studies relating to time, journals, and geographically afflicted countries.
2. To comprehend the critical research areas and pivotal studies in Industry 4.0 industry maturity assessment model studies?
3. To look into the areas and gaps that future researchers should look into in Industry 4.0 maturity model studies.

4. To investigate the findings of previous research on Industry 4.0 enterprise maturity models.

The study's uniqueness comes in its examination of multiple Industry 4.0 maturity evaluation methodologies and their objectives. It's important to know what areas of research are still unexplored.

Research Method

A Systematic Review of the peer-reviewed literature was done to locate studies that examined the numerous Industry 4.0 maturity assessment models presented throughout the years and their dimensions, objectives and implementation. The systematic literature review (SLR) method handles scientific research papers with precision, transparency, and explicitness in an analysis. This method's systematic, explicit, and reproducible strategy (Tranfield et al., 2003) ensures rigor and understandability in the literature review process (Fink, 2005).The following steps, according to Popay et al., should be followed when doing a systematic literature review: (1) determining what studies will be reviewed, researched, and mapped (Scope formulation); (2) defining the research question; (3) selecting the studies to be reviewed; (4) extracting data and evaluating the studies' quality; (5) formulating conclusions; and, finally, (6) communicating and disseminating findings. To maintain transparency, these stages will be detailed in-depth throughout the article, including the approaches utilized to help with each one (Saunders et al., 2009).

Paper selection method: Web of Science (WoS) and Scopus databases provide comprehensive coverage of peer-reviewed journal articles across various disciplines, making them ideal for finding relevant research papers for this literature review. The search is restricted to engineering, computer science, and business & management. Non-relevant fields are not taken into consideration throughout the selection process. 'Industry 4.0' AND 'maturity' were used in the title, abstract, and keyword search fields, respectively. The first seeks to deal with all articles that mainly investigate Industry 4.0 related articles. The keyword "maturity," which has a more significant meaning, was used to identify all the papers that explore the various Industry 4.0 maturity assessment methods, allowing for later filtering of the articles and not losing information in the process.

Using the keywords search in WoS and Scopus, 481 papers were discovered, as shown in Table 1. There were twenty-one papers that were not authored in English, resulting in a 460-article list. There were 239 papers left after eliminating book chapters, conference papers, and other document formats. The final selection methodology included 183 articles after excluding all but those relevant to engineering, business, computer sciences, or other disciplines of study. Then, 135 papers were produced as a result of removing 48 duplicates with rstudio. Only documents that addressed Industry 4.0 maturity were then considered for publication.

There were 52 publications found irrelevant to the study or lacking in a complete approach after all abstracts were examined. After full-text reading, 43 studies were discarded since they did not discuss any Industry 4.0 maturity models. This resulted in the final papers for the study as 40. While numerous studies have looked at various aspects of the maturity of industry 4.0 in companies, only a tiny minority have examined the current Industry 4.0 models in-depth, and even fewer have proposed new assessment criteria. Instead, most research focuses on the fourth industrial revolution's implementation issues and the lack of appropriate assessment criteria.

Table 1: Paper Selection Criteria

Criteria	**Description**	**Total number of papers remaining**
Keyword search	There must be keywords in the title, abstract, or keywords of articles.	481
Language Exclusion	A selection of English-language articles	460
Source-type exclusion	Only selected journal articles (Excluded book chapters, conference papers, and other document formats)	239
Field of knowledge	Papers that are relevant to the area of study	183
Duplicates	Excluded duplicate papers	135
Abstract reading exclusion	Only those papers are selected which are relevant to the study	83
Full paper reading exclusion	Based on the full-text reading, papers are excluded which are not relevant to the topic	40
Final paper selection		40

Review of Literature and Analysis

Descriptive Analysis: 40 articles met the final eligibility criteria. The selected articles have been classified according to various characteristics, including publication date, source of publishing, and method of study employed. Table 2 presents a comprehensive overview of the essential data. The study's period is 2016-2021, and according to the statistics, the average number of citations per document is 17.64. 142 authors have contributed to the literature related to Industry 4.0 maturity assessment models. There are 104 unique keywords in total.

Table 2: The Fundamentals of Published Articles and their Features

Data Information	Description	Frequency
Period	The total time period of the articles	2016:2021
Source	The frequency distribution of all the sources (Journals, Books, etc.)	33
Documents	The total number of articles retrieved from the database.	40
Average citations per document		17.68
Average citations per year per doc		5.733
Keywords (ID)	The total number of unique keywords was found in all of the articles	98
Author's Keywords (DE)	The number of keywords that appear in all of the articles mentioned by the Author	141
Authors	Total number of authors	123
Authors of Single-authored documents	The total number of individual writers for each article	1
Authors of multi-authored documents		122
Author's collaboration		
Authors per document		3.08
Co-Authors per document		3.23
Collaboration Index		3.13

Source: Elaboration using Bibloshiny

Figure 1 displays the first classification, which is based on the date of publication of the selected publications. The papers were organized into one-year intervals beginning in 2016 and ending in 2021 to ensure greater clarity. According to the graph, Industry 4.0 maturity assessment models are becoming increasingly important in the literature. The diagram illustrates this well. The year 2020 received the most publications (15 out of 40). However, since the data was retrieved on October 29, 2021, the data in this chart is limited to published papers until that point. Therefore, this does not represent the actual number of publications released within the calendar year of 2021.

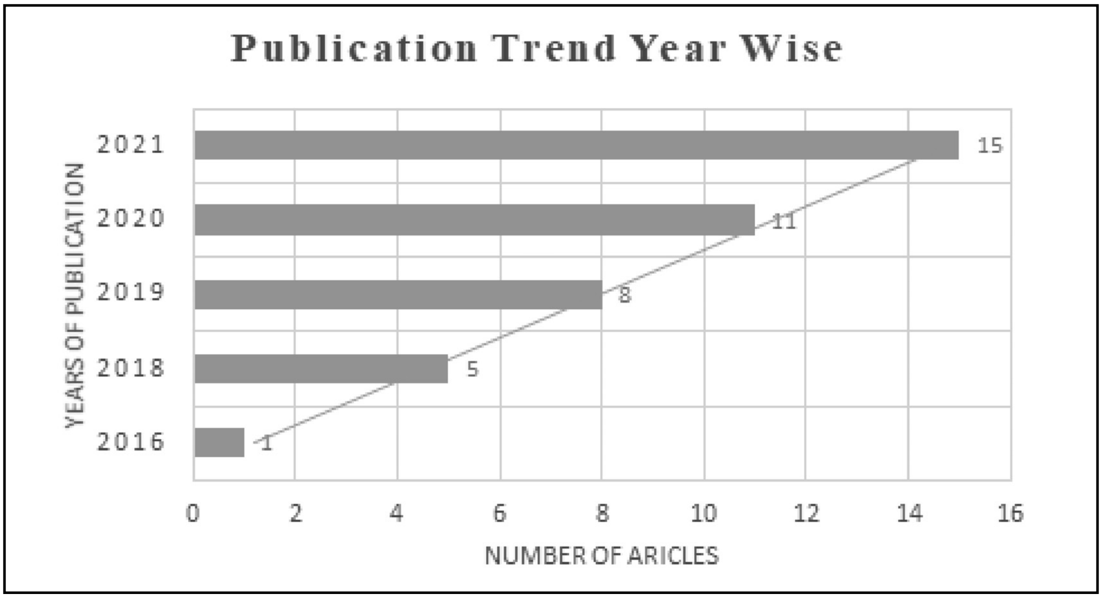


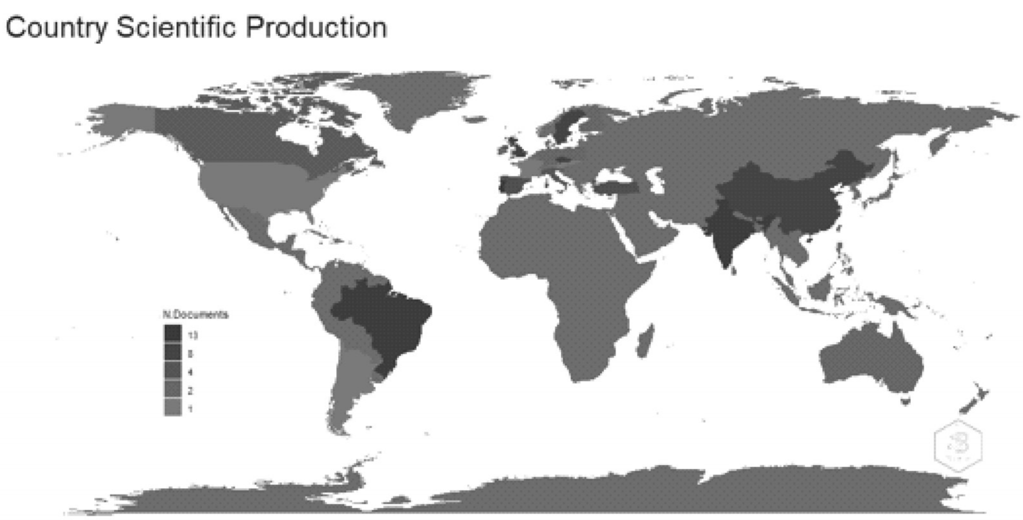
Figure 1: Distribution of Publications (Yearly Output)

Table 3 ranks and displays the top publication sources according to the number of publications. The total global citations show the overall number of citations received by the Journal's published articles. In contrast, the H-index is the highest value of h at which an author/journal has published at least h publications, each of which has been referenced at least h times. According to the analysis, publications in the Planning & Production control Journal has received the highest number of citations (94 citations for 2 publications). For instance, if an author has published 4 articles and each article has been cited at least four times, then that Author's h-index will be 4. The top two contributing journals, International Journal of Computer Integrated Manufacturing and Journal of Manufacturing Technology Management, have four publications.

Table 3: Classification of Articles as per their Source of Publication

Journal/Conference	Publications	Total Global Citations	H Index	Impact Factor (IF)
Journal of Manufacturing Technology Management	4	37	2	7.547
International Journal of Computer Integrated Manufacturing	3	25	3	3.205
Applied Sciences-Basel	2	21	1	0.773
Electronics	2	1	1	2.397
Information (Switzerland)	2	38	2	_
Logforum	2	21	2	1.29
Production Planning & Control	2	97	2	7.04

As illustrated in Figure 2, 24 countries produced literature on maturity assessment tools and models related to Industry 4.0. Portugal leads the chart with 32.5 percent (13 of 40) of articles, followed by Brazil and India with 11 publications each.



Source: Elaboration using Biblioshiny

Figure 2: Country-wise scientific production

As illustrated in Figure 3, sixteen publications (40 percent of the total) suggested new industry 4.0 maturity evaluation models for businesses based on prior dimensions and research. Numerous authors built their models on previously established tools and added industry-specific dimensions (Sütová et al. 2020). In addition, 12 articles (30 percent of the total) used a combination of literature examination cases primarily to examine existing models. Case study approaches to understand industry features and comprehend the suggested model's actual implementation (Pirola et al. 2019, Machado et al. 2021, Gajsek et al. 2019,Lin et al.,2020).

Some studies used expert interviews to better understand the practical condition of businesses and incorporate the aspects appropriately (Gajsek et al. 2019, Lin et al. 2020, Zoubek & Simon, 2021). Most studies analyzed the most extensively used maturity models in the literature and provided new strategies to address the gaps. Only one of the final paper selection articles included a literature review. Hajoary, P. K. (2020) analyzed 53 publications published between 2013 and 2019 on Industry 4.0 maturity assessment models and offered a conceptual framework for the evaluation. L. Gaur and R. Ramakrishnan (2019) developed an Internet of Things Maturity Model (IoT-MM) that enterprises may use to determine their current state. A Logistics 4.0-based AI maturity model was created by Ellefsen et al. (2019).

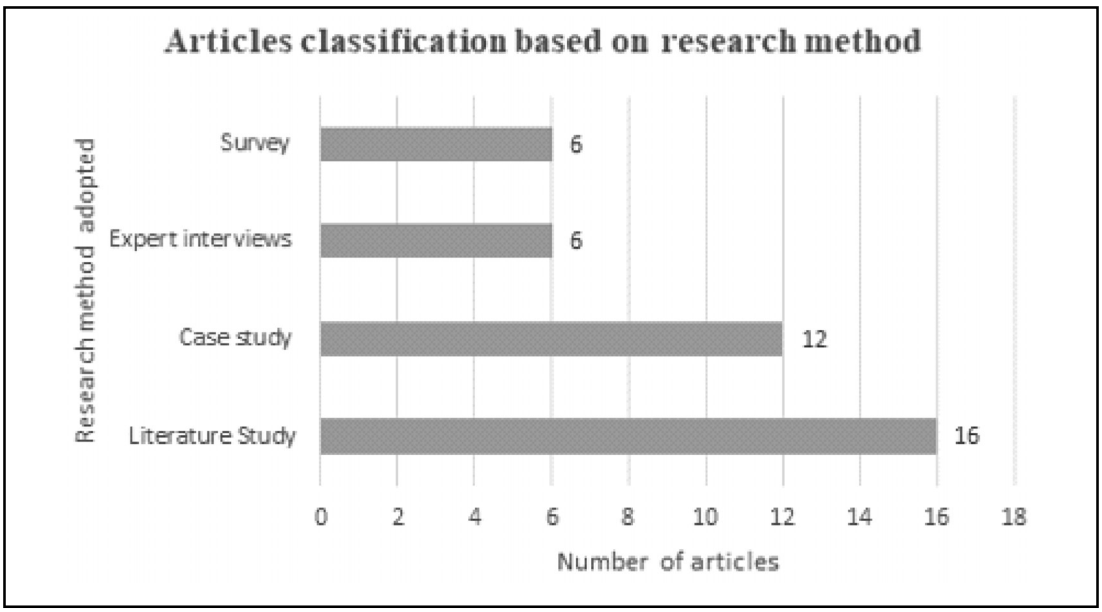


Figure 3: Articles classification based on the methodology adopted

Content Analysis

Main maturity model dimensions and evaluation scales: According to the findings of study there are mainly three kinds of maturity model recommendations for Industry 4.0: 1. from major consulting firms, 2. from industry associations, and 3. from scientific journals**.** The investigated models assess maturity in dimensions, which are characterized by transformative capacities. Industry 4.0 maturity is measured by how well each transformation capability is implemented in each dimension.

The maturity models are evaluated from the categories (applicable dimensions) and the method by which these dimensions are evaluated (the applied rating scale). These two characteristics are critical for evaluating Industry 4.0 maturity models. First, the widely adopted Industry 4.0 maturity assessment models are presented in Table 4. As its primary objective, these maturity models aim to assess a firm's digital maturity stage and recommend improvement activities to steer the organization to the next maturity stage following these models.

In Table 5. Various models proposed by different authors in the last three years (2019,2020, and 2021) and their dimensions are illustrated. In addition, to comprehend the recent trend in the domain, papers published in the previous three years are studied. The dimensions used by various authors and the evaluation scale parameters for available models are also presented in the table.

Table 4: Current available Maturity Models for assessing enterprise readiness for Industry 4.0

Maturity model name, reference, and Institution	Target	Description	Dimensions and levels
Industry 4.0 Maturity Model, Schumacher et al. (2016)	Manufacturing enterprises	Developed an Industry 4.0 maturity model and related tool for manufacturing companies. Unlike earlier models, this one contained organizational characteristics, making it more comprehensive.	Assessment in nine dimensions to assess readiness. Strategy, leadership, customers, products, operations, culture, people, governance, and technology
IMPULS–Lichtblau et al. (2015)	SMEs	One of Germany's leading manufacturers of hang gliders for beginners and flight instructors has created the IMPULS.	Six-dimensional assessment of readiness in five stages, encom-passing 18 elements. Strategy and organization, smart

			factory, smart operations, smart products, data-driven services, employees
The Reference Architecture Model (RAMI4.0) Hankel, & Rexroth (2015) Society for measurement, automation, and technology	Manufacturing enterprises	A three-dimensional framework demonstrates how to approach I4.0 in this model.	Six levels, seven dimensions. Business, functional, Information, Communication, integration & asset
System Integration Maturity Model Industry 4.0 (SIMMI 4.0), Leyh et al (2016)	SMEs	It allows a corporation to categorize its IT system landscape with an emphasis on Industry 4.0 criteria. SIMMI 4.0 is divided into five stages.	Five levels, four dimensions, Horizontal, vertical integration, digital product development and cross-sectional technology criteria
The Acatech Industrie 4.0 Maturity Index, Schuh et al. (2017), ACATECH, National Academy of Science and Engineering	Firms	The model depicts value-based development stages.	Six dimensions in 4 levels Resources, information systems, organizational structure, culture
The University of Warwick (WMG) MM Crimson & Co., Pinsent Masons	Firms	This approach includes an online self-assessment tool to determine the company's maturity.	Four levels, six dimensions, fifty-three items. Strategy and organization, Supply chain, Business model, legal considerations
Digital Readiness Assessment MM (DREAMY)	Manufacturing enterprises	Model helps to assist industrial companies in developing an Industry 4.0 integration strategy.	Five levels, four dimensions, Process, Monitoring and control, Technology, Organization
PwCOnline Self-Assessment (PwC SA), PWC (2014)	Enterprise0073	The PWC Self-Assessment Tool measures current maturity against desired maturity along six dimensions, identifying action items and classifying current maturity level.	Six dimensions and four levels (1-4) Business models, product and service portfolio; market and customer access; value chains, process and systems; it architecture; compliance, risk, security, tax; and organization and culture

Table 5: Maturity Models proposed in the last three years

	Name of the Author and Year	Dimensions in the models	Evaluation scale	Research method adopted
MM1	Santos, R. C., & Martinho, J. L. (2019)	Organizational strategy, structure and culture, Workforce, Smart factories, Smart processes, Smart products and services	Level 0: Low Level 1: Pilot actions Level 2: implementation of actions initiated Level 3: Partial implementation Level 4: Advanced implementation Level 5: reference in applying the concepts and implementing the technologies of Industry 4.0.	Comparative analysis of existing models; interviews with interviews with industry experts
MM2	Wagire et al. (2021)	People and culture, Industry 4.0 awareness, Organizational strategy, Value chain and processes, Smart manufacturing technology, Product and services-oriented technology, Industry 4.0 base technology	Level 1: Outsider Level 2: Digital Novice Level 3: experienced Level 4: Expert	People and culture, Industry 4.0 awareness, Organizational strategy, Value chain and processes, Smart manufacturing technology, Products and services technologies, Industry 4.0 base technology
MM3	Rafael et al. (2020)	Strategy and Organization, Smart factory, Smart operations, Smart products, data driven services	Level 0 to Level 5	Literature review and analysis
MM4	Amaral & Peças (2021).	Technology, Production processes, People, Product, organization, change	Level 0 to Level 5	Literature review and analysis
MM5	Caiado et al. (2020)	SCM (Customer, Logistics, supplier) SCM & POM (Integration) POM (planning & control, Quality, Maintenance)	Level 0: non-existent Level 1: Conceptual Level 2: Managed Level 3: Advanced Level 4: Self-optimized	mixed-method study (Literature review, In-depth interviews & focus groups and a case study)

MM6	Saad, Bahadori & Jafarnejad (2021)	Design real time data management, Design system Flexibility, Design execution	Si=1 Beginner Si=2 Learner Si=3 Experienced Si=4 Leader	Literature study
MM7	Priola, Cimini & Pinto (2019)	Strategy, People, Processes, Technology, Integration	-	Case study
MM8	Kiraz et al. (2020)	business models, products, and services, market and customer access, value chains and processes, IT architecture, compliance, risk, security, organization and corporate culture, leadership, strategy, culture, management, IoT (Internet of things) data protection, processing, and team expertise, and data integration for analysis	-	Survey
MM9	Zoubek & Simon (2021)	Logistics model 4.0: Manipulation, Storage, Supply, Packaging, Material identification	Level 0-Level 5	Literature review
MM10	Gaur &	IOT Maturity Model: Ramakrishnan (2019) Strategy, Data, IT, Process, People, Assets, Products, Technology, Financial		Literature review and case study

Key Findings and Conclusion

For researchers and professionals looking to select and understand the maturity models, Table 4 and Table 5 provides a comprehensive assessment of the most often utilized maturity models. Dimensions like Strategic leadership, technological innovation, supply chain, and culture are standard features in most models (Santos & Martinho, 2019; Wagire et al., 2021; Amaral & Peças, 2021; Pirola et al., 2019; Kiraz et al., 2020). Table 6 provides the common dimensions that are used in different models.

Table 6: Common dimensions used in models

Model name	Strategy	Culture	Technology	Products	Services	Operations	Human resources
Industry 4.0 MM	✓	✓	✓	✓		✓	✓
IMPULS	✓			✓		✓	✓
DREAMY			✓				
SIMMI4.O							
WMG MM	✓						
RAMI4.O							
ACATECH		✓					
PWC		✓	✓	✓	✓		
MM1	✓	✓		✓	✓		✓
MM2	✓	✓	✓	✓			✓
MM3	✓			✓			
MM4			✓	✓			✓
MM5							
MM6							
MM7	✓		✓				✓
MM8	✓	✓	✓	✓	✓		
MM9							
MM10	✓		✓	✓			✓

Smart products and services, Smart factory and smart manufacturing are also found in many of the published studies in the literature (Rafael et al., 2020; Kiraz et al., 2020).The majority of the newly developed models modified the dimensions of existing models and validated through case study.

Small and medium-sized businesses (SMEs) and other economic segments subject to unique constraints face significant challenges. SMEs, in particular, require assistance in figuring out how to turn the futuristic idea of Industry 4.0 into enhanced efficiency in the workplace (Ganzarain and Errasti, 2016). A deeper examination of a company's strategic vision, as well as its technological and human components, is required for maturity and readiness assessments for small and medium enterprises. Developing specialized maturity models for SMEs has focused by numerous researchers in the past three years (Pirola et al., 2019). However, as SMEs frequently lack a well-defined structure, both operationally and managerially, creating specialized maturity models for SMEs, particularly in emerging nations, is required. Therefore, SME maturity assessment models in emerging economies should be tailored to the sector's specific needs.

It is also observed that insufficient research has been done on how companies can figure out which approach to reshaping business models is most appropriate for their particular situation, i.e., whether they should use their efforts or seek support for generic maturity Industry 4.0 models or whether they identify the necessity of a specific strategy. However, limited studies aim to establish a framework that leads academics in the formulation and use of maturity models, nor for enterprises who perceive the need for a specific development.

Successful implementation of Industry 4.0 relies on a chain of cooperation. It is thus possible that there is a lack of national policy to implement this reality. Despite the fact that many countries have development plans, businesses might still perceive structural constraints as hurdles to individual efforts. Research to simplify models and implementation tools will benefit SMEs that lack the resources and means to seek specialist support to satisfy their particular implementation demands. Focusing on SMEs is crucial because they employ the most people and have the most difficulty acquiring advice on competitive strategies, business models, and organizational architectures.

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De-Commoditising the Functionality of a Product Via Premiumisation: Using the Cement Industry as a Case Study

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Abstract

Purpose – This paper seeks to develop a conceptual framework for understanding of what premiumisation of cement is and what drives customer segments to pay for a premium product. Design/methodology/approach – The paper reviews empirical studies made in transformation of commodity to a brand, particularly in the context of cement and concept of premium products and customers' willingness to pay. Findings – The study finds that product quality and packaging, distribution, service, and promotion through celebrity endorsement asprime independent constructs in fetching price premium focusing on the cement sector and highlights the role of value generation as a reflective construct to command price premium in the market. Willingness to pay premium (WTP) is the dependent construct which primarily is linked with the independent constructs through value generation.

Keywords: Base Products, Differentiation, Hexagonal Model, Servitisation Strategy, Willingness to Pay Premium.

Introduction

Cement is referred to as a bulk commodity and a product with a lower value. Cement companies in India usually put forward claims that their product is produced as per BIS (Bureau of Indian Standards) norms and hence there is little scope of product differentiation. Moreover, with identical raw material and production processes, it is a challenge for cement companies to position their products with significant differentiation in the market (Maity, 2014). Cement, being viewed as more a commodity product makes it vulnerable to price pressures which erodes the margins of the producers. To protect margins, commodity product manufacturers felt the necessity

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to create competitive sustainable advantage by building enduring customer base and communicating value to customers by introducing premium products.

India is the world's second-largest cement market, both in production and consumption. As per reports published by AT Kearney, Care Ratings, Ministry of External Affairs, the demand of Cement industry is expected to achieve 550-600 MTPA by 2025 from the present level of 487 MTPA, primarily because of the developments in housing, commercial construction, and industrial construction. Government outlay in Pradhan Mantri Awaas Yojana, in Urban & Rural sectors to the tune of Rs 45,500 crore in Union Budget 20-21, with the objective of "Housing for All" is a major growth driver apart from announcements in building public infrastructure like National Highway Projects in Nagaland (worth US$ 560.88 million), Rajasthan (worth US$ 1.14 billion), Karnataka (worth US$ 1.49 billion) and Telangana (worth US$ 1.80 billion).

This production is done by around 210 large plants and 350 mini plants making cement a fragmented industry. The long-term cement growth is expected at 1.2 times GDP and per capita cement consumption being far less at 235 kgs compared to world average of 520 kgs, the major players are eyeing the opportunity of capacity addition in cement production. The number of products operating within the cement industry are rising and in a commodity market where there is lot of similarity and a plethora of products, consumers come across a lot of difficulty to choose a particular product. To differentiate one commodity product from another, marketers have taken branding initiatives which include product differentiation, supply chain management, providing service and also building an image in the mind space of the consumers. In the current scenario, marketing communication through celebrity, has become a frequent practice for major companies including cement industry for better brand positioning with further attributes of trust, attractiveness, and expertise (Malik & Sudhakar, 2014).

Branding is a multidimensional construct and Punniyamoorthy (2011) opines that an understanding of the multidimensional nature of value and the delivery of it will be at the heart of successful commodity branding. Studies in the past by Chaudhuri and Holbrook (2001), Mudambi et al. (1997), Maity (2017), and Panda (2006) have specified that branding of commodity is a multi-dimensional construct is takes into account not only the physical product but service and image along with it. This points to creating differentiation across Product, over Service and Imagery.

The uniformity of any company's brand identity is created through its characteristics such as culture, vision, personality, positioning, presentations, relationships, and further beliefs pursued by the entity. Presently, companies that are part of process industries are frequently trying to avoid positioning themselves as just a commodity producer and are striving to create more functional products which provide better valuable benefits to their consumers with more profit margins and reduced turnover volatility. Also, it is noteworthy that in consideration to the rising competition in the present era, it is significant for the organization's brand management team to develop differentiation within their marketing communication for better positioning of their products and attain competitive edge.

From the context of branding identity of cement sector, it is discovered that distinct branding is difficult for cement companies and most of the customers do not have the fundamental knowledge about technical attributes of the cement as a product, therefore, customers are dependent on external informational sources for reliant brand information. Cement is usually sold through two channels: Non-Trade and Trade. There is a need to understand different segments of customers for strengthening the brand identity for companies operating in the cement industry (Maity, 2014). Moreover, till now, the years of establishment has been playing a better role in creating a brand identity for the customer to make the decision while purchasing cement (Mishra, 2019). As a result, there is an emergent requirement for a cement company which is offering premium products within the commodity market to create such marketing strategy which considers different marketing elements. It is through this brand identity creation by utilizing marketing elements and strategies that premium products offered in the cement industry can position themselves distinctly within a homogenous market.

Premiumisation or introduction of premium products in a commodity market like cement is relatively new. Nuvoco, erstwhile Lafarge, pioneered the concept of premiumisation in cement industry of India with the introduction of a brand "Concreto". With a differentiated packaging and mass promotion through celebrity endorsement, it quickly grabbed the attention of the customers. Premiumisation is the mechanism of charging a premium to customers on a particular set of products over and above the normal range. The manufacturers in cement industry are categorised into three distinct groups (A, B & C) primarily on factors like installed capacity, volume, and the price of their base products.

The competiton in the base category is intense, which often leads to price war as every company wants to occupy a larger share of the pie. The typical price pyramid as shown (Fig 1) brings out the fact that companies to come out from the fierce competitiveness in the base category introduced the premium products, thereby on one hand reducing the effect of bleeding in the base category and on the other developing the market of premium products to earn more from the market by proposing a higher value to the customers.

The typical price pyramid of cement industry of India can be captured as

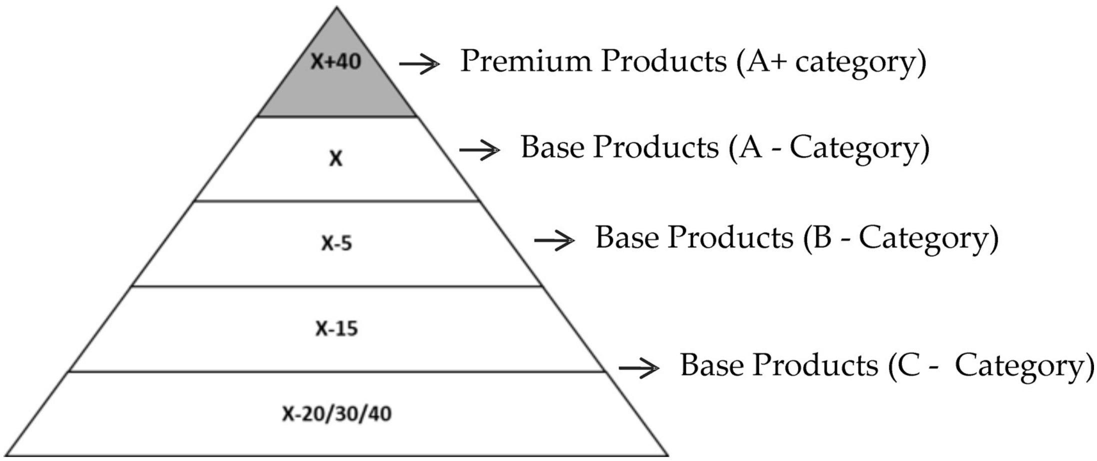

Fig 1: Price Pyramid (Authors' Perspective)

Organizations competing in A category as shown above with base product price as X have introduced products in A+ category, typically priced at X+40. The premiumisation as attempted by the companies have been mainly aimed to create differentiation and provide enhanced value to customers. The creation, communication and delivery of the value is thus critical in capturing the value with customers willing to pay the premium. Prior studies in customers willingness to pay premium, viz in tea industry (Fernando, Imali, 2016) points out intrinsic and extrinsic cues of product attributes as important considerations, while the study on green products suggests willingness to pay premium varies widely with demographics of different customer segments. The results of study on air-conditioners and fluorescent lamps (Biswas & Roy, 2016) suggest that availability, performance, and quality have high influence on consumers' intention to pay premium. Considering, cement being a commodity, it is even more intriguing to find out the underlying motivators for a customer to pay premium.

Review of Literature

Over the years, marketers are progressively adapting branding strategies to convert commodities to brand to respond to increasing competition. Docherty (2012) opines "Branding is not just glossy advertising. A brand comprises all that distinguishes one product or service from similar competitors — from advertising and packaging to provenance and ethics." Branding, is a multidimensional construct and Punniyamoorthy (2011) opines "An understanding of the multidimensional nature of value and the delivery of it will be at the heart of successful commodity branding" Studies in the past by Chaudhuri and Holbrook (2001), Mudambi et al. (1997), Maity (2017), and Panda (2006) have indicated that branding of commodity, being a multi-dimensional construct is not limited to how customers view the physical product but service and image that accompanies the product.

This points to creating differentiation –either through Product or through Service or through creating Imagery. Product differentiation, as studies done in past, reveal quality (Vertinsky and Zhou, 2000), packaging and labelling (Norberg et al., 2011), features (Romaniuk et al., 2007), name and logo as main components (Doyles, 1990), which marketers have utilised to establish an identity. Not only tangible factors create differentiation, but intangible factors too count in rational decision making as found in studies by Robinson et al (2002), Mudambi et al. (1997), Berry (2000), and Shostack (1977). A study on commodity chemicals by Robinson et al. specifies "if firms in this sector wish to break out of the commodity trap of blind allegiance to cost leadership as a generic strategy, then they must seek methods of differentiation" Prior studies have acknowledged parameters like contact with customers, delivery, order management, approachability, and sharing of information as differentiators.

The factor of value addition in terms of intangible aspects is similarly important for marketer to communicate the value created for the customer. Value communication plays a vital role to create a constructive image in the minds of the customer. The reason behind to create image is to communicate customers an assurance of safety, by mitigating the perceived risk. Perceived differentiation can create brand image apart from product and service differentiation. Larsen (2010) considers perceived differentiation as a motivational prospect. and Aaker (2001) suggests that perceived differentiation would provide choices to buyers.

Scott-Morton and Zettelmeyer (2004) points out brand loyalty as a fundamental element of developing a sustainable competitive advantage. Chaudhuri and Holbrook 's (2001) study on brand loyalty identifies trust, repeat purchase, attitude, and price difference as major constructs. Giddens (2001) reveals awareness, relevance, and perceived value as notable parameters of brand loyalty. Researchers propose qualitative as well as quantitative methods of increasing loyalty by building bond with customers as well as by increasing usage levels. Schijns (2003) identified customer fulfilment, faith, switching cost, reputation as factors of brand loyalty.

Punniyamoorthy et al. (2011) on a study of measurement of brand loyalty score for cement used AHP (Analytical Hierarchy Process) model to arrive at a single measure combining both qualitative and quantitative aspects of brand loyalty. For cement industry, Maity A (2017) opines that with proliferation of cement manufacturers and with abundance of products, the cement manufacturers have resorted to branding efforts to change the prevailing concept of cement as "bulk commodity" to a brand. Kumar A et al (2015) suggest a hexagonal structure to explain the six parameters which are important for the transformation of commodity like cement to a brand (Fig 2).

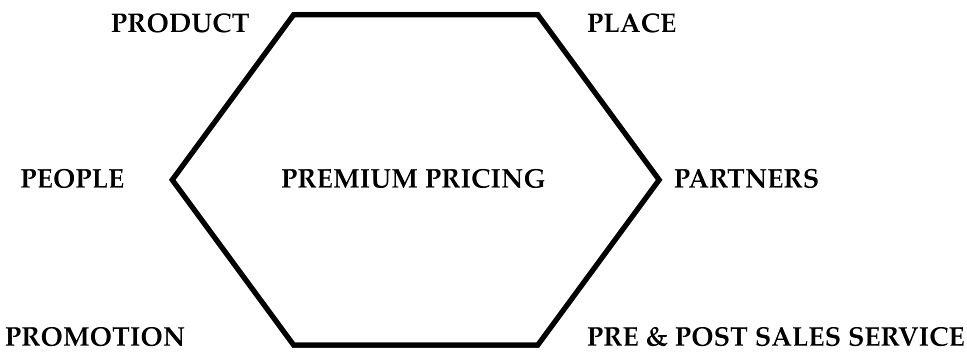

Figure 2: Hexagonal Model (Source: Kumar et al., 2015)

Marketing Mix in Hexagonal Model

Thesix Ps (Product, Place, Partners, Pre & Post Sale Service, Promotion & People) as explained in the study are important and contribute to the transformation. However, cement being produced as per BIS standards by reputed companies, with quality being almost at par, customers are not able to perceive the differentiation. Studies by Fahmy (2018), Rensburg & Niekerk (2010) indicate that products being considered a cluster of value attributes, customers attach varying levels of importance to the attributes to the extent they perceive benefits from them. In their respective studies on cement industry in Egypt and South Africa, they have identified product parameters like strength of construction or concrete, finish of surface of concrete or plaster, ease of mixing, gaining of early strength as indicators of desired level of quality the customers are asking for.

The differentiation parameters of product quality as identified in earlier research can be tested against premium products of cement industry, which has hitherto not been done. Also, in this context, packaging has been focused upon by companies to create a perceived differentiation.

As Underwood & Klein (2002) cite that for relatively undifferentiated products, packaging is a critical element. Prior studies emphasize packaging as a strategic tool for differentiation and identity. Package design is an integral part of projecting a brand's image and serves the purpose of conveying images of high quality and a certain price. Since many of all purchase decisions are made on impulse, "the effective package must perform many of the sales tasks - attract attention, describe the product's features, create consumer confidence, and make a favourable overall impression".

Role of package in marketing communications is to attract consumer's attention and transmit adequate value of product to a consumer. Research in packaging has found that often it is perceived to be part of the product and it can be difficult for consumers to separate the two aspects such as packaging colour, design and pictures can influence how a product is perceived. Distinctive designs of packaging also serve customer's demand of storage and safety (Singh et al, 2011). Rundh (2016). Researchers have particularly studied the impact of packaging on various marketing parameters across industries like FMCG, food supply chain etc. and have identified several marketing variables related to packaging.

Research shows that packaging can influence consumers' perceptions and evaluation of products and can be used to get their attention (Underwood et al., 2001). Packaging design can be used to utilize the packing material, shape, colour, branding and dimension to attract and inform the customer thus enabling decision making (Rundh, 2009). Packaging plays an important role in marketing and can influence consumers' perceptions and evaluation of products. This gives marketers packaging a strategic tool to differentiate their products from competition by using packaging design in a creative manner. Studies suggest that one of the main functions of packaging is protection of content other than user convenience and communication. Research reveals the main packaging considerations are: Color, Shape, Graphics, Communication, and Functionality.

The shape of package attracts customer attention and is also important for how it can be transported, a design with a combination of shape, colour, typography and printing support the information and promotion efforts to the end customer. Creating visibility is important however the communication associated is equally important as a meaningful message with a balance between functional and visual effects needs to be conveyed to customers to get the attention and engagement. The functionality of a package meaning protection, convenience is at the core of packaging and can never be ignored. An attractive package with a high functionality can create impact upon customer among a myriad of competing packages.

Typically, in cement industry various types of packaging are available like HDPE (High-Density Polyethylene), LPP (Laminated Polypropylene), BoPP (Bi-axially Oriented Polypropylene). The quality of packaging varies depending upon the material used. Thus, packaging plays an important role in marketing and can help brand owners and other actors to create a unique position in the marketplace. This gives managers a possibility to differentiate their products from competitive offerings by using packaging design in a creative manner.

Cement companies use similar distribution structures and business partners to reach tend customers and not much differentiation is noticed in their Route to Market (RTM) strategies. Place, Partners, and People though are necessary dimensions but not sufficient to sustain competitive advantage in the long-term. However, the decision on the mode of relationship with the channel partners is strategic in nature and has the bearing on the success of the value chain especially the choice of mode of relationship with channel partners is critical in the value chain's efficiency. Distribution is one of the key aspects of the value chain outbound activities that ensures a company's products are accessible to the customers.

Physical distribution management includes the following functionslike Customer services, Order processing, Materials handling, Warehousing, Stock/inventory management, Transportation. In a study on transportation and logistics system on cement industry, Femi (2014) points out that proximity of supply point to customer, delivering as per customer lot size are important considerations. On-time-in-full (OTIF) delivery to customers, returns management are some factors which customers find essential parameters for choosing a cement brand. Promotion, on the other hand has been used widely by most of the cement companies to build awareness and communicate especially with use of celebrities as brand ambassadors.

The term celebrity is derived from Latin term celebrem/celebritas/celebre meaning "to celebrate". Celebre is described as a noun and refers to one who is well known or famous. It is defined as "accumulation of attention capital which could represent individuals, social groups, and social events." The celebrities at the individual level have been classified into three categories – Ascribed, Achieved, and Attributed celebrities. In cement industry, we have noticed mostly, if not all, the use of Achieved Celebrities in endorsement of brands. Dwivedi et al. (2015) in their study found that celebrity endorsements affect brand equity through either a direct effect of endorser credibility on endorsed brand equity with a positive endorser–brand congruence or through a self-brand connection mediating the effect of endorser credibility on endorsed brand equity.

The rational inference derived from the study is that marketers can consider expending celebrities as means to develop important self-concept-related connections with consumers and also use of celebrity endorsement as a direct brand equity-enhancing tool. In another study, Singh & Pandey (2017) emphasizes the importance of celebrity endorsement and validates the synergistic effects of it which influences a buyer's willingness to pay price premium (WTP). The effective use of celebrity endorsement (CE) in promoting the product has been found useful in value management cycle; right from value creation to value communication, and finally value capturing.

The ability of brand ambassadors to psychologically influence customer's WTP price premium is envisaged as a strategic tool by cement manufacturers to safeguard their margins in a fiercely competitive and price sensitive market. Marketing Communications, especially related to celebrity endorsement market is a multi-billion-dollar industry (Crutchfield, 2010). Linking celebrities with brands, advertisers infuse the endorsed brands with desirable associations. There are several interfaces with customer when a celebrity endorses a brand. Perceived product interference (PPI) and linkage between perceived quality and WTP have been examined. A buyer also feels motivated and wish to possess brands which act as symbolic indicators of group membership on seeing a celebrity endorsing a brand. This is known as Self-enhancement (SE) in psychology and is an important component of human social behavior. Product exclusivity, Authenticity and Unique Popularity inspire buyers to pay price premium for celebrity endorsed brand (Anselmsson et al., 2007). .

Pre and Post Sales Service as identified by Kumar (2015) also serves as important dimension in building a brand. In many situations both tangible and intangible products must be combined to create a single, total product. Perhaps the best way to define a product is to describe it as a bundle of utilities or satisfaction. Delivering quality service is considered an essential strategy for success and survival in today's competitive environment. Service quality is a management controllable factor which can create impressions that drive loyalty. Berry (2000) observed that better service results in higher loyalty, a willingness to pay a premium, and praise for the business.

Robinson et al. (2002) highlight that a servitisation strategy in the context of traditionally undifferentiated sector can be a way of creating differentiation. Levitt (1972) suggested that: "There are no such things as service industries. There are only industries whose service components are greater or less than those of other industries. Everybody is in service" In commodity markets, services are often seen as an add-on, however, in the context of servitisation it is an integrated bundle of goods and services.

Service includes availability, warranties and coverage, extent of technical support, technical service assistance.

In context of cement industry, service includes on-site visit, technical supervision, technical meets with influencers, product demonstration. Service quality is not a cost, but an investment for the organization. Berry (2000) detected that improved service results in higher loyalty, a willingness to pay a premium, and admiration for the business. Customer's willingness to pay a price premium for securing warranties and reliable after sales service helps organization to achieve substantial growth. Research also shows that service becomes a vital source of brand building if continuous contact between buyer and seller is maintained pre and post sales. Companies operate with a business approach of creating value by integrating their product and services as an optimal solution for the customer. The key service attributes found across various studies can be listed as:

1. Regular contact with customers
2. Order handling procedures
3. Response to queries and complaints
4. Technical information
5. Delivery on time
6. Credit terms
7. Technical service and assistance
8. Ease of Availability

Furthermore, the customer's willingness to pay a price premium for securing warranties and reliable after sales service also helped in achieving substantial growth in their after-sales service businesses. Moreover, after sales service offers differentiation potentials that a producer can use to strengthen their brand equity. Previous research reveals that though six dimensions (Kumar, 2015) in development of a cement brand are relevant, however, out of the six dimensions, three dimensions, viz Product, Promotion and Pre and Post Sales Services are particularly helpful in building the equity and customer's willingness to pay premium. Maity A (2014) identifies quick response on query, technical service, support & promotions, order processing, confirmation on delivery process, easy availability, brand faith, good relationship and handling of grievances and complaints are the prime factors for a customer in selecting a cement brand. Similarly, Mishra & Shrestha (2019) points out that brand image and influencer recommendations go a long way in brand selection.

Jones and Slater sum up these values arising out of experiences of the brand because of usage may result in consumer's association with the brand. According to Doyle, these values play a vital role in many consumers buying decisions, as brands are purchased from emotional motivation as well as functional motivation. A brand being defined as a multidimensional construct matching a firm's functional and emotional values with the performance and psychosocial needs of consumers, the emerging dimensions from review of marketing literature can be summarized as:

i) Form Factor: Related to Product Quality & Packaging of **Product Dimension**

ii) Feed Factor: Related to Distribution of **Place Dimension**

iii) Figure Factor: Related to Marketing Communication & Celebrity Endorsement of **Promotion Dimension**

iv) Feel Factor: Related to Service of **People Dimension**

Research Questions & Constructs

The research questions (RQ) that arise from the literature review can be summed up as

RQ 1: Is packaging a differentiator for premiumization of cement?

RQ 2: Do associations and endorsement of celebrities account for fetching premium for cement?

RQ 3: Can product quality and service motivate customers to pay premium for cement?

RQ 4: Do distribution strategies of firms support premiumization of cement?

To find answers to the research questions, it is necessary to identify and define the constructs to form a conceptual framework combining the constructs and coalesce to a holistic view identifying the dependent and independent constructs for the future study. Four constructs could be developed based on the literature review and with research questions, viz Product Quality & Packaging Construct, Distribution Construct, Marketing Communications & Celebrity Endorsement Construct and Service Construct. These being the independent constructs needs to be related to the dependent construct, Willingness to Pay Premium. The construct of Product Quality & Packaging with identified variables and cues are as given below (Table 1).

Table 1: Product Quality & Packaging Construct

Construct	***Variable***	***Cue***
*Product Quality & Packaging (**Product Dimension of Marketing Mix)***	*Design of packaging*	*Shape, Colour, Logo, Typography, Aesthetic Appeal*
	Material of packaging	*Sturdy, Compact, Re-use of package for other purposes*
	Functionality of packaging	*Reduce waste, Tamper proof, Protect content, No leakage*
	Quality of product	*Strength of Construction, Finish of the surface, Workability of mix, Setting time, Green cement with lower carbon emissions, Durability*

The constructs for Distribution, Marketing Communications and Service can similarly be prepared as below:

Table 2: Distribution Construct

Construct	***Variable***	***Cue***
*Distribution (**Place Dimension of Marketing Mix)***	*Delivery*	*On time in full (OTIF) delivery, Speed of delivery, Proximity to customer*
	Inventory	*Ease of Availability, Freshness of product, Return of defective product*

Table 3: Marketing Communications & Endorsement Construct

Construct	*Variable*	*Cue*
*Marketing Communications & Celebrity Endorsement **(Promotion Dimension of Marketing Mix)***	*Reputation of the celebrity*	*Popularity, Fan following, Idol*
	Trust in the celebrity	*Credible, Recognized, can be relied upon*
	Gain Prestige & Social Status	*Appear member of high class, conspicuous consumption, sophisticated, intrinsic motivation*
	Authenticity	*Reduces perceived risk, genuine*

Table 4: Service Construct

Construct	*Variable*	*Cue*
*Service **(People Dimensions of Marketing Mix)***	*Responsiveness*	*Reaction time to customer queries/complaints*
	Accessibility	*Regular contact with Customer*
	On-Site Assistance	*Technical support and site services*
	Supply	*Consistency of Supply*
	Information Flow	*Availability of Product literature and information*

The four constructs individually and collectively would perhaps influence a customer and make him willing to pay premium to buy the product as all these lead to creation, communication, and delivery of value for the customer. The value that the customer would derive should be more than the cost of ownership of the product, only when the customer would be interested in purchase decision of premium product. Thus, perceived value generation for the customer is a reflective construct which consists of product and packaging, distribution, communications, and service. Willingness to pay for the premium product is a dependent construct which depends on generation of value for the customer and in turn on the independent constructs of product quality, packaging, service, distribution, and communications. The conceptual framework developed for the study considering the variables and constructs as identified to generate value for the customer and their willingness to pay price premium (WTP) is summarized below.

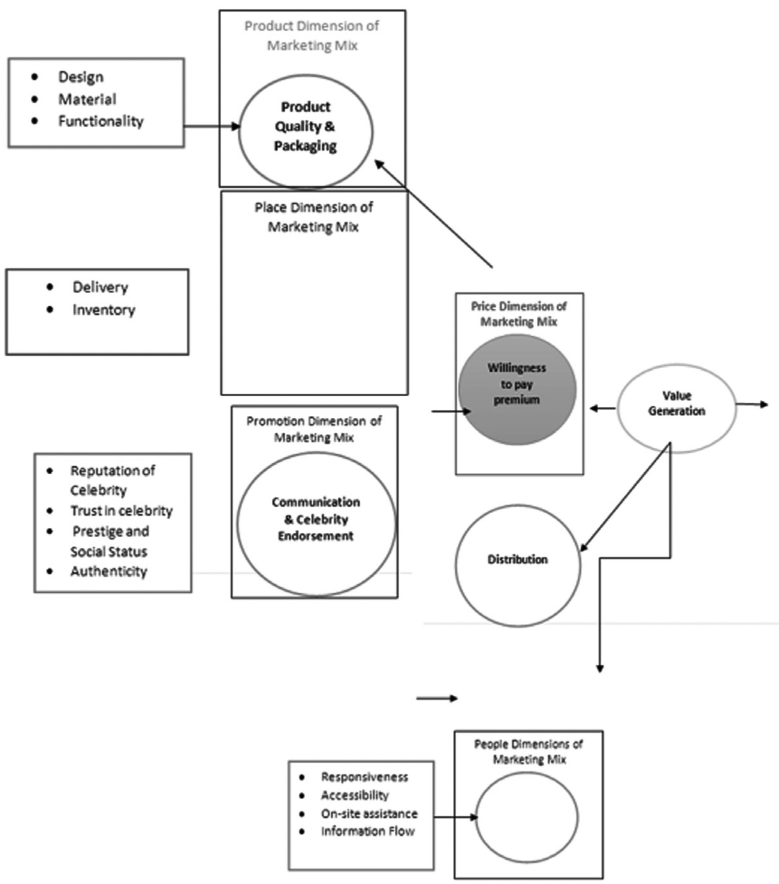

Figure 3: Conceptual Framework

The conceptual framework captures the Form, Figure, Feed and Feel factors in the context of marketing mix, viz Product, Place, Promotion and People dimensions which are the independent constructs. The independent constructs have several independent variables like design, material, functionality for Product, delivery and inventory for Place, reputation of celebrity, trust, prestige and social status and authenticity for Promotion and responsiveness, accessibility, on-site assistance, and information flow for People. All the independent constructs are individually and collectively contributing for value generation, which is a reflective construct. The dependent construct is willingness to pay (WTP) is a measure of premiumisation which happens when customer comprehends that value has been generated and that the value so generated exceeds the cost of ownership of the product.

Contribution & Directions for Future Research

The identification of the constructs and the proposed conceptual framework would be helpful for finding answers to the research questions and would provide direction for future research study contributing to the body of knowledge on customers willingness to buy premium products particularly in cement industry. The study provides a framework for assessment of factors influencing customer segments' willingness to pay premium. Future study across customer segments ranging from channel partners to influencers and users can provide useful information to the buyer's willingness for premium product, which can be useful for marketers to make judicious use of marketing spend in marketing premium products in customizing value proposition of premium products across customer segments in cement industry.

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Effect of Personality and Education on Satisfaction of Online News Readers

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Abstract

Reading online news is a growing area that has become an integral part of life today. It plays a vital role in the approach of readers to receiving, understanding, and reacting to information. While many studies have focused on media consumption in general, there is still a lack of attention devoted to the specific effects of personality and education level on the Satisfaction of Online News Readers. The present study focused on Personality (Introversion and Extraversion) and Education (Undergraduate and Postgraduate) in relation to the Satisfaction of Online News Readers, specifically those using news websites and applications. A structured tool, the Satisfaction of Online News Readers Scale, comprising 35 items on a 5-point Likert scale, was administered to 400 respondents. The findings indicate that personality significantly influences factors such as Credibility, Review, Choice, Sharing, and Use of Devices, while education significantly affects Flexibility, Relevant Content, Credibility, Review, Choice, Sharing, Evidence-Based Content, and Preference for News Websites factors of Satisfaction of Online News Readers. However, no significant interactive effect of Personality and Education was observed across these factors.

Keywords: Online News Consumption, Information Credibility, User Experience, Audience Engagement, Digital Behaviour.

Introduction

User satisfaction has become a critical aspect in determining the success of online news platforms because of exponential growth in their numbers. Online news sources depend on personality and education level, as these factors determine perceptions of various aspects of online news consumption (Fletcher & Park, 2017). Younger readers, who are technologically advanced, enjoy engaging with content that offers interactive and personalized services (Casero-Ripollés & Izquierdo-Castillo, 2013). Older users

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appreciate the reliability, depth, and credibility of the news. Social media has created new methods for people to access news because it introduces interactive features that allow users take part in the process (Anderson K. J., 2025). This situation showed how people developed trust issues which led to misinformation through the community.

Readers online news satisfaction depends on multiple elements that determine how content users spend time on particular news platforms. Users appreciate high-quality content, user-friendly platforms, and personalization. Demographic differences play a significant role in user satisfaction because each group of readers has their own preferences when consuming news (Makananise, 2022). Younger users demonstrate good digital interface skills that make them value platforms that provide instant updates and customized news content. They appreciate interactive features that can increase user engagement.

Older populations seek dependable news sources that provide in-depth and trustworthy articles. Introverts feel comfortable with sources containing analytical data, whereas extroverts prefer interactivity (Makananise & Madima, 2021). Users experience satisfaction through cognitive and emotional pathways, which leads platforms to require credibility, interactivity, and personalization features as essential elements for their user retention and active engagement maintenance strategies in virtual spaces with high competitive activity (Zhang & He, 2007).

Personality and Online News Satisfaction: Readers personality create different effects on their online news consumption and their contentment with its use (Anderson K. J., 2025). Extraverts enjoy interactive features, including comments and social media sharing which substantiate their participatory personalities (Seidman, 2013). They are likely to engage in live chats, trending discussions, and up to date news, as this is a place where interaction and networking take place. Introverts prefer organized platforms with in-depth analyses and reports that support serious attention without distractions (Makananise, 2022). They tend to prefer formal media with detailed reports of events and news. Readers require this ability to maintain complete attention to their current task without experiencing any interruptions. They tend to communicate through personal channels. Their focus is on understanding what is being discussed (Casero-Ripollés & Izquierdo-Castillo, 2013).

Personality influences the choice of news sources preferred by different readers; some people enjoy using the same news sources, while others prefer to use multiple news sources. The design fulfills user requirements by providing two types of features which include community-oriented elements that satisfy extravert users and structured elements that deliver high-quality experiences to introvert users (Northup et al., 2022).

Education and Online News Satisfaction: Education level has an important influence on how people prefer to use news. Undergraduate students prefer fast visual and easy to understand news. Therefore, they tend to select news content based on their preference for infographics, short videos, and personalized feeds which present information to them in a brief yet appealing manner (Casero-Ripollés, 2012). Digital interaction through news commenting, liking, and sharing activities demonstrates that undergraduate students participate more actively in online news consumption than their peers (Fletcher & Park, 2017).

Postgraduate students prefer news which provides complete and precise information together with thorough analysis (Zhang & He, 2007). The audience prefers news reporting which provides complete coverage, analytical insights and well-organized content. News content enables users to gain better understanding of the subject matter while developing their ability to think critically. The traditional print news readership of these users has shifted to digital news consumption because digital platforms provide easy access to content (Lampropoulos & Siakas, 2022).

The Interplay of Personality and Education: The effects of personality and education on how people read news online include the type of platform used to access news. Younger extroverts tend to enjoy interactive platforms that offer instant gratification. Extroverts above 45 years prefer a curatorial environment where discussions are organized (Northup et al., 2022). Personality affects content choice. Younger generations seek immediacy and excitement. Older generations place greater value on comprehensibility and analysis. News media can use knowledge of personality and education in their content strategies to improve user experience, satisfaction, and engagement. The identification of generational differences is vital, especially in areas where there is a rapid expansion of Internet use (Makananise & Madima, 2021). Personality and education affect the news reader preferences. This shows that it is important for news organizations to personalize their content so that it remains interesting and credible to different kinds of readers.

The Objectives

The paper aimed to examine the effects of personality and education on the Satisfaction of Online News Readers. The following objectives were formulated to conduct the study:

1. To study the effect of Personality as an independent variable on the Satisfaction of Online News Readers.
2. To study the effect of Education as an independent variable on the Satisfaction of Online News Readers.
3. To study the interactive effect of Personality and Education as independent variables on the Satisfaction of Online News Readers.

Scope of the Study: The study is aimed to understand how personality and education level affect the Satisfaction of Online News Readers. As online media is growing rapidly and readers show varying preferences and interaction habits, studying these differences is necessary. News platforms can use this understanding to deliver content that suits different reader segments and makes reliable information more accessible. The study explores how these personal characteristics shape the way individuals engage with digital news content.

Review of literature

The development of digital technology has significantly changed news consumption practices worldwide. Chyi and Lasorsa (1999) explored how the introduction of e-newspapers would change news consumption patterns and the challenges associated with innovations in this sphere in terms of sustainability. Smartphones and high-speed Internet have been major catalysts that have allowed the restructuring of news consumption by ensuring more accessibility and the ability to produce real-time reports that are easily reachable (Dinana et al., 2025). Digital technology has led to the emergence of user-driven news that enables readers to discover personalized content that is highly engaging because it meets their expectations (Carlson, 2018). The personalization of news allows the building of loyal audiences while raising concerns related to echo chambers.

Social media have contributed to the popularity of news but have made it easier for people to share fake news and rumors, making it necessary to consider the importance of digital literacy and fact-checking practices. Tandoc et al. (2017) pointed out that there is sometimes an urge to publish news quickly, which negatively affects its quality. The challenge of finding a balance between publishing news fast and ensuring that it is accurate becomes particularly relevant in today's globalized world, where information from different countries reaches news websites easily, thereby allowing them to cover different topics but creating issues related to producing homogenous content and more sensational reports than before (Ceci, 2025).

Trust has become one of the main components of sustainability with Carlson (2018) emphasizing that credibility, integrity, and ethics are crucial for news organizations to be perceived differently from users and alternative sources. Therefore, news organizations should pay attention to establishing trust and building their reputation (Dinana et al., 2025). Digital technology has brought fundamental changes to the nature of news consumption and readers attitudes towards it. Readers no longer passively consume news; they actively choose news stories and share them on various social media platforms (Baptista & Gradim, 2020).

Method

The Study: This study is exploratory in nature, with Personality and Education as independent variables and Satisfaction of Online News Readers as the dependent variable. The independent variable Personality includes Introvert and Extravert individuals, while Education comprises two levels, namely Undergraduates and Postgraduates. The study aims to investigate the main and interactive effects of Personality and Education on the satisfaction and its factors among users of news websites and applications.

The Design: A 2×2 factorial design was employed to examine the effects of Personality and Education on the Satisfaction of Online News Readers. Personality was studied in terms of Introversion and Extraversion. Education groups, namely Undergraduate and Postgraduate were chosen for the study. Four sub groups of the study were as under:

- Introvert Undergraduates
- Introvert Postgraduates
- Extravert Undergraduates
- Extravert Postgraduate

The Sample: Online news readers from various cities of India, namely Mumbai, Pune, Indore, and Gwalior, were approached for the study. The initial data were collected from 535 respondents, and after purification, the responses of 400 online news readers were retained for analysis. The respondents were classified into four discrete study groups as per the requirements of the research design, namely Introvert Undergraduates, Introvert Postgraduates, Extravert Undergraduates, and Extravert Postgraduates, with each subgroup comprising 100 respondents.

Tools for Data Collection: Two standardized instruments were used for data collection. The *Satisfaction of Online News Readers Scale* comprising 35 items on a 5-point Likert scale was administered to measure satisfaction levels. The tool demonstrated high reliability (Split-Half = 0.940, Cronbach Alpha = 0.918) and validity (0.969). The *Maudsley Personality Inventory (MPI)* by H. J. Eysenck (1959) was employed to assess personality, consisting of 48 items in a dichotomous response format with established reliability (0.88) and validity (0.89). Both tools were self-administered with clear instructions, and respondents were assured of confidentiality and anonymity of their responses.

Tools for Data Analysis: The collected responses were coded, edited, and tabulated in MS Excel to ensure accuracy. Item–total correlations were computed to establish internal consistency of the scale. Factor Analysis was conducted using the Principal Component Method with Varimax Rotation, resulting in nine distinct factors along with overall satisfaction. To examine the effects of independent variables, Two-way ANOVA was applied to both the total score and the identified factors to determine the main and interactive effects of Personality and Education. A total of **30 null hypotheses** were tested. **60 z-tests** were computed to assess inter-group differences. The analysis was performed using SPSS (version 20) and Microsoft Excel.

Results

KMO and Bartlett's Test: The KMO value obtained was 0.917, indicating the adequacy of the sample size for Factor Analysis. Bartlett's test of sphericity yielded a Chi-square value of 4405.462 with 595 degrees of freedom and a significance level of 0.000, confirming that the variables were sufficiently correlated for Factor Analysis.

Factor Analysis: Factor analysis was conducted using the Principal Component Method with Varimax Rotation. Nine factors of Satisfaction of Online News Readers were identified: Flexibility, Relevant Content, Credibility, Review, Choice, Sharing, Evidence-Based Content, Preference for News Websites, and Use of Devices.

ANOVA and Z test: The results of Two-way ANOVA analyses indicate that personality and education independently affect the Satisfaction of Online News Readers across different factors, whereas Personality and Education do not interact to affect the factors of Satisfaction of Online News Readers. The details of significant ANOVA and Z-test results are as follows:

Personality affects Credibility (F = 5.199; sig. = .023), Review (F = 5.219; sig. = .023), Choice (F = 5.821; sig. = .016), Sharing (F = 7.858; sig. = .005), and Use of Devices (F = 3.467; sig = .063) factors of Satisfaction of Online News Readers.

Education affects Flexibility ($F = 13.508$; sig. = .000), Relevant Content ($F = 14.429$; sig. = .000), Credibility ($F = 32.829$; sig. = .000), Review ($F = 24.811$; sig. = .000), Choice ($F = 20.135$; sig. = .000), Sharing ($F = 12.311$; sig. = .001), Evidence-Based Content ($F = 20.971$; sig. = .000), and Preference for News Websites ($F = 18.597$; sig. = .000) factors of Satisfaction of Online News Readers.

Introvert Undergraduates are higher in the Flexibility factor of Satisfaction of Online News Readers than Introvert Postgraduates ($Z = 2.36$, $p < 0.05$), whereas Extravert Undergraduates are higher in the Flexibility factor of Satisfaction of Online News Readers than Introvert Postgraduates ($Z = -2.04$, $p<0.05$).

Extravert Undergraduates are higher in the Relevant Content factor of Satisfaction of Online News Readers than Extravert Postgraduates ($Z = 2.56$, $p<0.05$).

Introvert Undergraduates are higher in the Credibility factor of Satisfaction of Online News Readers than Introvert Postgraduates ($Z = 3.43$, $p < 0.01$), and Extravert Postgraduates ($Z = 3.47$, $p < 0.01$), whereas Extravert Undergraduates are higher in the Credibility factor of Satisfaction of Online News Readers than Introvert Postgraduates ($Z = -3.17$, $p < 0.01$), and Extravert Postgraduates ($Z = 3.18$, $p < 0.01$).

Extravert Undergraduates are higher in the Review factor of Satisfaction of Online News Readers than Introvert Postgraduates ($Z = -2.15$, $p < 0.05$), and Extravert Postgraduates ($Z = 2.95$, $p < 0.01$).

Introvert Undergraduates are higher in the Choice factor of Satisfaction of Online News Readers than Introvert Postgraduates ($Z = 2.85$, $p < 0.01$), whereas Extravert Undergraduates are higher in the Choice factor of Satisfaction of Online News Readers than Introvert Postgraduates ($Z = -2.67$, $p < 0.01$).

Extravert Undergraduates are higher in the Sharing factor of Satisfaction of Online News Readers than Introvert Postgraduates ($Z = -2.29$, $p < 0.05$).

Introvert Undergraduates are higher in the Evidence-Based Content factor of Satisfaction of Online News Readers than Extravert Postgraduates ($Z = 2.48$, $p < 0.05$), whereas Extravert Undergraduates are higher in the Evidence-Based Content factor of Satisfaction of Online News Readers than Introvert Postgraduates ($Z = -2.65$, $p < 0.01$), and Extravert Postgraduates ($Z = 3.38$, $p < 0.01$).

Introvert Undergraduates are higher in the Preference for News Websites factor of Satisfaction of Online News Readers than Introvert Postgraduates ($Z = 2.21$, $p < 0.05$), and Extravert Postgraduates ($Z = 2.27$, $p < 0.05$).

Extravert Undergraduates are higher in the Use of Devices factor of Satisfaction of Online News Readers than Introvert Postgraduates ($Z = -2.06$, $p < 0.05$).

Discussion

Personality of online news readers determine which news sources they consider trustworthy and which digital platforms they will select (Shulman et al., 2024). Introverts value reading materials that demonstrate credibility through research. Thus, they dedicate extra time to studying comprehensive reviews by professionals and verified fact-based content (Makhortykh et al., 2020). Extraverts choose news formats which provide visually engaging and fast-paced content delivery because they like enjoying multimedia elements, notification systems, and interactive functionality which allows them to study various subjects (Anderson, 2018). Personality determines the quality of information, while assessing how well validation tools, such as comment sections, ratings, and peer review function. User satisfaction relies on content that matches user preferences in most significant ways (Prieto et al., 2025).

News platforms must provide users with Introvert personality complete content which demands high reading focus while offering social interactive elements to keep extraverts engaged. Otis (2024) states that platforms should offer different personality-based features to user groups because users have different needs to reach their fulfilment objectives. Different effects of personality on credibility assessment, review processes, content selection, sharing behaviour and device usage demonstrate how personality affects reader engagement with online news platforms in distinct ways. Humprecht and Esser (2017) observed that Undergraduate users prefer interactive features. Audience tends to believe information more when they see their peers supporting or sharing it. Postgraduate users use trusted sources and credible journalism provides clear summaries to comprehend news in a slow and thorough manner (Kong et al., 2025).

People from different educational backgrounds approach news consumption differently because they have different media understanding skills which result in their unique ways of reviewing content, selecting content to share and assessing evidence-based content. According to Blassnig et al. (2024), how people respond to new technology is influenced by their personal characteristics and academic qualifications. Undergraduate readers prefer informal and engaging news formats, whereas postgraduate students prefer news content which presents information through balanced and organized presentation (Makhortykh et al., 2020).

User satisfaction for online news content depends on platform flexibility and the ability to limit interruptions (Anderson, 2018). Users choose which content to interact with through their personal interface settings. Introverts prefer structured navigation and content review features, whereas extravert users enjoy dynamic interfaces with multimedia and interactive content (Barnes et al., 2018). Undergraduate users respond to flexible and visually stimulating platforms, whereas postgraduate users prefer simple and stable designs. Satisfaction is highest when platforms allow users to adjust their layout preferences and filter content according to education and personality-based preferences. Bhuiyan et al. (2021) noted that flexibility leads to better user engagement when readers feel in control of their content flow, which indicates that digital news platforms must adjust their system to handle different variations to achieve ongoing user satisfaction across various user demographics.

The way readers interact with online news also depends on how comfortably the platform aligns with their individual reading patterns. According to Seidman (2020) Introvert and Postgraduate readers prefer a more focused and structured experience where information is presented in an organised manner, and strengthening their sense of credibility, while extravert undergraduates are drawn to environments that allow quick movement between topics and establish actual contact through their rating activities (Shulman et al., 2024). The difference in engagement styles indicates that all readers need distinct design approach which cannot be fulfilled by a single uniform design (Otis, 2024). User groups exhibit different methods of interpreting and reacting to content. Introvert readers satisfaction emerges from clarity, coherence, and evidence-based content that supports deeper understanding, whereas Extroverts are influenced by visible cues such as user reviews, sharing behaviour, and ongoing discussions (Wei & Hindman, 2011).

Readers demonstrate distinct approaches towards choosing content and participating in activities. Undergraduate users explore multiple options and engage more actively through sharing and interaction whereas postgraduate users adopt a more selective approach focusing on content that appears most relevant to them (de Bruin et al., 2024). The difference between the two approaches shows how people participate in activities and it demonstrates the need for platforms to deliver both wide-ranging content and essential details. Introvert Undergraduate readers preferences have shifted toward particular news websites which maintain consistent structural and dependable standards to satisfy their news consumption needs (Prieto et al., 2025). Users across different groups experience digital devices as more easily accessible now, so their platform satisfaction depends on content organization and presentation methods rather than which particular medium they use (Wu, 2023).

Online news experience which brings users satisfaction depends on the way their characteristics match with the design features of the news platform. Differences in how readers engage with content, evaluate information, and interact with features suggest that a one-size-fits-all approach is no longer effective in digital news environments. Platforms should provide users with structured and interactive experiences because users have different needs (Seidman, 2020). Users who want clear information, deep knowledge and trustworthy sources respond better to organized content which has strong supporting material, while users who prefer dynamic and engaging environments benefit from interactive features and flexible navigation. These patterns results that user satisfaction and experience is not determined by single factor but emerges from combined influence of interaction opportunities, content presentation, and individual preferences (Humprecht & Esser, 2017).

Digital news consumption patterns demonstrate a shift toward user-controlled experience creation, where users actively shape their own experiences rather than passively receiving information. Users develop and maintain their satisfaction through the process of selecting content, evaluating its quality, and sharing it with others. This active involvement reflects differences in how readers approach information. This transformation highlights the growing importance of individual preferences in shaping how news is interpreted, engaged and accessed across digital platforms (Wu, 2023).

Readers no longer rely solely on the availability of information but instead seek content that aligns with their expectations of clarity, relevance, and credibility. The increasing role of feedback mechanisms, content sharing, and user interaction contributes to building trust and sustained interest in digital news environments (de Bruin et al., 2024). As digital environments continue to evolve, the role of personalised and adaptable content becomes increasingly significant in shaping user satisfaction. Online news providers can improve user experience and long-term reader satisfaction by creating platforms that integrate flexibility, credibility, engagement, and relevance (Kong et al., 2025).

Conclusion

Conclusions have been drawn with careful consideration of the objectives framed for the study. Personality affects Credibility, Review, Choice, Sharing, and Use of Devices factors of Satisfaction of Online News Readers. Education affects Flexibility, Relevant Content, Credibility, Review, Choice, Sharing, Evidence-Based Content, and Preference for News Websites factors of Satisfaction of Online News Readers.

Limitations and Suggestions

This study had certain limitations which could be addressed in the future. The study examines personality and education while excludes multiple demographic and psychographic variables such as age, gender, income, lifestyle, digital trust, and wider levels of education and personality for deeper insights. The research limits its scope to readers who access news through websites and applications. Researchers can use social media platforms such as YouTube to study readers who watch occasional or short-form content. The sample size was limited to 400 respondents from four different cities, but an expanded cross-cultural sample of 1000 or more respondents from various geographic locations would improve the research findings.

Implications

Online media organizations can enhance reader satisfaction by targeting content based on personality and educational background. Interactive features, which includes polls, quizzes, and feedback systems, increase user interaction while multi-format, such as videos and infographics ensures accessibility and convenience. Including accessibility features for readers with hearing, visual, or cognitive difficulties makes platform easier for everyone to use and helps readers feel more included and connected.

The quality of online news improves when policymakers support digital literacy programs and establish guidelines for trustworthy and dependable online content. The implementation of algorithm transparency regulations which include data privacy standards and inclusivity requirements will create trust between users and service providers while maintaining fair treatment for all parties. Media organizations and academic institutions work together to track changes in reader satisfaction. Ethical reporting rewards and accessible platforms creates high-quality practices which develop content that meet reader needs.

Flexible layouts which include credible sources, and evidence-based content establish a foundation of trustworthiness. Content creators should deliver news to their audience by matching their readers personality, educational background, and personal preferences. The presence of multi-format content that users can share through videos and infographics results in higher user engagement. Understanding reader behaviour helps professionals to improve reading comprehension, content relevance, and reader loyalty across various user groups.

This study enables researchers to explore the relationship between psychological variables, engagement patterns, and different platform types. The research compares social media users with traditional readers and occasional browsers which leads to better understanding of reading behaviour. The generalizability of Cross-cultural research studies increases when researcher use larger samples sizes. Examining demographics, literacy, and content formats helps determine the reading requirements of their audience. Studying personalized recommendations, interactive tools, and new content formats can help develop online news content strategies to enhance user engagement and satisfaction.

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Factors Influencing E-Commerce Adoption by MSMEs

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Abstract

MSMEs are the backbone of economies worldwide. In India alone, over 63 million MSMEs contribute roughly 30% of GDP and more than 40% of merchandise exports. Yet, most of them still do not use e-commerce in any meaningful way - even when the tools are available. This paper examines what drives and what blocks e-commerce adoption among MSMEs in Odisha, India. We use an extended version of the Technology-Organization-Environment (TOE) framework that also accounts for the role of the CEO or owner. We used a two-phase mixed-methods design. Phase 1 involved in-depth interviews with 17 MSME owners across six manufacturing sectors. Phase 2 was a structured survey of 89 Udyam-registered manufacturing enterprises across four districts of Odisha; 72 valid responses were used in the final analysis. Perceived compatibility with existing systems was the strongest driver of e-commerce adoption intent. Surprisingly, CEO/owner characteristics - age, education, IT knowledge, gender and innovativeness - showed no significant relationship with adoption intent. This study extends the TOE framework for owner-managed Indian MSMEs and raises important questions about the declining role of CEO attributes in an era of plug-and-play digital solutions.

Keywords: Digital Transformation, e-Commerce Adoption, TOE Framework.

Introduction

India's digital economy has grown remarkably over the past decade, with internet users crossing 624 million by 2021 and average daily internet usage exceeding six hours (Hootsuite, 2021). This surge in connectivity has opened up significant opportunities for businesses to improve operational efficiency, reduce costs and reach new markets through e-commerce (Beck et al., 2005; Grandon & Pearson, 2004). Yet, despite this potential, micro, small and medium enterprises (MSMEs); which make

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up the backbone of the Indian economy continue to lag significantly in adopting e-commerce platforms (Burke, 2005; Pham et al., 2011).

India's MSME sector comprises over 63 million enterprises that collectively account for approximately 30% of GDP, more than 40% of merchandise exports and over 110 million jobs (ICRIER Annual Survey of MSMEs, 2025). The sector spans 1,157 industrial clusters and produces around 6,000 different goods (Dasgupta, 2015). While the national policy agenda emphasizes digital transformation, actual e-commerce adoption among MSMEs particularly in semi-urban and rural areas remains fragmented and incomplete.

Existing studies have noted that MSMEs in developing economies are slow technology adopters due to resource constraints, limited managerial IT knowledge, poor infrastructure and a lack of enabling policy environments (Ghobakhloo et al., 2011; Rahayu & Day, 2015; Thong, 2001). However, studies focused specifically on the Indian MSME context especially at the state level — remain sparse. Odisha, a state with a growing MSME base across manufacturing sectors, presents a particularly relevant context to explore this gap.

This paper therefore investigates the antecedents of e-commerce adoption among MSMEs in Odisha using an extended TOE framework. The study adds CEO/owner attributes to the traditional technological, organizational and environmental dimensions, thereby responding to the criticism that the standard TOE framework neglects the role of individual decision-makers in small, owner-managed businesses (Ghobakhloo & Tang, 2013).

The study addresses the following research questions:

- **RQ1:** Which enabling factors significantly influence e-commerce adoption in the MSME sector?
- **RQ2:** Which barriers hinder the adoption of e-commerce by MSMEs and how do they affect adoption intensity?
- **RQ3:** How do institutional stakeholders including governmental, non-governmental and social bodies contribute to facilitating e-commerce adoption in the MSME sector?

MSME Sector: Status and Challenges

Global Overview: Nearly 90% of all companies worldwide are classified as MSMEs, and they collectively employ more than half of the global workforce (Panduwinata et al., 2025). The COVID-19 pandemic exposed deep vulnerabilities in the MSME sector but also demonstrated its resilience; enterprises that quickly adapted to digital solutions benefited from improved competitiveness and productivity recovery (Singh & Anees, n.d.). Going forward, innovation capabilities, digital literacy and adaptability have been consistently identified as key determinants of MSME resilience in both developed and developing economies (Saezow & Sukhabot, 2025; Hossain et al., 2022).

Global challenges remain significant. The MSME financing gap stands at an estimated USD 5.7 trillion across 119 emerging markets (World Bank MSME Finance Gap Report, 2025), while approximately 40% of formal MSMEs face credit constraints (Bruhn et al., 2017). Skills shortages in digital capabilities are equally acute — nearly 75% of employers globally found it difficult to fill roles in IT and digital domains during 2024–2025 (World Economic Forum Future of Jobs Report, 2025). Additionally, more than 40% of MSMEs worldwide remain uncertain about the returns on digital investment, and up to 65% cite lack of funding as the primary barrier to acquiring digital tools (OECD, 2025; Bhaskarwar et al.)

India's MSME Sector: India's MSME sector is among the largest and fastest-growing in the world, with over 63 million enterprises contributing nearly 30% of GDP and over 40% of exports (ICRIER Annual Survey of MSMEs, 2025). The Union Budget 2025 introduced significant reforms to the MSME classification, raising investment thresholds 2.5 times and doubling turnover thresholds, while eliminating the distinction between manufacturing and service enterprises. As a result, approximately 98% of Udyam-registered enterprises are micro-sized, with a small but growing share comprising small and medium enterprises (ICRIER, 2025).

Despite these fundamentals, Indian MSMEs face structural challenges including limited access to formal credit (only 16% of MSME credit reaches the micro-segment despite micro-businesses comprising 95% of all registered MSMEs), weak digital infrastructure and regulatory compliance burdens (Eteedge Insights Report, 2025; Maheshkar & Soni, 2021). Approximately 47% of the MSME workforce requires reskilling to meet current digitization demands, and only 33% of digitized MSMEs actually experience measurable improvements in growth and efficiency (Cyber Media Research, 2025).

MSMEs and the Role of IT

Global Scenario: IT adoption has genuinely changed how MSMEs operate. Faster market responses. Better customer relationships. More efficient supply chains (Beck et al., 2005). The benefits are real and well-documented. Perceived cost reduction, market expansion and improved customer service are consistently identified as the top motivators for MSME digital transformation (Ghobakhloo et al., 2011). But barriers are equally real. High costs, poor infrastructure, limited digital skills and inadequate government guidance continue to prevent adoption across regions (Bianchini & Sancho, 2025). More recent research suggests that MSMEs need MSME-specific advisory services — not generic digital policy along with subsidized access to cloud tools and ongoing workforce development (Faiz et al., 2024).

Indian Scenario: The Indian picture is mixed. Digitized MSMEs clearly outperform non-adopters in revenue and profit growth especially those using e-commerce platforms (CMR, 2025). Digital payments have spread remarkably fast, with about 90% of MSMEs now accepting digital payments. But deeper e-commerce adoption selling on platforms, managing orders online, integrating with supply chains remain limited. Over 70% of MSMEs lack adequate digital literacy or trained staff to manage e-commerce effectively (ICRIER, 2025). Government schemes like Udyam, Digital MSME and the Champions Portal exist. Many MSME owners, however, either do not know about them or cannot figure out how to use them (Vandita et al., 2023). This gap between policy design and ground-level awareness is not minor. It is significant, and it is exactly what our study explores from the field.

Review of Literature and Hypotheses Development

Theoretical Foundations: Several theories have been used to explain technology adoption behavior. The Theory of Reasoned Action (Fishbein & Ajzen, 1977) proposes that individual behavior is driven by intention, shaped by attitude and social norms. Useful but limited, because it focuses on individuals, not organizations. The Theory of Planned Behavior (Ajzen, 1991) added perceived behavioral control. Better, but still individual-focused. The Technology Acceptance Model or TAM (Davis, 1989) looked at perceived usefulness and ease of use. Widely applied, but frequently criticized for ignoring organizational and environmental factors (El-Gohary, 2012). Innovation Diffusion Theory (Rogers, 2010) shifts the lens to the adoption process itself — how innovations spread through populations and what characteristics of the innovation drive that spread. Compatibility, relative advantage and complexity are central constructs here.

For this study, we chose the TOE framework (Tornatzky et al., 1990). It is the only framework that simultaneously captures technological, organizational and environmental factors that shape adoption decisions at the firm level. It has been well-validated in e-commerce adoption research (Ghobakhloo et al., 2011; Sila & Dobni, 2012). We added CEO/owner attributes as a fourth dimension; a response to the critique by Ghobakhloo & Tang (2013) that the standard TOE framework ignores individual decision-makers, which is a critical omission in the context of owner-managed small businesses.

The Extended TOE Framework: The rationale for extending TOE is straightforward. In large organizations, technology adoption decisions are made by committees, IT departments, procurement teams and senior management working together. In a small business with five or ten employees, one person makes every important decision. That person is the owner. It stands to reason that the owner's IT knowledge, openness to innovation, education and demographic profile would influence the decision to adopt e-commerce (Thong & Yap, 1995). The researchers were curious. And as we shall see, the data gave us a surprising answer.

Hypotheses

Technological Context. Perceived benefits — the expectation that e-commerce will deliver real gains over the status quo — are a fundamental adoption driver (Iacovou et al., 1995). So is relative advantage. Perceived compatibility, how well e-commerce fits with existing systems, culture and workflows — is expected to positively influence adoption (Rogers, 2010). Complexity and security/privacy concerns are expected to act as barriers (Sila, 2013).

- H1: Perceived benefits positively influence e-commerce adoption
- H2: Relative advantage positively influences e-commerce adoption
- H3: Perceived compatibility positively influences e-commerce adoption
- H4: Perceived complexity negatively influences e-commerce adoption
- H5: Security and privacy concerns negatively influence e-commerce adoption

Organizational Context. Top management support enables adoption by freeing up resources and creating an enabling culture (Kabanda & Brown, 2017). Cost of adoption as financial and operational is a deterrent, especially for resource-constrained small businesses. Organizational culture and technological readiness determine how prepared the firm is to absorb and use new digital tools (Rahayu & Day, 2015). Firm size may also moderate adoption capacity.

- H6: Top management support positively influences e-commerce adoption
- H7: Cost of adoption negatively influences e-commerce adoption

- H8: Organizational culture positively influences e-commerce adoption
- H9: Organizational readiness positively influences e-commerce adoption
- H10: Organizational size influences e-commerce adoption

Environmental Context. Competitive pressure; seeing rivals adopt e-commerce is a well-established adoption trigger (Crowley & Jordan, 2017). Government support, through infrastructure and incentives, is theoretically a key enabler in developing economies (Mazzarol, 2015).

- H11: Competitive pressure significantly influences e-commerce adoption
- H12: Government support significantly influences e-commerce adoption

CEO/Owner Context. Owner IT knowledge reduces the perceived risk of adopting new technology (Ghobakhloo et al., 2011). Innovativeness predicts willingness to experiment with untested solutions (Marcati et al., 2008). Demographic characteristics; age, gender, education are also expected to shape risk tolerance and openness to digital adoption (Teo & Lim, 2000).

- H13: Owner IT knowledge positively influences e-commerce adoption
- H14: Owner innovativeness positively influences e-commerce adoption
- H15: Owner age significantly influences e-commerce adoption
- H16: Owner gender significantly influences e-commerce adoption
- H17: Owner education level positively influences e-commerce adoption

Qualitative Analysis of Enablers and Barriers

Respondent Profile: Before designing the survey, we spent time with MSME owners directly. We conducted in-depth interviews with 17 owners across six sectors in Odisha: fly ash bricks (n=3), aluminium rolling sheets (n=2), furniture (n=3), silver jewellery (n=4), confectionery (n=3) and kitchen utensils (n=2). Some used e-commerce in some form. Most did not. Interview duration ranged from 30 to 90 minutes.

What We Heard: We expected owners to cite cost as their primary concern. But most of them did not even get that far. Their first and most common problem was simple unawareness. They did not know what e-commerce could do for them. They did not know what it would cost. They did not know if government support existed.

One owner said: *"I don't use e-commerce because I don't need to go online to sell my products. I have a sufficient number of customers according to my production capacity."*

Another said: *"I am planning to use e-commerce for my business, but I don't have much knowledge about it. My son will look after these functions as he has good experience in technology."*

A third was blunt: *"Government does not inform us anything about e-commerce."*

And a fourth: *"I don't understand how it will add to my profit."*

These four sentences contain the essence of the adoption challenge. Low awareness. Dependence on younger family members for digital tasks. Absent government communication. Unclear benefit logic. These themes appeared repeatedly, across industries and across districts, and they shaped the structure of our survey instrument directly.

Six barrier themes emerged from the interviews: (1) lack of awareness about e-commerce benefits; (2) limited IT knowledge; (3) concern about start-up costs; (4) absent or ineffective government outreach; (5) a belief that e-commerce is simply not relevant for local, small-scale operations; and (6) no accessible training or skill-building opportunities.

Research Method

Research Design: We used a two-phase sequential mixed-methods design. Phase 1 was qualitative; in-depth interviews to explore the adoption landscape and refine our constructs for the Indian MSME context. Phase 2 was quantitative; a structured survey to test the hypotheses derived from the extended TOE framework. The quantitative analysis is both descriptive and correlational.

Sampling and Data Collection: Our target population was Udyam-registered manufacturing MSMEs in Odisha. We used convenience and snowball sampling, working through MSME associations and entrepreneurship networks in five locations: Bhubaneswar, Cuttack, Sambalpur, Sundargarh and Kandhamal. This gave us both the industrial heartland of the state and some of its more remote districts. We trained four second-year B.Com. students, all fluent in Odia, as field researchers. They personally visited MSME units, administered bilingual (English/Odia) questionnaires and authenticated responses through photographs and signed acknowledgements. This was important since mailed or online surveys in these settings often yield poor quality data. Of 230 MSMEs identified initially, 150 were successfully contacted. Eighty-nine submitted complete responses, and 72 were retained after data cleaning for the final analysis. Bhubaneswar and Cuttack yielded the most responses (41), followed by Sambalpur and Kandhamal (18 each) and Sundargarh (12).

Measurement Instrument: Constructs were adapted from established literature and validated by expert reviewers — including the Director of the District Industries Centre, the Principal Secretary for MSMEs (Govt. of Odisha) and the OASME industrial association. We used a six-point Likert scale for all agreement items. Demographic variables — age, education, experience were captured separately. The six-point scale was a deliberate choice to avoid the "safe middle option" that respondents often default to on five-point scales.

Table 2: Descriptive Statistics

Variable	N	Min	Max	Mean	SD
Organizational Size (employees)	72	1	60	18.47	15.51
CEO/Owner Age (years)	72	19	78	45.21	10.88
CEO/Owner Experience (years)	72	1	40	16.89	8.37
CEO/Owner Education (1–6 scale)	72	1	6	3.35	1.73

The average firm had about 18 employees, which clearly indicates them to be micro to small in scale. Owner-managers were mid-career (mean age 45) with nearly 17 years of experience and a predominantly graduate-level education.

Current Status of E-Commerce Adoption

What is actually happening on the ground in Odisha's MSME sector? The picture is one of transition; partial, uneven and tilted toward basic tools. Digital payment adoption is high. About 94% of respondents received electronic payments and 92% made electronic payments to suppliers. At this level; basic transactional tools adoption is almost universal. But move one step further and the story changes. Only 39% managed customer orders through a website. Only 26% negotiated contracts electronically. Just 18% used ERP to communicate with key suppliers. Social media is used for marketing by a reasonable proportion of firms. But integrated, strategic use of e-commerce platforms for product listing, order management and customer service has not happened. MSMEs have crossed the digital payment threshold. They have not yet crossed the e-commerce threshold. The gap between these two is what this study is fundamentally about.

Reliability and Validity Analysis

All constructs passed the standard reliability threshold of Cronbach's Alpha ≥ 0.70 and factor loadings ≥ 0.70. The **Environmental** construct (α = 0.823) covered Competitive Pressure (loadings 0.741-0.853 and Government Support (loadings 0.801-0.920). The five **Technological** constructs covered 24 items: Perceived Compatibility (α = 0.935, loadings 0.606-0.854), Perceived Benefits (α = 0.888), Security & Privacy (á = 0.900), Attitude (α = 0.928) and Perceived Complexity (α = 0.823). The **Organizational** constructs (α = 0.693-0.925) covered Technological Infrastructure Readiness (loadings 0.769-0.883), Financial Resources, Entrepreneurial Proactiveness and Organizational Culture. The **CEO Characteristics** constructs (α = 0.800-0.824) covered Entrepreneurial Innovation and CEO IT Knowledge. The dependent variable –**Intention to Adopt E-Commerce** – showed outstanding reliability (α = 0.913, loadings 0.900–0.948). The measurement model was sound. We could proceed to hypothesis testing.

Results

Given our sample size of 72, we estimated separate regression models for each construct cluster and then pooled significant predictors into a final integrated model.

Model 1: Environmental Factors ($R^2 = 0.290$, $F = 14.093$, $p < 0.001$): Competitive Pressure was significant (β = 0.539, t = 5.309, p < 0.001) : H11 accepted. Government Support was not significant (β = 0.004, p = 0.965) : H12 rejected.

Model 2: Technological Factors ($R^2 = 0.575$, $F = 17.846$, $p < 0.001$): Perceived Compatibility emerged as the single strongest predictor in the entire study (β = 0.657, t = 8.190, p < 0.001) : H3 accepted. Perceived Benefits (β = 0.291, t = 3.629, p = 0.001) : H1 accepted. Organizational Attitude/Relative Advantage (β = 0.206, t = 2.571, p = 0.012) : H2 accepted. Security & Privacy (t = "1.105, p = 0.273) and Complexity (t = "1.080, p = 0.284) : H4 and H5 rejected.

Model 3: Organizational Factors ($R^2 = 0.255$, $F = 4.514$, $p = 0.001$): Only Technological Infrastructure Readiness was significant (β = 0.396, t = 3.693, p < 0.001) : H9 accepted. Financial Resources, Entrepreneurial Proactiveness, Culture and Organizational Size all non-significant. H6, H7, H8 and H10 rejected.

Model 4: CEO Characteristics ($R^2 = 0.099$, $F = 1.45$, $p = 0.218$): The model was not significant. None of the five CEO variables reached the significance threshold. All of H13 through H17 rejected.

Final Integrated Model ($R^2 = 0.590$, $F = 19.014$, $p < 0.001$): Perceived Compatibility ($\beta = 0.631$), Perceived Benefits ($\beta = 0.256$) and Attitude/Relative Advantage ($\beta = 0.230$) remained significant. Technological Infrastructure Readiness showed marginal explanatory power. The model explains 59% of variance in adoption intention.

Table 6: Summary of Hypotheses Results

Construct	Factor	Hypothesis	Result
Environmental	Competitive Pressure	H11	Accepted
Environmental	Government Support	H12	Rejected
Organizational	Technological Infrastructure Readiness	H9	Accepted
Organizational	Financial Resources	H7	Rejected
Organizational	Top Management Support	H6	Rejected
Organizational	Organizational Culture	H8	Rejected
Organizational	Organizational Size	H10	Rejected
Technological	Perceived Benefits	H1	Accepted
Technological	Relative Advantage/Attitude	H2	Accepted
Technological	Perceived Compatibility	H3	Accepted
Technological	Perceived Complexity	H4	Rejected
Technological	Security & Privacy Concerns	H5	Rejected
CEO Characteristics	All five attributes	H13–H17	Rejected

Discussion

Technological Context: Perceived compatibility was by a significant margin is the most powerful predictor of adoption intent (â = 0.657). This finding has a clear practical message. When an MSME owner can see that e-commerce fits with the way they already operate their existing supplier relationships, their payment systems, the way they communicate with customers adoption feels possible. When it does not fit, no amount of government incentive or competitive pressure will move the needle. This aligns with Rogers' (2010) argument about compatibility being a central driver of innovation diffusion. It also has implications for platform design. E-commerce solutions marketed to small manufacturers need to emphasize integration with existing workflows, not just the promise of new markets. The non-significance of security concerns surprised us a little. But perhaps it should not have. These MSMEs are already using payment gateways at a 94% rate. They have crossed the basic trust threshold for digital financial transactions. At this stage, security is no longer the issue but fit and benefit are.

Organizational Context: Among all the organizational variables, only technological infrastructure readiness mattered. This is important. The sector-wide literature keeps flagging financial constraints as the dominant organizational barrier (Eteedge Insights, 2025). Our data does not support that for Udyam-registered enterprises. These firms by virtue of being formally registered appear to have cleared a basic financial threshold. What they lack is not money for adoption. What they lack is adequate IT infrastructure to make adoption functional. Top management support not being significant is also worth noting. In small firms, the owner is the top management. Their support should logically drive everything. But when adoption intent itself is measured, what matters is not their willingness but their readiness. You can want to adopt e-commerce but still be unable to do so if your existing IT systems cannot support it.

Environmental Context: Competitive pressure matters. MSMEs that see rivals using e-commerce are motivated to respond. This is a market-driven adoption pathway that does not depend on government action. It is organic and self-reinforcing. Government support, on the other hand, showed no significant influence. This was disappointing but not surprising. The interviews told us this clearly. *"Government does not inform us anything about e-commerce."* That one statement from a respondent in Kandhamal captures the problem precisely. Schemes exist. Communication is absent. This directly answers RQ3 institutional stakeholders are currently not playing an effective facilitative role. The gap is not in policy design. The gap is in last-mile delivery of that policy.

CEO/Owner Context: This is where we were genuinely surprised. We expected owner characteristics to matter. The literature strongly suggests they should, especially in small businesses where the owner is the decision-maker (Thong & Yap, 1995; Ghobakhloo et al., 2011). They did not. Not one of the five variables; IT knowledge, innovativeness, age, gender or education showed significance.

We think there is an explanation. The digital ecosystem in India has matured rapidly. Plug-and-play e-commerce solutions onboarding to Flipkart, Amazon, GeM, or even WhatsApp Business no longer require technical expertise. They require a smartphone and a willingness to try. Under these conditions, the owner's personal IT competence stops being the limiting factor. What matters more is whether the firm's existing systems can absorb the integration, and whether the owner can see a clear benefit.

This finding adds a genuinely new angle to the TOE literature in the Indian context. It suggests that as digital platforms become more accessible and user-friendly, the CEO/owner dimension of technology adoption may gradually lose its explanatory power.

Answering the Research Questions

RQ1 (Enablers): Perceived compatibility, perceived benefits, positive organizational attitude and competitive pressure are the primary enablers. Technological infrastructure readiness within the organization also plays a supportive role.

RQ2 (Barriers): The qualitative data points to low awareness, unclear benefit logic, weak IT infrastructure and no access to training as the real barriers. What the quantitative model shows, interestingly, is that widely assumed statistical barriers such as complexity, cost, security concerns are not the binding constraints among registered MSMEs. The binding constraint is the absence of perceived fit and benefit.

RQ3 (Institutional Role): Government support has no significant influence on adoption intent. This is a policy failure not of scheme design, but of communication and implementation.

Implications

Theoretical Implications: This study contributes to the TOE framework literature in two ways. First, it validates the extended TOE model with CEO/owner attributes in the Indian MSME context. Second, and more interestingly, it demonstrates that the CEO/owner dimension may be losing its relevance as digital adoption tools become simpler. This invites future researchers to examine whether the TOE plus owner model holds in more complex technology adoption scenarios such as ERP, AI tools or supply chain integration; where owner IT competence may still be decisive. The dominance of perceived compatibility also strengthens the case for bridging TOE and Innovation Diffusion Theory (Rogers, 2010) in MSME adoption research. These two frameworks, taken together, explain more than instead explained alone.

Managerial Implications: For MSME owners and managers, the message is clear. Before adopting any e-commerce solution, assess compatibility with your existing IT setup, your supplier relationships, your payment systems and your team's capabilities. The goal is not to leap to the most advanced platform. The goal is to choose the platform that fits what you already have. Start with compatibility. First develop benefit visibility. Adoption follows. Industry bodies like OASME can play a facilitating role here. Peer-learning events where MSME owners demonstrate e-commerce solutions to fellow owners in the local language, in a familiar setting are likely to be far more effective than formal training programs.

Policy Implications: The findings raise a direct and uncomfortable question for government: If support schemes are not reaching MSME owners, does their existence matter? The answer is clearly no. What is needed is not more schemes but better communication; district-level workshops in Odia, vernacular digital campaigns, active outreach by District Industries Centres and partnership with MSME associations to create awareness on the ground. Financial subsidies for e-commerce platform onboarding and simplified compliance pathways would complement this outreach (Ocloo et al., 2020).

Limitations and Future Research

This study is limited since the sample of 72 MSMEs is valid but small. Convenience and snowball sampling mean that more formally organized and accessible enterprises are probably over-represented. The cross-sectional design captures adoption intent at one point in time not actual adoption behavior, and their outcomes.

Future research should extend this study to service-sector MSMEs, which were outside our scope. A larger, multi-state sample would allow for geographic comparison and sector-specific insights. Longitudinal research could track whether adoption intent translates into actual adoption and whether it improves business performance. And given our surprising CEO findings, it would be worth investigating whether the role of owner attributes differs when studying more complex technology adoptions like AI, cloud ERP or data analytics.

Conclusion

The researchers began this research with a simple puzzle: why do MSME owners in Odisha surrounded by digital tools, active competitors and a supportive policy environment are still not using e-commerce strategically? The answer that emerged from both our interviews and our survey data is as follows. They will adopt when the technology fits. When the benefit is visible. When a competitor's success makes the cost of inaction obvious. They will not adopt simply because the government has a scheme or because they happen to be young, educated or tech-savvy. This finding challenges several assumptions in existing literature and in current policy design. It also offers a practical and actionable pathway forward. Build digital infrastructure. Make e-commerce platforms that fit existing MSME operations. Communicate actively and in local languages; what is available and what it can do. And trust that market competition will do the rest.

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Impact of Artificial Intelligence on Operational Efficiency of Healthcare with Special Reference to Karnataka

Niharika Mishra, Sai Teja Kumar Allu***

Abstract

Dynamic Artificial Intelligence is the area that depicts the ability of AI information on individuals and the ability to react to sure practices. Man-made brainpower in medical services alludes to the utilization of complex calculations intended to play out specific errands in a computerized style. At the point when analysts, specialists and researchers embed information into PCs, the recently constructed calculations can investigate, comprehend and even recommend results to complex clinical issues. Sample consists of doctors (n=100) of health care sector across Karnataka. Medical care industry has significant improvement essentially empowered by cutting edge innovations like, AI Robotics, Cloud figuring and 3D printing. Numerous examinations when modified, uncovered the advantages of embracing these innovations.

Keywords: Clinical Choice, Logical Assessments, Man-made Reasoning, Medical Services, Pressure Sensors.

Introduction

Artificial Intelligence reasoning was initially proposed in 1956 by John McCarthy in his first academic gathering with respect to the matter. Unexpectedly, it is possible to engage machines to think and learn a lot like individuals. Automated thinking is the region of take that portrays the capacity of machine getting data on people and the capacity to respond to sure practices. This besides fuses Natural Language Processing (NLP), a province of AI that take a gander at the human language, supporting a circumstance catch, translate, and control human language (e.g., text, talk).

The Indian medical care zone is anticipated to arrive at Rs 19,56, 920 crore (US$ 280 billion) by methods for 2020. Rising benefits stage, more wellness mindfulness, expanded priority of way of life diseases and progressed admittance to protection will be the critical members to increment.

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Artificial Intelligence is the sector that describes the capability of machine learning knowledge like human beings and the capacity to respond to sure behaviour (Arrieta et al., 2020). Artificial intelligence in healthcare refers to the usage of complex algorithms planned to perform certain tasks in an automated fashion (Maddox et al., 2019). When researchers, doctors and scientists insert data into computers, the newly built algorithms can analyze, understand and even suggest results to complex medical problems. Health care industry has considerably improved, primarily enabled by advanced technologies like, AI (Artificial intelligence) Robotics, Cloud computing and 3D printing. Many studies when revised, revealed the benefits of adopting these aforesaid technologies. Although there are researchers who had made study on various technologies used in health care industry (Perez et al., 2018).

There was no specific study pertaining to artificial intelligence and its related aspects. Therefore, the study focused to understand the impact of AI adoption on operational efficiency of healthcare industries. Since operational efficiency results in better health care facilities leading to greater societal impact (Dwivedi et al., 2019). The study involved interaction with doctors from recognized organizations followed by questionnaire for data collection. It was observed that majority of the doctors strongly agreed on applications of AI that could improve responsive governance in health care, in this process it reduces medical errors, collects vast amount of clinically relevant high-quality data in real time and mainly it reduces administrative work flow assistance. Though application of AI is prominent in certain functions of health care, but more benefits can be related to developing AI applications supporting hospital administration leading to better patient care. The objective of the study is (i) to understand the level of adoption of Artificial intelligence in health care industry, to identify and analyze the factors of Artificial intelligence (AI) on operational efficiency of health care industry in Karnataka.

Review of Literature

Peculiar mentioning conditions continue being an immediate consequence of the health information's size and unusualness; regardless, the AI society is suitably headed to get together those challenges by methods for developing new model ID approaches, flexible figuring, and novel procedures that use massive fragments of prosperity bits of knowledge to address well-known questions (Mary & Majeed, 2015). An assessment man-made reasoning and clinical science review in their appraisal they found that although the essential places of AI in patient idea so far have expressly been in affected individual appraisal and picture assessment, the future holds uncommon potential for applying AI to improve a tremendous number of the influenced singular idea way. Some model envelops changing medications to broaden execution even as confining perspective outcomes, proposing fitting strategies of logical assessments, checking the patient people's thriving and security, and going over new real course of action that could obviously affect the stunning of care (Kaur & Mann, 2017).

AI in wellness care will diminish realities imbalance between wellness care transporters, payers, and victims since it rethinks the wellness care scene. While an amazing amount of work is unquestionably done via innovation suppliers, the genuine power of AI is in building up opportunities for new companies to determine specific issues with applications and verticals. As of now, patients are the objects of an expense chain framework; AI engages them to get more noteworthy liable for their wellbeing. Simulated intelligence has the capacity to upset the manner in which logical labor force access insights and the manner in which authoritative staffs control resources and financial outcomes (Garbuio & Lin, 2019).

The examination centers around medical care measure displaying which technique and when and the outline appraisal with the wellness care individuals outfitted loved bits of knowledge into the preferences and disadvantages of each graph in wording in their ease of use and programming in the medical care settings. Partner charts and data graphs might be explicitly valuable on the underlying level of the displaying. Despite the fact that they had been mulled over now not to offer a full insight into how the consideration methodology functions, they had been viewed as advantageous in defining the limit of demonstrating, distinguishing partners and information data shape. When associations between individuals, divisions and trusts are key inconveniences, verbal trade charts might be produced from partner outlines and information graphs.

At the point when measurements connections between clinical gadgets and people are of fantastic issue, realities ow graphs might be created from framework content material charts and realities outlines. By and large consideration cycles can likewise be perceived in an additional patient-focused on manner through nation change charts, which can be without trouble produced from owcharts or procedure content outlines (Jun et al., 2009). The investigation centers around AI in medical care, Now is an ideal opportunity to get locally available and embrace AI, says the leader of radiology's primary master association. "Artificial intelligence can beautify our vocation and rebuild the activity of radiology worldwide," It will permit radiologists to invest more prominent energy on tasks to advantage every victim and doctor." Job one is reproducing and rebranding adding rooms to virtual indicative information center points turning "all in all imaging care," says Rao, who is the seat of the part of radiology at Jefferson University Hospitals in Philadelphia. Radiologists should be blessing with victims, referrers and care choice making (Miyashita & Brady, 2019).

AI system has two estimations that influence scholarly leftover job needing to be done: Complexity of the figuring and UI. Various experts have endeavored to smooth out its fundamental estimation, yet no basic advances have been taken to improve the AI systems interface. As such, its impact on human discernment stays sketchy. Scholarly ergonomics is a portion of human components and ergonomics highlighted ensuring amazing correspondence among advancement and individuals. In this article, we talk about human structure relationship from a mental ergonomics perspective in clinical administrations. In this participation, scholarly ergonomics centers around mental cycles, for instance, thinking, thinking and basic speculation, comparably mental or direct associations. In mental ergonomics, these perspectives are concentrated concerning work and various systems. Focused in on the use of AI in a general sense in improving its ability to give careful ends. Man-caused insight systems to have since a long time prior held the assurance of refining the assumption for diseases, for instance, controlling imaging for aspiratory embolisms (Choudhury & Asan, 2020).

Advances of Flexible Pressure Sensors toward Artificial Intelligence and Health Care Applications, center around the basics of adaptable pressing factor sensors, and thus on a few basic ideas for the investigation of utilitarian materials and improvement of detecting gadgets toward viable applications. Points of view on self-controlled, straightforward and implantable pressing factor detecting gadgets are likewise analyzed to feature the advancement headings in this energizing examination field. By uprightness of their broadly applications in close to home electronic gadgets and mechanical checking, pressure sensors are alluring contender for advancing the progression of science and innovation in current culture. Adaptable pressing factor sensors dependent on natural materials, which join exceptional favorable circumstances of adaptability and minimal effort, has arisen as a profoundly dynamic field because of their promising application in man-made brainpower frameworks and wearable medical care gadgets (Zang et al., 2015).

The examination centers around Artificial insight in medical care monstrous advancement in computerized reasoning (AI) with the improvement of profound neural organizations, common language handling, PC vision and mechanical technology. These strategies are presently effectively being applied in medical care with a large number of the wellbeing administration exercises right now being conveyed by clinicians and heads anticipated to be taken over by AI in the coming years. Notwithstanding, there has additionally been excellent publicity about the capacities of AI with a mixed-up thought that AI will supplant human clinicians inside and out. These points of view are off base, and if a reasonable viewpoint of the impediments and guarantee of AI is taken, one can check which parts of the wellbeing framework AI can be incorporated to have a significant effect.

The four primary zones where AI would have the most impact would be: understanding organization, clinical choice help, quiet observing and medicalcare mediations. This wellbeing framework where AI assumes a focal part could be named an AI-empowered or AI-increased wellbeing framework. In this article, we talk about how this framework can be created dependent on a practical appraisal of current AI advancements and anticipated turns of events (Reddy et al., 2019). Artificial knowledge (AI) is seen as the most groundbreaking innovation of the 21st century. Medical services have been distinguished as an early contender to be changed by AI advancements. Different clinical and patient-confronting applications have just arrived at medical care practice, cut down expenses and eventually improve the existence of patients. This article targets furnishing a beginning phase commitment with a comprehensive view on the 'dynamic' limits of AI advancements (Schönberger, 2019).

The examination centers around Artificial knowledge in medical services and Medicine, AI specifically, has extraordinary potential for improving medical services and empowering a more customized approach. We show procedures from Social AI can be adequately applied in creating Behavior Change Management frameworks, and outline its utilization in related work on information assortment for Value-Based Health Care. Specifically, we'll talk about fake feelings, genuine games for medical services, and fake allies to help with the consideration of patients in a clinic or home setting. These allies can screen the conduct of patients, assist them with reminding taking medicines where medical services are conserved upon. (Hindriks & Meyer, 2019).

The assessment bases on Artificial knowledge in clinical consideration is a huge headway in electronic thinking (AI) with the improvement of significant neural associations, regular language taking care of, PC vision and mechanical innovation. These systems are by and large viably being applied in clinical consideration. (Jarrahi, 2018). From the above literature the following hypothesis had been proposed;

H1: There is a significant impact of artificial intelligence adoption on operational efficiency in health care industry.

Artificial Intelligence Adoption	→	**Operational Efficiency in Health care Industry**

Figure 1: Conceptual framework

Method

Research is a specific study which focuses on finding a new knowledge and in order to achieve the objective, the method used for research is analytical research as this research is about investigating the use of artificial intelligence adoption of operational efficiency in health care industry highlighting specific solution. The source of the data which was collected for the research was primary data followed by secondary data which involved various reference research papers and list of Hospitals in Karnataka from authorized sites. Technique which was used for sampling of the population was judgmental sampling because this research was about a specific technical area which could only be analyzed by specific group of people.

Primary data was collected from various doctors of health care sector across Karnataka in which out of 290 total population only 100 could be the target respondents for the study as they were well informed about the research problem and could add valuable inputs to conduct the further study. The collection of the primary data from the respondents was done with the help of questionnaire which was filled by various bank employees of different posts in specific branches.

The collected data was further compiled using Microsoft Excel and SPSS to bring out the correct analysis in more technical format along with appropriate tabular and graphical representations which can provide a visual depiction of the collected data and provide a detailed insight of the study to bring out the result. In order to validate the data and represent it in a form of information Pearson's Correlation Testing, sophisticated analytical testing which helped to understand the relationship between one dependent and one independent factor and therefore helped to prove the hypothesis.

Results

Table 1: The Regression results of AI (Artificial Intelligence) on Operational Efficiency

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Sig.
1	.880[a]	.775	.695	.45506	.000[b]

The Table 1 represents the regression results of artificial intelligence on operational efficiency in health care industry. The R square value is 0.775. There is 77.5 percent of variation in operational challenges is determined by the variation in artificial intelligence. The significance level is less than 0.05 with a value of .000. Remaining 22.5 percent is determined by other factors other than Artificial intelligence.

Table 2: Co-efficient of Regression of AI (Artificial Intelligence) on Operational Efficiency

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(CONSTANT)	0.227	0.48		0.473	0.637
Clinical Effectiveness	-0.027	0.081	-0.027	-0.335	0.739
Staff Development	0.018	0.079	0.021	0.229	0.819
Patient-centeredness	0.217	0.091	0.185	2.383	0.02
Production Efficiency	-0.07	0.1	-0.067	-0.703	0.484
Responsive Governance	-0.113	0.095	-0.108	-1.192	0.237
Length of Stay	0.009	0.085	0.01	0.106	0.916
Utilization of Supplies	-0.019	0.094	-0.019	-0.198	0.843
Labs and Medication Use	0.151	0.101	0.158	1.503	0.137
Physician Practices	-0.106	0.099	-0.113	-1.075	0.286
Patient In critical Care	-0.156	0.095	-0.142	-1.636	0.106
Provide Essential Relevant Information	-0.015	0.106	-0.015	-0.141	0.888
Ensure Safe and Effective Patient Care	0.079	0.067	0.094	1.185	0.24
Timely and Effective Equipments for Surgeon	0.122	0.086	0.13	1.408	0.163
Sterilization of Surgical Theatre	-0.038	0.071	-0.052	-0.527	0.6
Medication Planning and Reminders	-0.2	0.105	-0.192	-1.901	0.061
Education on Healthy Diet	0.022	0.06	0.029	0.365	0.716
Health Evaluation	0.133	0.097	0.112	1.363	0.177
Care Coordination	-0.039	0.09	-0.033	-0.434	0.665
Tracking and Managing Consultations	0.073	0.119	0.074	0.611	0.543

Tracking Number of Working Hours	0.32	0.103	0.333	3.109	0.003
Functioning Efficiency Scheduling of Doctors	0.147	0.11	0.165	1.333	0.187
Surgery Coordination and Management	0.017	0.061	0.021	0.277	0.782
Clinical Audit	-0.006	0.075	-0.007	-0.081	0.936
Research and Development	0.258	0.119	0.268	2.175	0.033
Recruitment and Retention	-0.031	0.054	-0.051	-0.572	0.569
Risk Management	0.208	0.071	0.229	2.908	0.005

Table 2 represents the coefficient of regression of artificial intelligence on operational effectiveness. The factors patient centeredness, tracking number of working hours, research and development and risk management is having a significance value of less than 0.05. Also, the t statistics value is more than 1.96. The patient centeredness has a t statistics value of 2.38 with a significant value of 0.02 which is less than 0.05, tracking number of working hours has a t statistics value of 3.10 which is less than 0.05, research and development has a t statistics value of 2.17 with a significant value of 0.03 which is less than 0.05, risk management has a t statistics value of 2.90 with a significance value of 0.005 which is less than 0.05.

Discussion

To understand the level of adoption of Artificial intelligence in health care industry most of the plants had fused Artificial insight in medical services. Specialists have emphatically agreed that reception of Artificial knowledge diminishes clinical blunders in medical care area. Great specialists concurred that creation productivity and administration factor could improve operational execution of medical services. There is a tremendous interest for Artificial knowledge (AI) on operational efficiency later on. Man-made reasoning had expanded the profitability of specialists in Health Care.

From the results of regression, it shows that the R^2 value is 77.5 percent which means that doctor operational efficiency have positive relationship with increasing the productivity of the hospital sector. And there the calculated p value is 0.05 which helps to validate the acceptance of the alternative hypothesis. According to the data collected from the respondents it was analyzed that effect of artificial intelligence on operational efficiency of healthcare, the variation in operational challenges is determined by the variation in artificial intelligence. Remaining 22.5 percent is undetermined with a significance level of .000($p<0.05$) therefore it has been concluded that AI adoption does influences operational efficiency.The factors- patient centredness, tracking number of working hours, research and development, and risk management has a significant impact on the operational efficiency.

The majority of the plants had incorporated Artificial intelligence in health care. Maximum doctors thought artificial intelligence will be most useful in research and development and maximum number of doctors thought artificial intelligence could change robot assisted surgery in health care. Most importantly doctors have strongly agreed that adoption of Artificial intelligence reduces medical errors in health care sector. Man-made intelligence apparently contributes to medical care by means of empowering a superior comprehension of specialists, alongside a faster reaction to their requirements, at that point its take-up inside the universe of work is probably going to proceed. Later on, numerous errands will have the chance of contribution from AI. Notwithstanding, as opposed to supplanting people, it is the mix of AI and people that is probably going to carry the best advantages to the working scene. Thus, we may infer that it will be how AI 'connects' with people that will impact its job later on universe of work.

Conclusion

Man-made intelligence will keep on changing the universe of medical services and specialists. Later on, as people progressively cooperate with AI, the medical care industry will observe a great deal of new innovation's that take place where it's made advantageous by following number of working hours, working proficiency booking of specialists, medical procedure coordination and the board and which will be more helpful in the region of innovative work, hazard the executives wellbeing assessment, labs and drug use, giving fundamental and applicable information, where AI has assumed a significant part in robot helped a medical procedure, virtual nursing collaborators, primer determination, better clerical specialists.

Furthermore, AI has aided the specialists in making analysis, settling on therapy choices and direct therapy (including a medical procedure). It likewise helps in giving clinical help with underserved regions, which brings about improving reaction time in medical care, gathers tremendous measure of clinically pertinent top-notch information, progressively and principally it lessens authoritative work process. The current study is limited to the state of Karnataka and the future studies may consider other states also and conduct a comparative analysis.

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Impact of Financial Status and Social Isolation on Mental Health of Adolescents: A Review

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Abstract

Financial status and social isolation are two major factors that can negatively affect mental health. When people struggle with money problems such as unemployment, debt, or rising living costs, they often experience anxiety, fear, and uncertainty about the future. Constant financial pressure can lead to sleep problems, depression, low self-esteem, and difficulty in concentrating. At the same time, social isolation reduces emotional support and human connection. People who feel lonely or disconnected from family, friends, or society may develop experience of sadness, hopelessness, and stress. Isolation can also increase the risk of depression and anxiety disorders because individuals may not have someone to share their problems with or seek help from during difficult times. The combination of financial stress and social isolation can create a harmful cycle. The present paper is an attempt to review the available related literature drawn from journals like PubMed, MDPI, ScienceDirect, Wiley online library, Research Gate and Elsevier from 2020-2026 by using keywords like financial stress, mental health, mental wellbeing, social isolation and adolescents. The study did a systematic review of 48 articles to identify the gaps that need to be explored.

Keywords: Cognitive Development, Economic Disparities, Mental Wellbeing, Parental Distress, Supporting Parents.

Introduction

The World Health Organization (WHO) has defined mental health as a state of mental well-being that enables people to cope with the stresses of life, realize their abilities, learn and work well, and contribute to their community. It encompasses emotional, psychological and social well-being directly determining how one can handle stress,

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relate to others and make choices. It is more than just the absence of illness. It has intrinsic and instrumental value and is a basic human right. It exists on a complex continuum, which is experienced differently from one person to the next.

At any one time, a diverse set of individual, family, community and structural factors may combine to protect or undermine mental health. Although most people are resilient, people who are exposed to adverse circumstances are at higher risk of developing a mental health condition. Mental health conditions include mental disorders and psychosocial disabilities as well as other mental states associated with significant distress, impairment in functioning, or risk of self-harm(WHO).The American Psychological Association (APA) has defined mental health as a state of mind characterized by emotional well-being, good behavioural adjustment, relative freedom from anxiety and disabling symptoms, and a capacity to establish constructive relationships and cope with the ordinary demands and stresses of life.

Mental health of Adolescents

Adolescence is the phase of life between childhood and adulthood, from ages 10 to 19. This includes significant bodily changes. The numerous physiological, sexual, cognitive, societal, and psychological changes that take place during this adolescence can induce both enthusiasm and anxiety in adolescents and also their families. During adolescence, many mental health issues, like academic pressure, peer pressure, body image issues and socioeconomic status of family start showing impact. According to the World Health Organization (WHO), Adolescence is a crucial period for developing social and emotional habits important for mental well-being. These include consistency with daily exercises, sleep schedules, adopting healthy food habits, healthy interpersonal behaviour, regulating emotions and positive outlook. Family and school environments with a wider community are important. Several factors like peer pressure, identity crisis, state of distress impact the mental health conditions of adolescents.

Some are more vulnerable to mental health problems because of their living circumstances, stigma, exclusion or discrimination, or lack of accessibility to high-quality services and support. According to the 2019 Global Burden of Disease study, the estimated prevalence of diagnosable mental health disorders, such as anxiety disorders, depressive disorders or attention deficit hyperactivity disorder, was around 12% for 5–24 year olds globally (Kieling et al., 2024). The COVID-19 pandemic has resulted in social isolation and impacted mental health of adolescents. Anxiety and related mental health disorders are on rise (Panchal et al., 2023). Prichett et al. (2024), also in their study found that the rates of depression, anxiety, and suicide risk in youths aged 8–20 years have increased, spanning 2015–2022. Adolescents face a range of mental health challenges that can affect their well-being, development and transition into adulthood (McGorry et al., 2024).

Approximately one-third of mental disorders begin before the age of 14, with onset peaking at 14.5 years, and nearly half appear before the age of 18 (Solmi et al., 2022). Since adolescents are still of school age, they are significantly influenced by their school environments. Therefore, it is essential to account for school-related risk factors such as bullying, body image concerns, loneliness, learning disabilities, peer problems and academic stress when studying their mental health (Hao et al., 2024; Zhang et al. (2025). Mental health issues among adolescents in low and middle-income countries can be affected by various factors, including socioeconomic instability, cultural stigma surrounding mental health, inadequate access to mental healthcare services and exposure to violence or traumatic experiences (Renwick et al., 2022).

Despite hosting 90% of the world's adolescents, low and middle-income countries receive significantly less research attention and resources for adolescent mental health compared with high-income countries (Quinlan et al., 2021). According to Zhang et al. (2025), to have a better understanding of adolescent mental health it is necessary to compare the mental health of adolescents of low and middle income countries and high income countries to identify overarching patterns. Chukwuemeka et al., (2026) in their study concluded that poor mental health outcomes were higher in public schools (58.6%) compared to private schools (41.4%), whereas 59.1% of adolescents with good mental health attended private schools ($p < 0.05$). No significant differences were observed between urban (72.1%) and rural (75.7%) adolescents.

Adolescents commonly recognized difficulty concentrating (35.6%), withdrawal from activities (21.2%), and mood swings (20.8%) as signs of mental health challenges. Private school students reported higher frequencies of emotional distress (34.6%), behavioral difficulties (29.7%), and social isolation (27.1%), though they demonstrated better self image and self esteem despite also demonstrating better self-image and self-esteem (52.4%). Conversely, public school students expressed greater self-confidence (48.8%) and satisfaction with physical appearance (45.2%), though they were more likely to experience overall poor mental health.

According to Barbieri et al. (2026), higher levels of health literacy among both parents and adolescents were related to better mental health outcomes in adolescents with higher associations to adolescents' health literacy. Social support and problematic internet use were associated with both mental health outcomes and parental and self-reported health literacy. Health literacy is a partial mediator in the relationship between parental and self reported mental health outcomes.

Social Isolation

According to the World Health Organization (WHO), High-quality social connections are essential to our mental and physical health and our well-being. Social isolation and loneliness are important, yet neglected, social determinants for people of all ages including older people. Social isolation refers to inadequate quality and quantity of social relations with other people at the individual, group, community, and broader social environment levels. Social isolation is defined as the absence of human contacts, resources of society, and lack of participation in social activities.

Social isolation is the lack of social contact or support, whereas loneliness is the feeling of being alone or isolated (National Library of Medicine). Loneliness is a discomfort occurring at the cognitive level by having the self-validated opinion of being solitary. It's also a highly subjective feeling of having a deficit in social connections and negative thoughts. Usually the feeling of loneliness is underpinned by factors such as struggling to find the meaning of life, a feeling of being unpleasant, and not being able to connect with anyone, and it is highly subjective. Social isolation and loneliness are widespread, with around 16% of people worldwide one in six experiencing loneliness.

While the recent estimates suggest that loneliness is most common among adolescents and younger people, people of all ages experience loneliness including older people, with around 11.8% experiencing loneliness. A large body of research shows that social isolation and loneliness have a serious impact on physical and mental health, quality of life, and longevity. Social isolation is a serious issue that can significantly affect mental health. It contributes to depression, anxiety, low self-esteem, cognitive decline, and harmful behaviours. Although modern technology offers new ways to communicate, genuine human connection remains essential for emotional and psychological well-being (WHO).

Family income and social isolation have a significant influence on the mental health of adolescents. Financial difficulties can contribute to stress, anxiety, depression, and reduced self-esteem, while stable economic conditions generally support healthier development. However, emotional care, supportive parenting, and social support systems are equally important in promoting adolescent mental well-being. Addressing economic inequality and improving access to mental health resources can help adolescents lead healthier and more productive lives. Since adolescence is a sensitive stage of development, strong social connections and emotional support are essential for healthy mental growth.

Method

This study reviewed 60 papers published between 2020 and 2026 on financial status, social isolation and mental health of adolescents. Data were retrieved from Scopus, PubMed, MDPI, ScienceDirect, Wiley Online Library, Research Gate and Elsevier using predefined search strings like household income, financial status, financial strain, mental health, social isolation, and adolescents. After data cleaning and duplicate removal, 48 documents were reviewed to identify the gaps. The details of the reviewed papers are as follows; financial status-08, mental health-13, mental health of adolescents-08, social isolation- 09 and financial crisis and mental health - 10.

Results

The household income - mental health link

Income inequality has been shown to influence both adult and adolescent mental health outcomes, but findings on the direction of influence are inconclusive. While Vilhjalmsdottir et al. (2019) found that income inequality on a neighbourhood level adversely affected adolescent emotional distress, Ghaly and Jivraj (2022) observed better self-rated health for persons aged 16 and older in more unequal neighbourhoods. Financial crises significantly affect mental health across individuals, families, and communities, with children and adolescents being especially vulnerable. Financial stress, parental distress, and family conflict can disrupt development and increase emotional, behavioural, and cognitive difficulties (Feghali et al., 2025).

Yang et al. (2025) in their study found that higher family income was associated with better child mental health, but the magnitude of the effect varied with age. After adjustment for confounders, lower income predicted poorer overall mental health at ages 11 and 14 years, with the strongest association observed at 14. Weak association was found at ages 3, 5, 7, and 17. A similar trend was observed for externalising problems, while the income protective effect on internalising problems showed a significant increase with age. No substantial sex differences were observed in these associations.

According to Laura Shields-Zeeman (2022), it has been difficult to draw inferences about causality between income and mental health, which has hampered opportunities to inform public policy (Ridley et al., 2020; Shah et al., 2021). Thomson RM et al. (2022) narrowed this knowledge gap by systematically assessing the evidence for a causal relationship between income, wellbeing, and mental health. The direction of causality evaluated was that a change in income is followed by a subsequent change in wellbeing and mental health, suggesting a unidirectional causal effect of income on mental health and wellbeing. Specifically, evidence was found that an increase in income is followed by an improvement in wellbeing of 0·274 standardised mean difference (SMD; 95% CI 0·143 to 0·405). The finding suggested that policies directed towards income security have meaningful effects on wellbeing. Several other findings in this research study have profound implications for policy making and future research.

While exploring the relationship between income and wellbeing and income and mental health, it was found that increases in income were associated with a 0·084 SD [ASMD (95% CI 0·038 to 0·130) improvement in mental health, and reported an effect size of –0·21 SMD (95% CI –0·30 to –0·13) related to a drop in mental health following a reduction in income. These findings suggest that the effect of income loss is more detrimental to mental health than an increase in income is for improving mental health, which has important implications for those living just above or below the poverty line for whom a drop in income can represent a substantial risk to income security and mental health. Addressing the adverse effect of income loss is especially relevant amidst the current economic climate, which has been affected by external shocks such as the COVID-19 pandemic, (Hertz et al., 2021 ; Berry et al., 2018) climate change, and the war in Ukraine; all of which potentially contribute to income insecurity through job and income losses.

Evidence of a causal relation between income and mental health does not rule out the possibility of more complex dynamics, such as bidirectional or looped causality. An improvement in income can lead to improved mental health, which in turn can further propel benefits to livelihood or financial security, as mental health is associated with increased productivity, participation in the labour market, and decreased household spending on health care (Chisholm et al., 2017). Conversely, perpetual less income can impact mental health negatively which can threaten income security creating a vicious cycle of low income, income insecurity and mental health. According to McGorry et al. (2025), mental illness has become a leading cause of health burden, particularly among adolescents and emerging adults, with most disorders emerging before the age of 25. Over the past two decades, mental health has surged to alarming levels, with evidence confirming that the increase is not just due to better awareness or diagnosis but reflects a genuine public health crisis.

Lin et al. (2024) in their study provided a comprehensive review of the major risk factors affecting adolescents' mental health by combining individual, family, and social perspectives. One of the strongest points of the study is that it explains how factors such as low self-esteem, perfectionism, poverty, bullying, parenting styles, and school climate are interconnected and together influence depression, anxiety, and emotional well-being among teenagers. The research highlights the importance of supportive parenting, positive peer relationships, and healthy school environments in preventing mental health problems among adolescents. However, the study is confined to the developed countries only and it is simply correlational study and does not show any cause and effect relationship. Moreover, a self report questionnaire has been used which is likely to create response biases which can affect the objectivity.

Barnhart et al. (2022) examined how family economic status, adverse childhood experiences (ACEs), and family conflict influence mental health problems among adolescents. Using longitudinal data from more than 5,500 children and adolescents from the ABCD Study, the researchers analysed how low socioeconomic status (SES) is linked to internalizing symptoms such as anxiety and depression, and externalizing symptoms such as aggressive or behavioural problems. The study found that adolescents from lower economic backgrounds experienced higher levels of ACEs, and these ACEs significantly increased the risk of mental health problems. The researchers also found that family conflict strengthened the negative effects of economic stress and ACEs, making mental health outcomes worse for adolescents.

The study further highlights that the family environment plays an important moderating role in adolescent mental health. Conflictual family settings intensified the relationship between low SES, ACEs, and psychological problems, especially internalizing symptoms such as stress and emotional withdrawal. The paper contributes to the literature by using longitudinal data instead of only cross-sectional analysis and by separately examining both parent/caregiver and youth perspectives. However, the authors also acknowledge limitations, including reliance on secondary data, limited measurement of positive family characteristics, and lack of baseline mental health controls. Overall, the study concludes that economic hardship, adverse childhood experiences, and family conflict together create a strong risk for adolescent mental health problems and recommends trauma-informed interventions and stronger family support systems.

Akee et al. (2024) in their study explored the long-term relationship between childhood mental health, household income, and adult well-being using data from the Great

Smoky Mountain Study (1992- 2012). The researchers analysed symptoms of depression, anxiety, ADHD, and oppositional defiant disorder (ODD) among children and followed them into adulthood. The study particularly focused on the impact of unconditional cash transfers received by American Indian families after casino operations began. The findings showed that children from households receiving additional income experienced lower levels of depression and anxiety in adulthood compared to non-American Indian children. The study also found that mental health symptoms in childhood are strongly associated with poorer economic outcomes in adulthood, including unemployment, financial instability, and lower economic well-being.

The paper further highlights that economic improvement during childhood can reduce the long-term persistence of mental health problems. Children who were exposed to increased household income for a longer period showed significantly fewer depression and anxiety symptoms by age 30. The study suggests that financial support during childhood may protect adolescents from long-term psychological distress and improve future life outcomes. Additionally, parental mental health, low household income, and early psychological symptoms were identified as major predictors of adult mental health problems. Although the study provides strong longitudinal evidence, the authors note limitations such as differences in symptom reporting across ages and the inability to fully separate the effects of treatment duration and age of exposure to income support. Parental income as parental income is an important determinant for adolescent mental health (Ejlskov et al., 2023).

Ramaiya et al. (2023) in their study investigated a wide array of outcomes impacting adolescents' daily lives including health (mental, physical, sexual and reproductive health, vaccine perceptions and overlap between these topics), social relationships (family and peer), education and socio-economic disparities. Both scientic and grey literature between December 2019 and February 2022 were sought from PubMed, Google Scholar and organisations conducting research among adolescents, and coded. A total of 89 articles were included, 73% of which were peer-reviewed; 37% of the articles were from WHO's Western Pacic region; 62% of the articles were cross-sectional; 75% were quantitative.

Three major topics emerged in more than half the articles: mental health (72%), education (61%) and socio-economic ramications (55%). However, there were regional differences in topics and many of them overlapped. The results indicate that, where there has been research, almost all ndings have been linked to worse mental health during the pandemic. Overall, remote education was seen as a negative experience.

The ramication of school closures on future aspirations, in particular early school leaving, highlights the importance of prioritising education during future pandemics based on the situation within the country. Gender and other disparities have made marginalised adolescents vulnerable to the economic ramications of containment measures. Given the risks identied, there is a pressing need to put adolescents at the centre of establishing priorities for their health agenda for post-pandemic recovery.

Social Isolation-mental health link

Studies have investigated how Social Isolation (SI) has evolved into an epidemic and WHO has alarmed many developed and developing countries that their citizens are going through the epidemic of loneliness and SI. It affects the Mental Health status of a person & leads to morbidities and premature death. Social isolation is an objective condition characterized by a lack of contact with other people and being disengaged from groups and social activities (Cudjoe et al., 2023). Unlike highly subjective loneliness, social isolation is when a person gets ignored by society. It's much more prevalent among the urban clusters of middle and high-income countries (Naito et al., 2023). Review confirms a reciprocal, mutually reinforcing relationship, supportive environment further boosting individuals' mental health.

In a cross-sectional study by Fuller - Rowell et al. (2025), social isolation was found to have increased globally after the COVID-19 pandemic, with the initial increase disproportionately seen in lower-income populations and subsequent increases broadening across socioeconomic strata. Targeted interventions for vulnerable groups and research examining country-level policies were suggested urgently needed to mitigate high isolation levels and reduce inequities. Social isolation is embedded in broader social structures and shaped by macro-level conditions that influence social relations across demographic subgroups (Kawachi et al., 2024). Although some research suggests that lower-income groups compensate for economic hardships by forming strong social networks (Small et al., 2009) most evidence indicates heightened risks of isolation due to discrimination, structural barriers, and resource limitations (Wang et al. 2024).

According to Fuller-Rowell et al. (2023), less-advantaged socioeconomic groups face disproportionate exposure to unfair treatment and exclusion. They are also marginalized from advantaged social networks and are in a deficit of psychosocial or material support. Furthermore, the widening income inequality observed in many countries in recent decades may have exacerbated these vulnerabilities, compounding their effects on social connectedness (Chetty et al., 2022). Social isolation during adolescence has been linked to heightened emotional reactivity and anxiety-related responses. Research suggests that adolescents are particularly vulnerable because peer relationships play a major role in identity formation and emotional regulation. While digital communication may reduce subjective feelings of loneliness, studies indicate that online interaction does not always reduce physiological stress responses associated with social isolation.

This suggests that virtual connection may partially compensate for social absence but cannot fully replace in-person interaction during adolescent development. Adolescence is a critical stage of emotional, psychological, and social development. During this period, teenagers form identities, build friendships, and develop emotional independence. Social interaction plays an essential role in healthy adolescent growth. When teenagers experience prolonged social isolation or loneliness, it can significantly affect their mental health and overall well-being. Social isolation refers to a lack of meaningful social connections or limited interaction with peers, family, or community. It may result from bullying, family conflict, excessive screen time, social anxiety, discrimination, or major events such as the COVID-19 pandemic. Unlike temporary solitude, long-term isolation can create emotional distress and increase vulnerability to mental health disorders.

Research consistently shows a strong relationship between adolescent isolation and depression. Teenagers who feel disconnected from peers often report sadness, hopelessness, and low self-esteem. A longitudinal study found that loneliness during adolescence predicted later depressive symptoms and reduced positive well-being. Another major study reported that socially isolated young people were more likely to experience depression symptoms, conduct problems, and psychotic-like experiences as they moved into adulthood. Isolation also contributes to anxiety and heightened stress responses. Adolescents are especially sensitive to peer acceptance because social belonging is central to teenage development. According to research published in The Lancet Child & Adolescent Health, reduced peer interaction during adolescence may affect emotional regulation, stress processing, and brain development. Studies suggest that even short periods of social deprivation can increase emotional reactivity and feelings of social threat in teenagers.

Modern technology and social media create both opportunities and risks for adolescents. Digital communication can help isolated teenagers stay connected with friends, but excessive online interaction may also increase loneliness, cyberbullying, and emotional comparison. Some researchers argue that online communication partially reduces feelings of loneliness but cannot fully replace the emotional benefits of face-to-face relationships. SalmelaAro et al. (2025) in a study examined relationship between isolation and ostracism during adolescence identified peer rejection as a major risk factor for mental health difficulties. This longitudinal study (N=1078, 46% boys; 54% girls) examined profiles of isolation leading to loneliness and ostracism during adolescence and their consequences and antecedents. Longitudinal latent profiles analyses identified four distinct profiles: (1) High emotional loneliness (25%), High and increasing social loneliness (15%), High peer exclusion and high social impact (9%) and No peer problems (51%).

Subsequent internalizing problems were typical for the High and increasing social loneliness profile and externalizing problems for the High emotional loneliness and High peer exclusion and high social impact profiles. Furthermore, effortful control, prosocial skills, and relationship quality with parents and teachers were highest in the No peer problems profile, whereas the High and increasing social loneliness profile had the lowest self-esteem and was characterized by low surgency/extraversion, high affiliativeness, and high negative affectivity. The effects of adolescent isolation are not limited to emotional distress. Studies show that isolation leading to loneliness may negatively affect physical health, academic performance, sleep quality, and social confidence. A recent study in BMC Public Health found that lonely adolescents reported poorer health and lower levels of social support than their peers.

This study analysed data from the Health Behaviour in School-aged Children (HBSC) survey in Germany in 2022, which included 6,475 students aged 11, 13, and 15 years (girls: 50,6%, M_{age} = 13,4, SD=1,7). Loneliness was measured via the University of California–Los Angeles Scale (UCLA) and a single-item measure. The mental health indicators included subjective health, life satisfaction, and multiple psychosomatic complaints. Social support from family, teachers, and classmates was assessed. Chi-square tests, t tests, logistic regressions, and moderation analyses were conducted. The findings highlight that loneliness was a prevalent phenomenon among children and adolescents and is strongly associated with mental health issues. Greater social support is linked to reduced loneliness and better mental health, so targeted interventions to promote social support and connect in schools and families are needed to address isolation leading to loneliness.

Nasimi et al., (2026) in their study found that there is significant positive correlation between social isolation and depression ($r = 0.235$, $p < 0.01$). T-test results revealed no significant gender difference in the degree of depression or anxiety, whereas Regression analysis revealed that social isolation was a significant predictor of mental health problems among adolescents (â = 0.235, $p = 0.004$). Authors further concluded that to reduce the effect of social isolation on adolescents, specialized intervention program including peer support, family involvement, and mental health services may be adopted. Research indicates that adolescents who reported higher levels of parental involvement, emotional support, and positive family communication exhibited lower stress levels, reduced anxiety, and better coping strategies, thereby indicating that family support is a critical factor in enhancing adolescent resilience and mental health (Elegbede & Abidogun, 2025).

Scope for Future Work

Most of the reviewed papers focus on the mental health of adolescents in developed countries. Future research can also be done to understand the impact of cultural beliefs, educational systems, economic conditions, and family environments in developing as well as developed countries. Further, intervening variables like peer interactions, type of school public /private, family structure nuclear/ joint, social media exposure, rural and urban backgrounds, and cultural diversity can be studied. A fuller knowledge of the variables influencing adolescents' mental health longitudinal studies can be undertaken and focused preventive and supportive interventions can be obtained through cross-cultural and comparative studies across various contexts. Review has shown low income status that persisted over time was strongly related to higher rates of mental health problems among adults. A decrease in financial status was associated with increasing mental health problems.

Much available literature concerning social isolation has its target audience as the adults or elderly population and are not specific to adolescents. The review highlights the need for individual level interventions as well as reducing the inequalities at a societal level to improve mental health of not only adolescents but across all age groups. The review shows financial status and mental health of adults and elderly has been researched. The impact of financial status on mental health of adolescents, has not been explored in depth as adolescents get equally affected by family income. Hence, further studies are required to comprehend the effects of income inequality on adolescent health in the Indian context. Research can help families, schools, and communities to work together to create supportive environments that promote inclusion, friendship, and mental well-being among adolescents.

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Review of AI Driven Sectors with Special Reference to the HR of Audit Firms

Roma Singh, Runumi Das***

Abstract

The study provides an overview of certain AI driven sectors which have the potential of huge automation in contradiction with the HR services which are believed of not being fully automated any time sooner or later. Pilot study is done by surveying senior HR professionals of 7 big audit companies including some Big 4s operating in Delhi/NCT. Findings indicate AI techniques to be used for the purpose of, Talent Acquisition and Talent Management and the extensive literature review based on scholarly articles and industry reports indicates that not only the IT industries but sectors like Healthcare, Education, Manufacturing and Banking have a lot of unexplored potential to achieve in the field of AI acquisition especially in the Indian context. Opinions of technology experts' from the audit firms were also taken regarding the new form of audit requirements and added functions of the new age auditing process.

Keywords: Big4, Facial Verification, Human Resource Automation, Talent Acquisition, Unskilled Workers.

Introduction

Studying the role of AI in the audit profession compels the need to know the essence of both fields. On one hand, Artificial Intelligence is the augmentation agent of humans performing tedious tasks in various sectors through its subset technologies. Whereas, an audit is a systematic and independent examination of economic activities and phenomenon according to the predetermined criteria and also attempts to gather and evaluate evidence as required by law. Human Resource, on the other end, has been an inevitable part of every sector, regardless of the type of involvement sought (Mental or Physical), but with the advancement in technologies, nations round the globe are seen adopting innovative ideas and techniques so as to survive in the highly

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competitive environment. When the entire world has switched the traditional working patterns to virtual mode.

The AI technique is one of such booming advancements which has become the need of the hour and is seen to be introduced in every possible sector by the advent of Industry 4.0. Auditing is one such labor-intensive sector requiring regular updates on competitiveness and efficiency for increasing productivity of the auditors by using IT and other innovative technologies during the audit procedure. However, despite its increasing rate of applications in various sectors, and in the field of Human Resources as well, the algorithmic technology is yet to make a mark in the critical HRM functions of assisting the HR professionals.

AI has achieved many other milestones in different sectors of the society leading to transformational changes in technology. In those sectors of economy, where implementation of AI techniques are seen to be crucial for the up-rise and increase efficiency of manpower, on the other hand digitalisation is thought to be a major threat in the labor intensive country like India, where increased automation might result in unemployment of the unskilled-untrained working class (Singh & Das, 2023).

No sector seems to be left unattended by the advent of AI in the current time. The globe has noticed different variants of technology and its unbelievable implications. Such rate of application has also raised questions regarding its political, economic and social impacts, which is a matter of concern for AI governance that requires understanding of fundamentals of AI applications in order to bridge the gap between humans and technological avenues of AI, so as to design the task of artificial agents (Carl, 2021). Hindrance of national security also stands as a severe concern for a developing country like India while opting for total automation in any of its sectors be it government or private.

Research and Survey in the field of AI have explored large audit firms like Big4 investing in the implementation of innovative technologies due to the rise in tender governing rules for the audit process. However, research conducted for finding the use of AI in HR of such audit firms and other Non Big4 audit firms is at a very nascent stage and requires more empirical studies in the field. Therefore, this paper will indulge in the study of audit firms to explore the rate of involvement of AI in the HR departments of this service sector industry along with reviewing the literature of studies focused on implementation and prospects of AI in different sectors.

Objectives of the Study

Stephen Hawkings said, "success in creating AI would be the biggest event in human history. Unfortunately, it might also be the last, unless we learn how to avoid the risks" (Forbes India, 2021). Perceptions of AI experts have been considered in the study regarding AI adoption and AI readiness of different companies (Johnk et al., 2020). Therefore, studies, researches, and round the table conferences have been done regarding the prospective implications, significance and threats of AI in HR of India and round the globe. However, the data is scattered across limited databases and each study focused on a specific sector and the study on effects of AI as well as the techniques to use AI-human configuration in organizations are yet to be studied (Budhwar et al., 2022).

Therefore, this study concentrates on the aim to bring together such researches under one umbrella through the current paper, making it a diverse pool of information regarding various AI implemented sectors and its effects. Studies in regard to the perception of HR professionals have not been witnessed yet. Hence, the two major objectives of this study will be, Firstly; to undergo a literature review of the current AI driven sectors and secondly; to explore the AI tools and techniques used in HR of both Big4 and Non-Big 4 audit firms.

Review of Literature

Automation and Artificial Intelligence: Advent and Implications: Reports decrypt the meaning and history of automation being not at all new for mankind, right from inventions of Steam Engine, Information Technology, or gains like Automated Teller Machine (ATMs) and industrial robots being made."The Brookings Analysis of BLC, Census, EMSI, Moody's and McKinsey ratings of data represents the occupations most vulnerable to automation, this includes roles like Construction, Production, transportation and payroll clerks etc and the areas which seem secured includes Business and finance, Law, Education, Management Occupation,Software Developers, Applications etc". In general, the IT era has been transformed into the AI era and those jobs which are paid the lowest today are more vulnerable to total automation in comparison to the highly paid skilled jobs which are to be complimented by AI techniques (Mark et al., 2019).

The field of AI is said to be 60 years old and has been equally impacting educational platforms through its deep learning methods for predicting aspects of educational performances, researchers attempt to highlight series of "relations between 'versions' of learning, academic and corporate entities, models and datasets and relationship between epistemic cultures and economic interests", referring it to be a socio technical affair (Carlo, 2020). AI is projected to add US $13 trillion to the global economy over the next decade. Another innovation aligned with AI are the smart speaker devices such as Amazon Echo, Google Home and Apple Homepod which are seen to be gaining immense importance in the British households , it marked a sale of 66 million units of Amazon alexa, Google assistant and Apple's siri enabled products in the US market (Feiner 2019; Of com 2019).

Starting right from the inbuilt facial verification process on the phones today, upto the interactive billboards on the bus stops, all engages distinct phases of facial recognition system by AI in order to identify the required set of data either from the customers or from the owner of a phone, household or any crucial documents (passports during international travels), not only introducing 'Smart Glasses' for visually impaired individuals to identify peoples' around them but also spotting of terrorists by facial recognition systems has gained importance but, on the contrary has resulted into overpowering of Government and large private corporations to manipulate and repress the entire population at times (Brend, 2019).

The increasing use of household speakers has no doubt raised privacy concerns for the users, but the individuals are seen to be less concerned in comparison to that of institutional actors such as the app developers and speaker manufacturing units (Christoph, 2021).

Manning (2020) in his research report depicted that there will be more technology-driven change during the coming two decades than it happened in the first ICT revolution. Applying these technologies may bring accelerating changes, transforming the current face of healthcare, transport, finance, manufacturing, agriculture and warfare etc, He highlights the cybersecurity threats and safety issues involved in the use and implementation of AI as well as the numerous gaps in digital governance which needs to be filled up by proper R&D along with setting up clear policies.

Dhanabalan and Sathish (2018) articulates the important contributions of AI in the different domains of the Indian economy, including agriculture, manufacturing, finance, transportation, public administration and defence. They talk about the extent of benefit maximisation and loss minimisation from AI application by deploying required policies and necessary infrastructure in place. Further, they mention the relevant areas impacted by AI in India and the financial support/schemes provided by the Ministry of Electronics and Information Technology, Government of India for AI programmes. The service branch of the hospitality industry also has been impacted by the use of chatbots for responding to customers and might influence the human resource of this industry but not on a very high scale (Carter & Knol, 2019).

Cowen & Tabarrok (2014) suggested that online courses will cut down the marginal cost and lead to an increase in the fixed cost and price of teaching as well. Largest courses will have an advantage of drawing on the largest databases and the most sophisticated algorithms. It will also lead to economies of scale along-with providing high quality education with varied options. Nations that are most creative and ground breaking tend to overpower international relations. One such name in the area of rising AI advancements in education is China, whose education plan released in the year 2018, signifies the acceleration of AI innovation and implementation in educational institutes (Jeremy, 2020).

Similarly, India has taken a step forward on its path towards revitalizing professional education by adding new technological aspects like AI and Big data analysis into its educational curriculum (Draft NEP, 2019). Indus International Public School in Bangalore recently introduced human robots for helping the teachers in their subject areas (Joshi & Joshi, 2022).

Hunter et al. (2018) in their research report discussed about different terms for development of AI by multiple nations of the world, where US and China being the major players avail the first mover advantage in the field of AI and Robotics followed by other countries like Russia, France, Japan, Saudi-Arabia and India having diversity in the areas of AI investment but relatively similar interests. One of the major hurdles for initial AI implementation is being unable to build a robust AI ecosystem and paying less attention to security, privacy and reliability concerns in some aspects may lead to initial advancement in the short term but may be harmful in the distant future.

Technology today is used for both construction and destruction of the goodwill of any firm. Having both the "smarter side" on one hand which helps in prompt decision making and problem solving of employees, whereas on the contrary a "darker side" which gives every possible opportunity and power to tarnish the image of the organization via various online and digital media platforms, replacing the traditional workplace surveillance system (Holland & Bardoel, 2016). The robots no doubt can manage some crisis situations, in a way no other can do, specially if we talk about the current pandemic scenario, where social distancing norms had to be followed to avoid human life threats, because robots are not only virus resistant but can serve as medical and law enforcement personnel assisting the doctors and state authorities in coping up with challenging situations, but AI lacks the ability to diagnose upcoming threats by facial recognition at times and also has security concerns while application of big data in the field of security and surveillance (Konrad, 2021).

Work From Home has gained immense importance in recent COVID times and has become feasible to some extent due to the joint efforts of HR complimented by AI tools and techniques in the global context. There have been a lot of AI advancements in numerous sections of the economy, many well known and unconventional inventions of AI include products like 'Tesla Cars' introduced by Elon Musk (CEO, Tesla), which includes computer vision, Artificial Intelligence and machine learning for its Autopilot system and Full Self-Driving Beta Technology (Loveday, 2021), lately Musk also made an revelation regarding the launch of 'Tesla bots' (Humanoid Tesla Robot) which is a 125 pound 5'8" humanoid robot soon to be introduced in the markets for automating tasks repetitive in nature (Forbes, 2021).

Another such inventions include 'Sophia' The Humanoid, invented by David Hanson (Hanson Robotics), and Erica who is 23 years old holding degree in autonomy is a semi-autonomous android created by Hiroshi Ishiguro and his co-worker Dylan Glas (Japan), also the recent launch of a teaching software named 'Teachmint' one of the fastest growing edtech startup in the country, which is turning teaching into a effortless experience in the current prevailing scenario of virtual education. The very recent wave of AI has introduced the economy with a new tool named as, the ChatGPT tool launched by OpenAI (A research and deployment company) in Nov 2022, which has caught the eye over all social media platforms in a short while. According to Sam Altman, co-founder and CEO of OpenAI, over a million people have attempted to make ChatGPT communicate within a week of its release (Person & K.S., 2022).

Background and Research Questions

Artificial Intelligence in Audit Firms: The advent of technology on a large scale has compelled each sector of the economy to think and perform out of the box and function accordingly as per the demand of the tech advancements. One such domain highly impacted with this disruption is the audit function, which in order to increase and retain its financial reporting quality needs to have a technology expert involved in the audit committee for managing the wide variety of risks including cyber frauds and other digital money laundering.

Depending on the different themes identified for use of technology in audit for perceived improved performance, studies are seen prioritising managerial and top-level support for influencing the use of technology in audit firms. In accordance to the UTAUT model (Unified Theory of Acceptance and Use of Technology), many authors identified that, auditors were more likely to use Computer-Assisted Audit Techniques (CAATs) and Generalised Audit Software (GAS) only when their managing authorities encouraged them to do so, also depending on the size of the firm (Meredith et al., 2020).

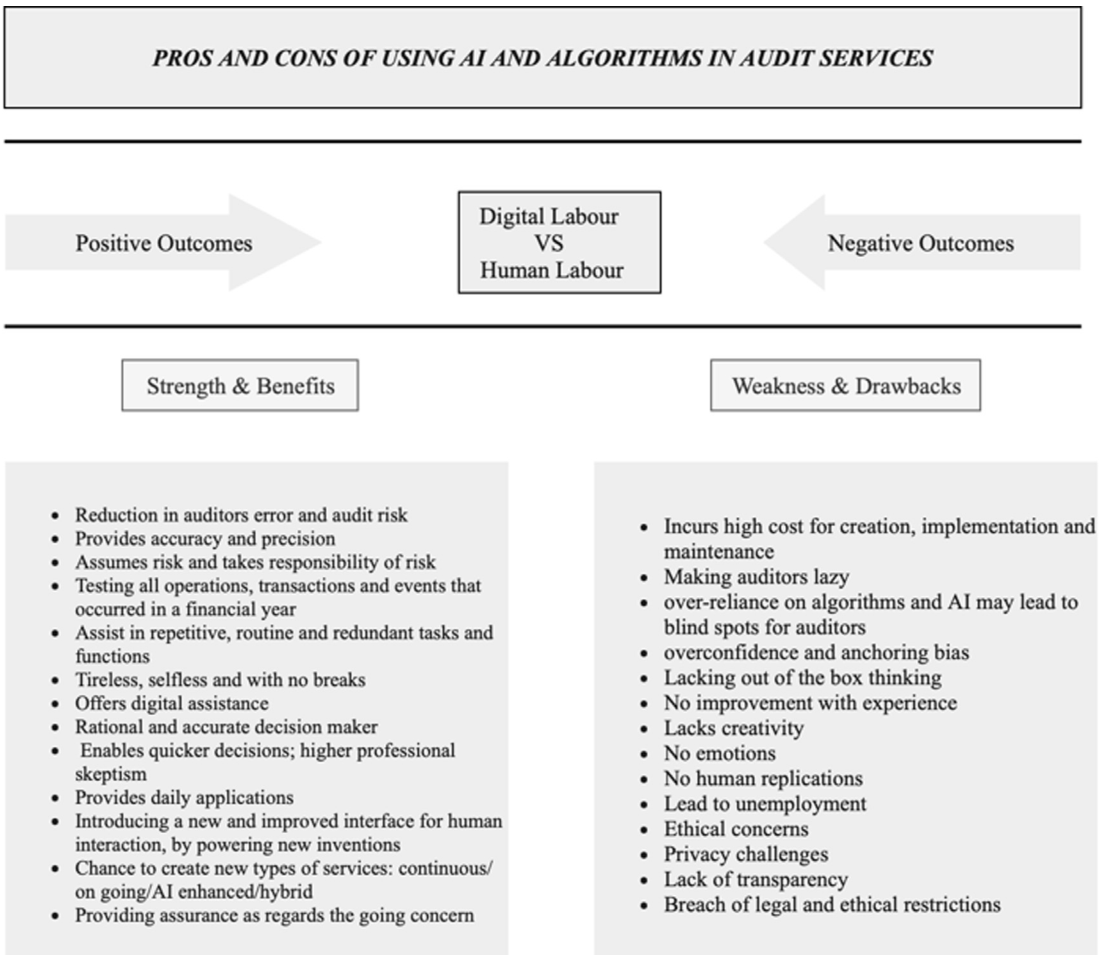

Figure 1: **Strengths and weaknesses of using AI and algorithms comparing to humans in audit work (*Adopted from Tiron-Tudor and Deliu, Qualitative Research in Accounting & Management, 2021).***

Tiron-Tudor and Deliu (2021) debated on a dual aspect of the emergence of AI and use of technologies in the audit process. Secondly, the strengths and weaknesses of algorithms, machines in comparison to human auditors which has been mentioned above in Figure:1. Similarly, a 2023 study from Saudi Arabia revealed that AI applications enhance performance and competitive advantage in audit businesses by decreasing expenses, effort, and time in audits, enhancing control quality, and facilitating continuous auditing (Aljaaidi et al., 2023). Therefore, based on the findings of this study, "Auditor-Governing-the-Loop" is predicted to be the possible scenario for the auditing profession in the near future.

Dheeriya & Singhvi (2021) proposed a conceptual framework for replacing Audit Committees (AC) with AI infused bots. The report suggests that delegating the audit responsibilities will lead to less error in financial reporting and will have significant policy implications for the stakeholders, regulators and society as well. Moreover, another study by Rahman et al. (2024) shows a positive link between AI use and audit report timeliness when both audit firms and clients adopt AI.

Artificial Intelligence in Job: The consequences of digitalisation on jobs in the future varies depending on the rate of digitisation of jobs which could form the basis of growth of expected employment rates of different sectors in Australian countries. The International Labor Organization (ILO) identifies six disruptive technologies along with the type of jobs which may be replaced with machines, once AI is more developed. Unskilled workers will also lose their bargaining power regarding their wages, when AI can be adopted as another best alternative relatively low in cost compared to human labor (Peetz, 2019).

Szczepanski (2019) in the Briefing of the European Parliament, outlined the positive as well as adverse effects of AI on economic growth. On one side, where adaption of AI might lead to increase productivity and economic growth, on the other hand AI may have highly disruptive effects on the labor markets, creating unemployment for the unskilled group which might lead to creation of inequality, cutting down wages, income distribution and rising demand for high-skilled workforce. Significant impacts of AI have been witnessed in many sectors such as marketing and sales, supply chain management, logistics and manufacturing, but the report depicts that the service industry is to gain the most.

Iyer (2018), therefore, described the changing scenario of India's industrial revolution from Industry 2.0 to Industry 4.0 by reducing the License Raj prevailing until 1991. It highlights the fact that in spite of stupendous growth observed in the service sectors of India, manufacturing industries are still stuck with technology, equipment and processes from the preliminary phase, such as manual inputs, lacking information and communication technology integration in manufacturing and strategic gaps in capability. A view point is provided regarding the uses of AI in the actual organisational setup by experts. Where the two generations of Millennials and Generation Z style of work comparison is expressed in order to acquire and retain talent in the organization. Both the challenges and opportunities brought in by AI are enlisted in order to be conscious of and compete well, in the ever changing environment (Hogg, 2019).

On the other hand, the AI advances are also being witnessed as an awakening call for policymakers and Indian government as well and not only to be primarily applicable in the private sectors as always. After encountering the facts about China's rapid progress in the area of AI based research, it's becoming imperative for India to view AI as a critical element of strategic security and prepare India's jobs and skills market as well for an AI based future in order to safeguard its key interests. AI is also required to be adopted as a vital component of the Prime Minister's 'Make in India','Skill India' and 'Digital India' policies (Vempati, 2016).

Artificial Intelligence in Human Resource Management: Rana (2018) depicted the prospects of HR in the existence of AI, by offering AI to be a complimentary service for HRM. It suggests the implementation of AI as a supporting tool for HR and not overrule the role of HR personnel at any point. The Harbor View Advisors in their round table event focused on the trends in Human capital Management Technology. Out of many observations a major one is, the highest priority area for HR Professionals continues to be Talent Acquisition and, as the opportunities for technology enabled services in HR are expanding, the HR executives are excited to experiment (Mathis, 2018).

Although, there has been a gap between promises and the reality of AI implementation on the ground level even in HRM. Surveys identifying 4 major issues in using data-driven science techniques in HR practices, also proposed solution based implications to these challenges that would prove to be both economically efficient and socially appropriate in the field of HRM (Tambe et al., 2019). Therefore, a report discusses Top 10 HR trends that leaders will need to prepare in the age of AI, as the future of HR is both technical and human. It cites the crucial need of automation in the field of HR by being more fluent in AI which in turn will lead to uniqueness, and better job performance etc (Meister, 2019).

There are transformations of HRM activities noticed on digital platforms (Waldkirch et al., 2021). Studies have attempted to unveil the work culture where employees are not regarded as workers, but despite being independent service providers, undergo a manager-employee relationship with algorithms, which leads them to maintain a healthy client-employee relationship among the humans and also with the algorithms. In short, organisations in the gig culture consist of a varied modus-operandi compared to the traditional ones, which needs to be evaluated for depicting future consequences. Qualitative studies are seen to be undertaken for exploring the application, challenges and benefits of AI in HR under the Indian context. The studies explore that the involvement of AI into the HR processes of Indian companies has been relatively less in comparison to foreign businesses due to many reasons, one of them being awareness regarding the transformational benefits of AI for HRM (Premnath & Chully, 2019).

The rise in remote work due to the advent of digitalisation in the world can be noticed, which also affects the relations between organisations and employees. The necessary shift in human resource practices due to re-contextualising remote work culture and dehumanisation of works is sought in order to save the role of HR managers from deteriorating, due to rise in technological regime as well as outsourcing of managerial works to distinct functionaries (Rory & Jennifer, 2020). Organisations are shifting their work practices from Analytics to AI by introducing faster and smarter technologies widening the area of traditional analytical processes, particularly in machine learning. Companies getting transitioned to Analytics 4.0 are sought to embrace competencies in providing additional benefits like 'Agile, Cloud and Open Source Technologies (Thomas, 2018).

Sharna & Janet (2021) talk about the changing role of Talent Management and Talent Identification by way of automation and increase of digitalisation in the organisations, and its most probably negative implications on the HR practices. Presence of both material and social properties are witnessed within different divisions of the same organisation and the appropriate suitable definition of 'Talent' is seen to be varying for the corporate level and the HR professionals. Adaptation of relevant TM practices in the current times is regarded to be conceivable only when there is accuracy of knowledge and skills available with regard to the new Digital Talent Management **(**DTM**)** era and breakthrough techniques like AI and Machine Learning**.**

Research identifies 'Mobility' as a critical indication of talent designation, apart from the two different dimensions predicting talent, namely; Performance and Potential of human resource. A lack of proper formal process in identifying Talent is being evident, which has been ignored by many business unit leaders. In general, a broad and established definition of TM is being provided by various authors collectively, as it cannot be covered by a single Human Capital Theory (Stefan et al., 2019). In Spite of being such a crucial and inescapable invention, AI is not free from certain loopholes as well, especially in the field of HR, and this indeed might cause hurdles for the top level corporate professionals in the long run in absence of adequate vigilance and lack of algorithmic accountability.

Table 1: Top 5 most popularly searched terms by web users in relation to Artificial Intelligence techniques techniques (2020-2025).

1.	**artificial intelligence ai**	**100**
2.	**ai**	**98**
3.	**what is artificial intelligence**	**68**
4.	**artificial intelligence course**	**45**
5.	**machine learning**	**44**

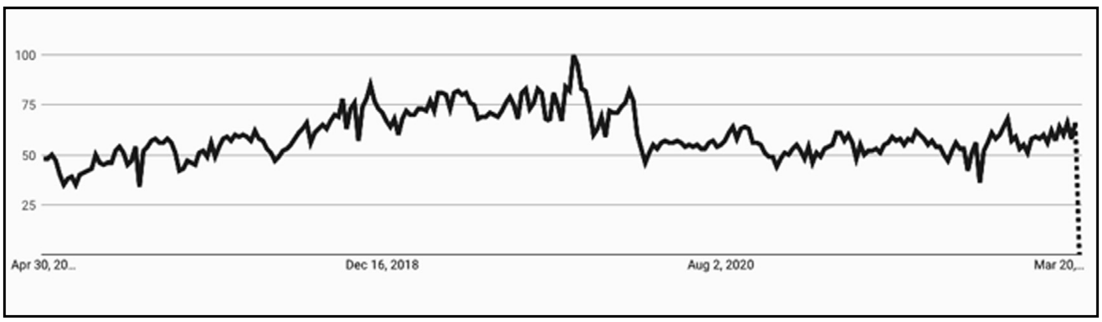

Figure 2: Search interest of web users for the term Artificial Intelligence and Machine learning in India within a time frame of the past 5 years that is between 2017-2022 *(Source: Google Trends).*

Over the years there has been a rise witnessed in the rate of web searches in regard to innovative technologies and trends (Sestino & De Mauro, 2021). The figure 2 depicted above shows a similar picture in regard to India. Algorithm and Machine Learning were the two most popularly searched terms in relation to AI during April 2020-March 2025 (Table,1).

Research Questions

For meeting this objective of the study, responses were collected using the snowball sampling method for surveying the HR professionals on the four research questions.

Demographics: Gender, Years of experience and Location of the respondent.

RQ1: To which extent has implementation of AI techniques supported the department in the new Work From Home trend?

RQ2: Which Artificial Intelligence techniques your department has been using?

RQ3: What are the most important functions of your department performed with the help of Artificial Intelligence implementation?

RQ4: Have AI helped the department to cope up in performing functions efficiently during the pandemic situation?

Research Method

The study deals with a two-fold motive of firstly, gaining the quantitative data and then backing it up with past and present literatures for filling the gap existing in the current field of study of HR and other major AI implemented sectors.

Data Sources and Search Strategy: An exploratory study by means of pilot survey on 7 senior HR Professionals belonging to Seven different audit companies functioning within Delhi, and NCT (National Capital Territory) was done to know about the different AI tools and techniques in order to get a specific idea of the major AI implemented techniques especially at managerial level of audit firms. Respondents were limited to Accounting & Auditing firms because of the prevailing research gap identified in this sector through literature, as well as the context of research was narrowed down to only Big corporates. 28% of the total data collected represents the Big 4 units operating within the city and its territories and the other 72% from the national and international non-Big 4 audit firms. Further clarification was pursued on a need basis.

Four sets of keywords were used; the first containing keywords related to AI tools and techniques commonly used, secondly, its use in various sectors, third set, from the HR perspective of organisations and the fourth included its use in the audit profession, search terms such as “AI” AND”Audit”, “AI” AND “Auditing”, “AI” AND

"HR". "Algorithm" AND "HR", "AI" AND "Business", "Automation" AND " Education", "Scope" AND "AI" OR " Algorithm" OR "Automation" were used. The keyword search was then carried on in the Google Scholar search engine and different electronic databases such as Web of Science, Springer, Taylor & Francis, JSTOR. The search was made into a vast pool of databases because there was a lack of literature witnessed in one single database due to gaps in this field of study and the terms used for searching the presence of AI in Auditing firms.

Inclusion and Exclusion Criteria: To fulfil the twofold objective of this study, peer reviewed academic journals, research articles, industry reports, reputed magazines and surveys dealing with the advent of recent technological innovations in various fields majorly published within the current time frame was considered to accurately tap the rising widespread of such technologies in recent times. Only open access journals were taken into consideration for the study. The studies focusing solely on technical aspects of AI were excluded from the scope of the current paper, considering only the business and management perspective of AI in various sectors. The reports of various reputed auditing firms like Deloitte, E&Y have also been considered in order to gather information related to ground level scenarios and the modus-operandi of such firms in the field of AI implementation.

Results

The study revealed a brief perspective of the HR professionals towards AI integration in the HR related functions. Questions related to use of types of AI technology, and for which purposes were put forth to gather responses. Which shows that AI techniques have started creating their mark in the HR departments functioning. Highly preferred AI tools and techniques witnessed are the Chatbots, Social media analysis and multi agent system. Web services like LinkedIn and naukri.com are also a part of their hiring processes. In spite of the availability of enormous AI tools and techniques, the use of 'Avature' software was cited by only one out of the seven firms, but on the contrary Avature platform has assisted in transforming the face of traditional HR practices for more than 650 companies in today's WFH trend.

Along with tech giants like IBM, few of the Big 4 (Audit Consulting Firms) like KPMG, PWC, and Deloitte have added nuances in the HR functioning for making Talent Acquisition process more accurate and faster by ''making the right hires and retain the best talent'' through developing in-house softwares rather than outsourcing the process of acquiring new talents. Similarly, E&Y has its own job portal for hiring new talents which assists the prospective employees to open and operate an account for checking and applying for upcoming vacancies in the firm till the time they are okay with the system having their biodata and are operating the portal.

The major functions undertaken with the assistance of AI were Talent Acquisition & Management. Only a few of the professionals opted for functions like Training & Development, and Payroll Compensation, which actually might be a necessity in the modern era of virtual work as per current studies (Sirangi, 2026). It was also witnessed that some HRs also used AI in Employer Branding. It is noticed that the male HR professionals found AI techniques more supportive in comparison to the female HRs during the current work from home culture. A further study is required to get in-depth of this particular notion regarding the implications of AI in WFH for making a further judgment on this. After an analysis of the matter, it could be proposed that the use of AI techniques are still not found to be in ample amounts in the HR department of accounting & auditing offices of non Big4 firms and lack of adequate awareness regarding the technology or its outstanding services was one of the reasons adding to this low usability in such companies.

The HR Professionals were yet to be acquainted regarding the marvellous technology and the wonders it could do, technical skill up-gradation is required to be provided in ample amount so as to make maximum use of the technological advancements occurring in near future. As per BCG's annual report on the ranking of top 10 most innovative tech companies since 2005; Apple, Google, Amazon and Microsoft have been on the top 4 ranks, Tesla , Samsung and IBM being later in the list (Forbes, 2021). Not only the companies operating in India rather the Indian origin companies need to focus more on such technology so as to survive in the global market for longer duration.

The literature review done across various databases for exploring the AI driven sectors and its future prospects spells out the similar picture, which says that AI has immense potential to meet the needs of these sectors and also lower the unwanted work burden, overlapping of works, excess time consumption, narrow reach and what not. In short AI has the capability to change the overall picture of these sectors resulting in shaping a better and digital world but with an overall exposure of privacy at times and fear of job loss due to over dependence on machines. The number of studies in this area is also witnessed to be very limited throughout the databases compared to any other field of study which demands immense focus from the academic perspectives as well.

Discussion

The need for audit automation in the upcoming business environment has led to inclusion of tech professionals in the auditing committees which have resulted in the jobs like e-discovery, data analytics, data recovery, data carving based on file signature and indexing of soft data in the field of financial and other forensic audits (Salaja, 2025). As per KPMG report, the COVID 19 has led towards the rise in need of intelligent automation and AI for businesses by adopting holographic meetings for remote workers, manufacturing on demand (MOD) and restructuring food delivery platforms etc. However the lack of accurate data was recognised as a major impediment to standard development which would limit the success of this game changer technology (Chatani et al., 2021; Arora, 2021).

In the process of surveying HR Professionals of various companies , it is seen that the Artificial Intelligence techniques have started gaining priorities in the HR department of Accounting and Auditing firms as well, apart from Talent Acquisition and Talent Management functions undertaken based on algorithms for selecting suitable candidates for the positions, few other services of the AI features like communications through chatterbots and managing payroll compensation are availed by the department. The study revealed that the Accounting and Auditing sector only entrusts very few of the AI techniques into their working schedule as the nature of work in HR departments will always crave for a human touch in majority, and no neural system can totally replace that human understanding and critical decision making ability sooner or later, but systems such as Big Data Analytics can be used for introducing advanced analytical techniques for catering into high volume, and high variety data.

This AI technique, if implemented will allow analysts to make faster and better decisions regarding data procured from assorted devices and distinct web or social media sources. The HR professional can easily make use of data which was inaccessible and unusable in the past by applying advanced analytics techniques such as text analytics, data mining in the field of Talent Management and Natural Language Processing (NLP) to gather new information as suggested by Kokina et al. (2025).Talent Management has many avenues which can be complemented by AI starting right away from frequently generated queries up-till resolving work-flow related concerns and cross checking of payslips or looking into heaps of employee feedback forms. Also keeping track of the outcome of Training and Development programmes for appraisal and talent retaining purposes.

Similarly, certain HR- centric virtual assistants can be propping up in automation of exhaustive processes like leave management, appraisals and expense reimbursements for decreasing the shared burden of its HR professionals, allowing them to focus on serious grievance redressal issues. AI can be supportive in manoeuvring employee grievances through automating cognitive employee interaction by introduction of virtual agent platforms. Curating travel plans for attending professional meetings and proceedings on behalf of the organisations with the assistance of AI algorithms can lead the HR departments to contribute in the cost effectiveness of the organisations by delegating AI with the work of exploring best possible cost saving travel options available out of thousands at that moment.

The literature on the other hand depicted that those jobs which lacked the characteristics of being transitioned had the fear of being polarised. Especially the labor based industry in comparison to the skill based one which had the capability to survive change by upgrading their skills and techniques of work. Numerous other sectors along with the OTT and social media platforms in the entertainment sectors have noticed a hike in the use of AI technology but they are still unexposed to literary works of and many such other unattended sectors of different industries are to be analysed as well.

Limitations

There are few limitations of this study, first one being the relatively less number of respondents (Abou-El-Sood et al., 2015).Further, the scope of this study is limited to the HR department of Accounting and Auditing firms only. Therefore, the results cannot be generalised to the HR departments of other industries. The study is also confined within the boundaries of two metropolitan cities, collecting responses from the firms deploying HRs. Less emphasis has been given to the AI activities of other departments in these firms as well, due to which the number of respondents decreased. The current literature only caters with the data set of a very recent time frame of the past 5 years due to the sudden rise in application of such innovative technologies which led to the need for more studies especially in the Indian context.

Recommendations

The current study will help in forming a base for future studies in the field of AI implemented sectors and its implications. An overview of recent AI trends occurring in major sectors around the globe can be achieved with the help of this study. The information regarding different types of AI techniques majorly used in assisting the

HR of auditing firms will add to scholarly articles and the literature, industry reports on the other hand will be helpful for every reader looking out into AI prospects and practical implications on humans and sectors.

There is a scope of Empirical investigation in this field for future researchers, it has huge research prospects due to the rushed shifts witnessed in the field of technology and the reason behind its nascent growth in the developing countries specially with labor intensive markets. The presence of Artificial Intelligence in various other aspects of the Auditing firms apart from the HR functions can be studied in the future works. Use of AI in industries like textile, entertainment, hospitality and banking etc can be studied, also expanding the geographical locations of the implementation of the technology. The geographical area as well can be broadened by the future researchers in order to have a generalised viewpoint on the implementation of such technologies. Also, an in-depth analysis of the crucial uses of AI techniques in talent management functions can be studied in future papers also the most exposed sector to AI and the effect of this technology on the same.

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Strengthening Corporate-Community Linkages through Micro-plan under CSR: A Case of OPGC Limited, Odisha, India

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Abstract

Success of any program is directed towards judicious crafting of program components. It addresses the people's need based problems; increases program acceptability, participation and reliance towards the organization. A corporate organization always makes conscientious efforts to create general well-being for its community members through Corporate Social Responsibility (CSR). These efforts integrate economic, social and ecological concerns in their business operations and facilitate interaction with the community members. To make it prolific, organization uses micro-plan as a tool and incorporates it in CSR policy for increasing corporate-community interfaces. This paper highlights on organization's strategic CSR intervention in improving the socio-economic status of the community members. This research was carried out in peripheral areas of Odisha Power Generation Corporation (OPGC)Ltd. Two hundred respondents were interviewed regarding functioning and effectiveness of CSR practices. It was found that program sustainability depends upon beneficiaries 'participation in designing and execution of CSR practices.

Keywords: Developmental Activities, Micro Plan, Program Activities, Quality of Life, Sustainability.

Introduction

In a globally competitive business scenario, there is growing realization among the corporate that the society is an entity upon whom the business functions by and large dependent for its survival and growth. Hence, the corporate have the accountability to give back to society and addressing various social causes globally with a desire to improve the immediate environment, where they operate. To fulfill this purpose,

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several organizations have shown their eagerness to initiate such activities, which can address various social issues (Shinde, 2005). In addition, it is contemplated that increase in consciousness level among the public propels them to opt for a product or services of a corporate organization, which is genuinely concerned for the causes of the society, devote a part of its profit and pay attention to the principles of socially responsible behaviour. The pursuance of this process has given rise to the concept of Corporate Social Responsibility (CSR).

Different terminologies have been attached with corporate social responsibility (CSR).It is known as corporate responsibility, corporate citizenship, responsible business, sustainable responsible business (SRB), or corporate social performance. It is a type of corporate self-regulation incorporated into a business model. Preferably, CSR policy would function as an integrated and self-governing system through which the corporate organization would monitor and oblige to support to law, ethical standards, and global norms. Consequently, the corporate house would embrace accountability for its activities on the environment, stakeholders of the business and all other affiliates of the public sphere.

In addition, CSR accentuated businesses would proactively endorse the public interest by encouraging community growth and development, and voluntarily obliterating practices that hurt the public sphere, despite of legitimacy. Essentially, CSR is the purpose fulinsertion of public interest into corporate decision-making, and the reverence of a triple bottom line: people, planet and profit (Kaur, 2012). The term "CSR" came in to common use in the early 1970s, after many multinational corporations formed, although it was seldom abbreviated. The term stakeholder, meaning those on whom an organization's activities have an impact, was used to describe corporate owners beyond shareholders as a result of an influential book by R Freeman in 1984.

With the objective of involving more and more corporate organizations initiating philanthropic activities, ISO 26000 is conferred as the recognized international standard for CSR (currently a draft International Standard). Whilst executing the CSR program, all corporate organizations must hold on to the principles of triple bottom line (TBL). It is broadly established that CSR holds on to similar values but with no prescribed act of legislation. The UN has developed the Principles for Responsible Investment as guidelines for investing entities. Based on it, the Corporate Social Responsibility can be defined as a responsible business in achieving commercial success in ways that honour ethical values and respect people, communities and the natural environment. These businesses minimize any negative environmental and social impacts and maximize the positive effects.

Significance of Micro Plan in Developmental Activities

Micro planning is a grass root level process, where the disadvantaged section of the society gets the opportunity to express his/her opinion and participate for own development. The community as a stakeholder of the development process, can participate in planning, monitoring to execution of the process. In other words, it can be expressed asa concern or directing human performance for socio-economic transformation in "supra-local space" in rural economy as against supra-urban space for an urban dominated economy (Singh 1982: 2).The total process helps the community to understand and emancipate their responsibility towards sustainability of the program. In this process, the community members identify the vulnerable areas, design the program activities, and involve themselves in materializing the program. They own and lead the program to success. In a nut shell, the micro planning process can be understood as a decentralized process, where people come together and express their own way of empowerment in the society.

At the beginning of introduction of the process, the implementing agency consults with the community members, take a note of their concerns, design and implement the program a long with the members. As the community is given priority from the beginning, the members own the result of the program and this pattern is followed year after year, generation after generation, unless and until any impending situation compels.

Need of Integrating Micro Plan in CSR Activities

It is expected that in all types of development interventions, micro planning process must be followed and people's participation is an important component of the said process. As in Section 135 of Company Act 2013, it is made mandatory that all Corporate Organizations must have the responsibility towards the holistic development of the community, hence, in order to get the positive outcome of the amount spend in CSR activities, it is imperative for the corporate organization to incorporate micro plan as a process in CSR policy.

While deriving CSR policy of a corporate organization, it is the concern of top-level management to maintain a balancing act among the three components, i.e., people, planet and profit. People stands for social well-being, Planet for ecological quality, and Profit for economic prosperity. Balancing of the three 'Ps' in the organization means creating an opportunity for the community to make choices and set their priorities in designing the program activities under CSR plan. Thus, it has defined the role of the corporate houses in society which assumes a responsibility among firms to pursue goals in addition to profit maximization and make the firm accountable for its actions to the stakeholders. Further, the process exemplifies corporate organization's concern towards bringing improvement in economic, social and environmental indices of the society. Accordingly, the practice is carried out with utter care for bringing overall benefit to the stakeholders as well as to the society. The purpose is not to achieve merely the economic growth, Return on Investment or minimum compliance with the legal framework, but to extend the supportive hand to build a better society.

The goal of micro-planning is to prepare plan from the lowest level. The process begins with the participation of the grass-root community of a clearly defined region in the development programs to fulfil the need of the local areas and ensuring the process of assimilation of the diverse areas with a purpose to achieve balanced regional development. Therefore, the chief concerns of micro-level planning is to carry out socio-economic activities with its inter-linkage over a region or a particular geographical area. Micro-planning takes into cognizance the advancement of the spatial pattern of human activities without which economic, social and environmental goals of planning cannot be achieved up to expectation.

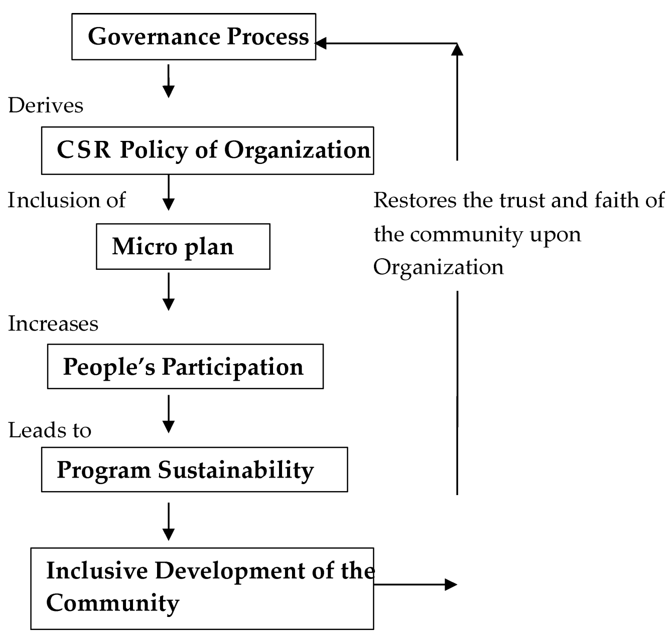

Fig.1 Theoretical Framework of the Research

Hence, this approach lays greater prominence upon involvement of disadvantage sections of society in the developmental planning process. These segments of the society include people from lower income groups, particularly the poor and the weaker sections in rural areas and the program is always implemented with an aim to facilitate them a better quality of life and ameliorating their deplorable socio-economic conditions (Shah, 2013). In this context, following theoretical model describes the benefit of incorporating micro-plan while designing the CSR policy for organization.

The governance process of the organization which has the objective of bringing change in the lives and livelihood of the people and wishes of continuation of the better practices certainly emphasizes upon peoples' participation. Increase in involvement leads to higher acceptance of the program contents and a holistic development can be observed in the community.

Review of Literature

Society needs not only personnel effort and financial assistance, but also it needs a concerted effort from an organization body to mobilize the community's thinking, its resources and its understanding mind to work in a focused direction to spread the benefits of goodwill. Founding upon this concept, there is the emergence of Corporate Social Responsibility (CSR), which is directed at corporate organization to take up activities that would bring holistic benefit the society. A good corporate is expected to look for opportunities to serve the countrymen, needs of a community and its common needs.

Integrating micro-plan in socially responsible behavior of corporate organizations is the need of the hour. In addressing the priority needs of the people and sustainability issues; Satapathy and Paltasingh (2019) in their study have mentioned that idea of CSR was well rooted in Indian ethos and its cultural values. In the name of CSR, many philanthropic activities were undertaken by the rich business houses. Gandhiji had promulgated the Trusteeship model and endorsed this model for the business houses to win the trust and confidence of the people, The feature of this philanthropic model of serving the people changes with globalization and becomes a multi-stakeholder perspective process.

Singh and Das (2018) have highlighted the various guiding principles for banks in India with special reference to CSR and at the same time the areas focused by banks for implementation of CSR activities. The study was confined to one public sector bank, SBI and one private sector bank, ICICI and comparison of CSR activities of these two banks. It was of great importance that the CSR initiatives need careful planning and implementation mechanism as well. The implementation mechanism of CSR initiative of one organization may not necessarily be as beneficial and effective as for the other organizations too. The statement prescribed in the book Stakeholder Theory: The State of the Art in 2010, has been extensively described in the management text regarding incorporation of CSR. The CSR must be amalgamated into various facets of business and also emphasize upon management arrangements and governance that favour the execution of a rational CSR approach (Salvioni & Astori, 2013; Salvioni & Bosetti, 2014; Vitolla et al., 2016, 2017).

Sharma and Kiran (2012) observed that many firms in India have taken up the CSR projects in their respective peripheral are as and met with varying needs of the society. After amendment in new company act 2013, India has entered into a transformational change with new CSR initiatives (Satapathy & Paltasingh, 2022). Achieving competitive advantage, corporate firms have shed off their profit motive with increasing interest in improving their image through socially responsible activities. It should be the objective of Corporates to improve image or goodwill in the community for long term sustainability. Arevalo and Aravind (2011) concluded in their study that the stakeholder approach is the most favoured CSR approach in most Indian firms. It propels the Indian firms to pursue CSR for the ethical cause followed by the planned or profit cause. Further, the significant impediments to CSR execution are connected to need of resources, involvement and difficulties inbringing correlation between quantitative and qualitative outcomes of CSR.

Fisher (2010) mentioned that in the 21st century, the sources of competitive advantage for business world are corporate sustainability and social accountability. In this context, Fisher recommended businesses must concentrate upon corporate Triple Bottom Line performance in strategic growth to improve efficiency, lessen risk and get better performance. Achieving sustainability goals shall require collaborations with different stakeholders. Study conducted by Achda, T., (2008) emphasized that as firms are embedded in different national business systems, can experience divergent degrees of internal, external and lateral pressures while engaging themselves in CSR activities. According to Blomback, and Wigren, (2009) in recent times the CSR has found a very important place in the Corporate Governance process of the organizations. This issue has revealed many dimensions to pursue the research and find out the facts related to it. Saeed, (2010) depicts that CSR initiatives in India are now taken up by many corporate firms irrespective of the size, nature and nomenclature.

Matten and Moon (2008) referred that the unambiguous and clearly understood CSR as contextual institutional representations favours the growth of added residual and included CSR approaches. The business house which is banking upon unambiguous model, the decision making in corporate governance process is directed towards short-range and the institutional background is disconnected from the execution of social and sustainable practices (Campbell, 2007). Similarly, Boyle, M. & Boguslaw, J. (2007) observed the existing functions of the corporations performing a crucial role in poverty reduction in reference to both developed and developing nations. It portrays a preliminary investigation of a transition of the responsibility of the corporate sector in relation to government, nonprofit stakeholders, and the poor.

The study reviewed the corporate sectors contributions in reducing the magnitude of poverty through direct and indirect involvement and analyzed different spheres of CSR with regard to consequences on business, society, and corporate citizenship. Ferrell, & Ferrell (2005) observed that thematic coverage areas of CSR have been reduced to limited aspects. Many of the organizations are yet to adopt an inclusive framework for the growth and execution of CSR. The CSR process must be synchronized with the organization's strategy, structure, and culture (Bhattacharya & Sen, 2004).

Significance of the study

The edifice of any social development program is built upon people's involvement. Higher the involvement, higher is the success rate and sustainability of the program. With this underlying principle, the corporate organization must adopt people centric strategy to deliver its responsibility towards society. It facilitates a win-win situation, a positive atmosphere in acceptance of program design and a harmonization of organization's CSR objective. Keeping in consideration of the above-mentioned aspect, the involvement of the organization in CSR activities is imperative not only to augment the financial performance, but also contribute towards poverty alleviation, making people access to basic facilities and stimulate the economic growth. In this context, this study is attributed towards organization's involvement in assessing the needs of the people residing in the peripheral areas, designing and execution of the program activities and examining its impact on lives and livelihood of the beneficiaries.

Keeping this in view, the present study has focused upon the following objectives and a detailed analysis has been presented in the subsequent section.

- Identifying the level of acceptability of program activities among the community members and their participation in planning and implementation.
- Determining the role of community in deriving sustainable strategic plan of various thematic activities initiated by OPGC.
- Examining magnitude of community participation in CSR policy formulated by OPGC.
- Extending recommendation for improvement in CSR policy for better result in community participation, trust improvement and a tangible impact in society.

CSR policy of Odisha Power Generation Corporation Ltd.

Odisha Power Generation Corporation (OPGC) is located in Lalhanpur Block of Jaharsuguda District. On November 14, 1984, OPGC started as a wholly owned Government Company of the State of Odisha with the main objective of establishing, operating & maintaining large thermal power generating stations. In the pursuit of its objective, OPGC established IB Thermal Power Station having two units of 210 MW each in the IB Valley area of Jharsuguda District in the State of Odisha. This state-run public-sector organization is taking up peripheral development activities in 50 villages of 6 *panchayats* of Lakhanpur block.

The decision-making process for CSR interventions of OPGC are propelled by multi-dimensional forces. Community as the primary stakeholder puts forth their priorities to be fulfilled at the village level, and these are facilitated by local elected representatives, District Administration, and local pressure groups. To suffice it, priority assessments are carried out at the grassroots level and compliances are carried out by the members of CSR team in respective operational areas for larger benefit of the community.

The CSR activities of OPGC are instituted upon two broad areas: physical infrastructural development and human index development. In physical infrastructural development, prominent activities like pond construction or renovation, internal village roads, street lighting systems, putting drinking water supply systems, multi-purpose buildings in their habitats, etc. are carried out in all operational areas on community demands. While fulfilling these demands, the community members are asked to give a detailed plan of present numbers of beneficiaries and future plan for up keeping of these community resources.

Fig-2 Model of Determining CSR Interventions by OPGC

The human index development activities of OPGC are more focused upon empowerment process of community and their contribution in sustenance of the activities. In this category, long term needs of the community are addressed. The members realized in the course of time issues like handling of water scarcity and a sanitized environment poses a big threat to the survival of life and subsistence of livelihood. In order to corroborate these threats, long term programs like water and sanitation activities supplementing to the Swwach Bharat Abhiyan, Skill Building among youths to enhance the micro entrepreneurship activities and augmenting the per capita income at the rural households, initiating livelihood activities to increase the socio-economic status of the family and encouraging them to maintain a Quality of Life, and strengthening the base of primary education at the school level.

The strategy formulated in deriving and executing CSR policy of OPGC is of twofold: first is direct involvement in the work. OPGC is directly involved in carrying out the infrastructural activities. Second, development of partnership and execute with the professional support of partnership organization. The human development activities are executed in the field with the support of partner organizations. These strategic decisions in CSR policy give the organization an upper hand for better monitoring and accelerating the pro-humanistic objectives of the organization, i.e., coexistence of both the industry and community and maintain animproved life style by the community.

Method

In order to achieve the objectives of this study, it is important to examine the extent of involvement of beneficiaries in planning, monitoring and execution of welfare activities initiated by OPGC in its CSR operational areas. In addition, it is also crucial to study the satisfaction level of beneficiaries with regard toarea specific prioritization of problems and operational procedures in addressing the problems, empowerment process and involvement of people in program sustainability, and establishment of affinity of OPGC personnel with the beneficiaries of CSR operational area. In broad terms, three types of analyses are planned in the study. These are:

- Extent of flexibility of CSR policy framed by OPGC where priority of the people is given emphasis.
- People's partaking is the major yardstick of all investment made by the corporate organizations under CSR program.
- The outcomes of investment of resources in respect to holistic benefit to the community as well as organization's benefit.

The study has made use of both quantitative and qualitative methods to explain the effectiveness of CSR policy formulated by the organization, benefits reached out to the targeted beneficiaries, ongoing activities which enable to mitigate the chronic problems of the areas. The interview schedule was prepared to get information regarding acceptability of the program activities and its usefulness to address the recurring problems by the beneficiaries and its future prospects. Accordingly, on a simple random sampling basis, 200 numbers of respondents were selected from20 peripheral villages of the OPGC. The beneficiaries were asked questions on frequency of consultation of officials with the community, priority assessment of the problem before initiation of any activity, wide scale acceptability of the program among the members of the community, awareness among the community members about different programs and its benefit to the society as a whole, management of the program by the community to fulfill its present objectives and continuation in future, and support extended from the OPGC to enhance the living standards of the community as well as inclusive growth of the society.

An interview schedule was formulated to collect the information from the respondents. For each and every question, a five-point scale was developed. The respondents were briefed about the study and translated in vernacular medium for thorough understanding of the question. The interview schedule was administered at the operational villages of OPGC by the trained professionals. The opinions of the corporate officials engaged in CSR activities were collected regarding future plan of the organizations, CSR policies and implementation process. The collected information was analyzed with the use of statistical tools like calculating highest number of percentages the beneficiaries responded for the responses on the question.

Results and Discussion

The findings of the study are addressed to evaluate the extent of micro-planning process given importance in designing the CSR program in one public sector organization. For this purpose, the responses are analyzed regarding prioritization of the program, participation of beneficiaries in program planning, qualities of lives of the beneficiaries, program monitoring etc.

Table-1: Demographic Profile of the Respondents

Gender	Nos. of Respondents	Age Group	Nos. of Respondents	Qualification	Nos. of Respondents	Occupation	Nos. of Respondents
Male	124(62%)	Below 18		Below 10^{th}	19(10%)	Labourer	13(6%)
		18-35	22(11%)	10^{th}	61(31%)	Agriculture	42 (21%)
		36-53	54(27%)	10+2	37(19%)	Self-employed	58(29%)
		54-70	42(21%)	Graduate	7(3%)	Unemployed	3 (2%)
		71 and above	6(3%)	Post Graduate	-	Private Job	8(4%)
Female	76(38%)	Below 18	-	Below 10^{th}	53(26%)	Labourer	-
		18-35	48(24%)	10^{th}	16(8%)	Agriculture	28(14%)
		36-53	23(12%)	10+2	7(3%)	Self-employed	46(23%)
		54-70	3(2%)	Graduate	-	Unemployed	-
		71 and above	-	Post Graduate	-	Private Job	2(1%)
Total	**200(100%)**		**200(100%)**		**200(100%)**		**200(100%)**

Primary data were collected from 200 respondents (villagers who are direct beneficiaries of the CSR initiatives of the OPGC), who are segregated into different demographic components as presented in Table-1. To assess the benefit of incorporating micro-plan in designing and execution of CSR Programin the peripheral villages of Odisha Power Generation Corporation Ltd. 200 numbers of beneficiaries were interviewed. The beneficiaries have given their opinion on extent of involvement in program planning and designing, program monitoring and evaluation, maintenance and ownership of the community assets etc. The satisfaction level of the respondents has been determined by depicting their agreement level in a 5-point Likert Scale in which 1 is denoted for Strongly Disagreed, 2 is denoted for Disagreed, 3 is denoted for neither agree nor disagree, 4 is denoted for Agreed and 5 is denoted for Strongly Agreed. For this purpose, six statements have been given to the respondents to rate on the basis of their agreement.

Statements
1. The organization assess the needs of the communities prior to the implementation of the project.
2. The community members are aware of and involved in planning and implementation of the project.
3. The project facilities are created as per the requirement and benefits of the villagers.
4. The facilities are helping the people to improve their conditions of living, instead would have faced a difficult situation.
5. The organization monitors the program activities along with the community members for a better result,
6. Handing over strategies and processes have been initiated by the organization towards ownership of the CSR activities by the community

It is inferred that those who have agreed or strongly agreed to the statements have definitely felt the changes leading to the betterment. But respondents' disagreement or strongly disagreement to the statements does not mean that the program activities have no impact on their living condition and success of the program.

Table-2: Prioritization of program in operational areas

Response	**N=200 (Frequency with %**
Strongly Agree	38 (19)
Agree	106 (53)
Neither Agree nor Disagree	14 (7)
Disagree	26 (13)
Strongly disagree	16 (8)
Total	**200 (100)**

(Note: The number in parentheses denotes the percentage)

Awareness level decides the participation of the people in program activities. The increase in awareness level facilitates the program personnel in dissemination of information; organize meetings and expecting more involvement of people from planning to execution of activities. It is observed from the above table that Seventy Six percent of respondents are strongly agreed on the issue that the awareness level of beneficiaries on thematic issue has increased after program intervention; they realized the benefits of their participation in the program and accordingly involvement in the program is increased. The corresponding value is eight percent, who have opined that hardly any participation of beneficiaries is sought in planning and execution of the program.

Table-4: Enhancing the quality of life of beneficiaries through the program contents

Response	Percentage
Strongly Agree	12 (6)
Agree	42 (21)
Neither Agree nor Disagree	96 (48)
Disagree	34 (17)
Strongly disagree	16 (8)
Total	**200 (100)**

(Note: The number in parentheses denotes the percentage)

The objective of implementing strategic CSR by the organization is to bring changes in the lives and livelihood of the people in the peripheral areas. Initiation of such philanthropic activities from the organization increases its brand image, believability and distinctiveness in society. It is observed from the above table that Fourty Eight percent of respondents are neutral about the benefit of the program percolating in enhancing their socio-economic status, as well as spending pattern in different matter and enhancing the quality of life in society. The corresponding value is Twenty One percent, who realized that the activities launched today will help them in enhancing their economic status, increase spending pattern to maintain different indices of human development and to maintain a status in society. However, Seventeen percent of respondents are disagreed about quality of life to be increased through the interventions of OPGC under its CSR plan.

Table-5 : Support services by the organization for sustenance of activities

Response	Percentage
Strongly Agree	134 (67)
Agree	46 (23)
Neither Agree nor Disagree	0 (0)
Disagree	14 (7)
Strongly disagree	6 (3)
Total	**200 (100)**

(Note: The number in parentheses denotes the percentage)

Financial, technical and knowledge support services are essential for survival and growth of the developmental activities. These support services facilitate the beneficiaries to enhance their socio-economic condition and strengthen the rural economy. It is observed that Sixty Seven percent of respondents are strongly agreed the organization is providing all kinds of support services to carry out both physical infrastructural and activities responsible for developing human indices. The organization has formed community organization at the grassroots level and the support services are extended to the community through the community organization. The process empowers them for smooth management of the activities and setting up procedures for continuation of same activities in future without facing any hurdles. The corresponding value is very minimal, where only Seven percent of people have negated the fact.

Table-6: Mutual monitoring of activities for better result

Response	Percentage
Strongly Agree	18 (9)
Agree	72 (36)
Neither Agree nor Disagree	54 (27)
Disagree	38 (19)
Strongly disagree	18 (9)
Total	**200 (100)**

(Note: The number in parentheses denotes the percentage)

Combined supervision ensures higher success rate of the program. In a developmental program, the combined supervision from community and the program personnel ensures program quality and quantitative target to be achieved for the project. It is observed that Thirty Six percent of respondents are agreed about combined monitoring of activities which have initiated in their villages with the support of OPGC. They have opined the process of combined monitoring plays a pivotal role in better implementation of activities, chalks out the role and contribution of community members in implementation of the activities, meeting the target and achieving the desired objectives of the project. In comparison to that Twenty Seven percent of respondents are neutral towards combined monitoring system and Nineteen percent of respondents are disagreed about the process.

Table-7: Opinion regarding role of OPGC & Community for sustainability of CSR

Response	Percentage
Community Empowerment	24 (12)
Creation of Community Fund	56 (28)
Continuation of OPGC in the villages for ever	56 (28)
Formation of Apex level agency	18 (9)
Ascertain of Livelihood Source	46 (23)
Total	**200 (100)**

(Note: The number in parentheses denotes the percentage)

The phase out process must be planned in conjunction with the execution plan. The objective of phase out process is to empower and hand over the program operation to the community. Accordingly, questions were asked to the respondents on phase out process and sustainability of the program operations. It is observed from the above table that twenty eight percent of the respondents have opined regarding creation of community fund in the villages, which will enable them to continue the program forever, whereas the same number of respondents have opined about continuation of welfare activities by OPGC forever. At the same time, Twenty Three percent of respondents gave their opinion regarding ascertaining livelihood source for the members of the community through various skill building programs which will assure them to maintain an improved life standard and continuation of the activity in future. Twelve percent of respondents emphasized upon empowering the community members through which they will be able to tap the resources from various sources and carry out the activities in future.

Critical Reflection and Recommendations

- Out of the total fund allocated for CSR program in one financial year, 50% of the fund is utilized for creation of community infrastructure facility in the peripheral villages of OPGC.
- The CSR Department of the organization is an extension wing of the Human Resource Management (HRM) Department and the head of CSR is reporting to the head of HRM department. Hence, there is a gap in people centric development and target oriented CSR implementation.
- In budget planning, emphasis is given upon short term program strategy and quantitative achievement rather than long term strategy.
- There is lack of synergy between the peripheral villages intervened by the CSR and the development program of the Government.

In order to envisage a better impact on the lives of the community, there should be convergence with the Govt. Scheme and developmental programs. A detailed and clear action plan must be prepared about the activities to be taken up by the Govt. agencies and possible role of corporate organizations under CSR scheme. However, the convergence factor is still a distant dream. From the beginning of the CSR program intervention, the organization must design the phase out strategies. Community contribution as a part of the strategy must be incorporated. Discussion and orientation of the community must be held in that direction for acceptance and ownership of the program. The strategic CSR process will bring a change in social, cultural and economic status of the community and also fulfill the CSR goal of the organization

Conclusion

The micro-planning process approach integrated in CSR policy summarized throughout this paper is aimed at thorough understanding of the community issues by the corporate organization, involvement of community as a stakeholder in addressing the problem, deriving mechanism to empower them and streamlining it for sustainability of the program. The governing body of the organizations must emphasize upon human development component while preparing CSR policy. This component must have the characteristics to reflect upon process oriented approach. Base on it, steps are taken to make the people aware on various issues, people are empowered to make their own decisions and high level of involvement in every activity. The process will help the community to nurture their financial status and recognition in the society. Moreover, the community increases their faith of upon business organization vis-à-vis, the business organization will able to win the trust of the community and society. Hence, there is simultaneous growth of the community as well as the business organization.

From the above analyses of data, it was observed that community members have opined for creation of community fund as well as strengthening the source of livelihood of each and every household. The management must emphasize upon more livelihood program for the community members, which must be planned along with the members. Further, the combined monitoring yields a better result for the organization. The organization must keep on empowering the community, who will steer the welfare activities of the organization in right direction. The people can be satisfied if the organization can assess the vulnerability at the beginning and initiate such activity which is prioritized by the community. The organization is providing support services at the beginning of the intervention, however, the community's contribution must be encouraged for future sustenance of the activity. At the time of phasing out from the operational villages, the people must be empowered enough to take their own decision and do better for holistic improvement of the community.

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Sustainable business practices among Indian Companies

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Abstract

Sustainable business practices have become an important component in measuring the performance of a corporate entity. In earlier stages of industrial revolution, the sole objective of businesses was to maximize profits. Corporate finance stated that the objective of a business is to maximize shareholders' wealth. As businesses evolved, expectations of the stakeholders increased. Along with running successful businesses, they were also expected to discharge corporate social responsibility (CSR). CSR has come a long way; it initially started as a nice thing to do by the corporates to today where it is a necessity. It helps in showcasing an organization as a corporate citizen. CSR was initially started by wealthy philanthropists as their own individual endeavors.

Keywords: Biological Diversity, Deforestration, Ethical Governance, Sentence Core Analysis, Sentiment Analysis.

Introduction

Successful industrialists like Andrew Carnegie and John D Rockefeller donated close to half a billion in the late 1800s towards philanthropy. CSR started to take off strongly during 1970s. Businesses started strategizing their CSR policies during the period 1980s and 1990s. Though earning profits remained the primary objective of the business, contribution towards society for causes like education, health care, housing, infrastructure and so on became a necessity. So, measuring the business performance was from two angles – profits and contribution towards the society. This process is termed as double bottom reporting or 2 P reporting (Profits and people).

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Industrial revolution facilitated wealth creation, employment generation, availability of new products/services and business across borders. This enormously improved the earning potential of large section of society. Wealth creation impacted most of the stakeholders in a positive way. Financial stability and improved quality of life were observed in most societies. But excessive industrialization had its own pitfalls. By early 2000, major sustainability issues like climate change, water pollution, greenhouse gas emission, air pollution and so on became common problems for most parts of the world. Focusing on these issues and coming up with solutions became inevitable. Development and growth are important, but the world had to focus on sustainable development.

Sustainable Development: *Brundtland Report (1987) defines sustainable development as "development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs".* With every passing year of industrial revolution, world was experiencing various kinds of environmental issues – carbon emission, air and water pollution, industrial waste dumping and so on. This was having significant impact in the society – global warming, floods, increased levels of pollution etc. People started realizing that there needs to be a different kind of approach to take control of the situation. This led to a milestone in sustainable development; Rio De Janeiro Earth Summit (1992). This was a united nations conference held in Rio De Janeiro from June 3rd to 14th 1992. Earth summit highlighted how social, economic, and environmental factors are interrelated are interlinked/interdependent and evolve together. The agenda of Earth Summit was to come up with a plan and outline to facilitate actions at the international level.

Important issues addressed at the Earth Summit 1992 are:

- Protection of atmosphere
- Combating deforestation
- Promoting sustainable agriculture and rural development
- Conservation of biological diversity
- Environmentally sound management of toxic chemicals, including prevention of illegal international traffic in toxic and dangerous products
- Environmentally sound management of hazardous wastes, in hazardous wastes
- Safe and environmentally sound management of radioactive waste

After the Brundtland study (1987) and Earth summit (1992) there was a significant change in the way stakeholders of the society – governments, regulatory framework, businesses, public and other institutions thought about sustainable development and economic growth. World realized that environmental and economic growth are not mutually exclusive and businesses which erode environment are not sustainable. Sustainable initiatives by governments and businesses have become a common phenomenon across the globe. Corporate sustainability was adopted by most of the corporates as it became a matter of necessity.

Corporate Sustainability: Dow Jones Sustainability Index defines corporate sustainability as "a business approach that creates long-term shareholder value by embracing opportunities and managing risks deriving from economic, environmental and social developments". It can be seen as a new and evolving paradigm. It is viewed as an alternate business objective compared to traditional standards of profit maximization. While corporate sustainability recognizes that businesses need to be profitable, it also considers the fact that responsible business is the way forward. Holistic business model which takes into consideration profits, CSR and environmental initiatives is the sustainable business model.

Most of the companies are reporting their CSR initiatives in the annual report. But when companies started adopting sustainability initiatives like reduction in carbon emission, lake rejuvenation or development of green zones and so on, there was no clarity on how to report the same. Unless sustainability initiatives are reported in a proper framework, stakeholders and other bodies like regulators will not be able to assess the sustainability activities of the company. It is increasingly becoming vital for organizations to report such initiatives in an appropriate framework as potential investors too are very keen to invest in responsible businesses.

Review of Literature

Sustainability is claimed as 'Corporate citizenship', which means a corporate tries to showcase it as a part of society, economy and environment by adopting sustainability. Many studies have been conducted in sustainability practices adopted by companies. A study conducted by (Yadava & Sinha, 2016) compared the sustainability reports of Indian companies belonging to private and public sector. GRI guidelines were used as a measuring tool where the results reveal that the sustainable business practices followed by TATA steel seems to be worth noting. As far as the disclosures of the sustainability reports are concerned, one can find a difference between public and private sector banks which is proved by (Kumar & Prakash, 2019). The study also reveals that the banks in India are still at the nasal stage of adoption of sustainable business practices.

Sustainability reports also have shown a positive impact on the corporate performance which is proved by (Farisa Caesaria & Basuki, n.d.). The findings corroborate earlier studies that indicated that greater transparency of the economic, environmental, and social aspects of a sustainability report would improve the performance of the enterprise market. Therefore, the company can improve these three parts of the sustainability disclosure report if it wants to catch the attention of market trends in performance. Korsunova et al. (2016) analyzed the roles played by stakeholders in bringing sustainability related innovation in a firm. The roles identified are divided into two categories such as proactive and reactive. Under the proactive category the stakeholders can be stimulators, initiators, brokers or mediators and under reactive category concept refiner, legitimator, educator etc.

The findings of the study prove that stakeholders can be the reason behind innovation of sustainable products and services of companies. One of the driving forces for sustainability could be an agenda shared by different stakeholders. When corporates engage with society through corporate social responsibility, they establish a relationship with the stakeholders and then it leads to Stakeholder relationship management (Steurer et al., 2005). The goal of sustainable development also forms the basis of stakeholder relationship management, economic welfare, social welfare and environmental protection. Therefore, Sustainable development and stakeholder relationship goes hand in hand. Clifton & Amran (2011) considered stakeholder approach as a key area of focus in the study of sustainable development. According to the authors, through mapping and analytical models' stakeholders can be approached for their ideas about sustainability and the same can be implemented in day-to-day management practices. The approach can be narrow or broad depending upon the stakeholders identified by the company.

Aggarwal (2013) conducted a study to explore the impact of sustainability performance on the financial performance of listed Indian companies. The research aimed to address the gap in understanding the relationship between sustainability and profitability in the context of emerging economies like India. The study focused on a sample of listed Indian companies and examined their sustainability performance metrics alongside financial performance indicators. The findings suggested a positive association between sustainability performance and financial performance, indicating that companies with better sustainability performance tend to achieve higher profitability. The research highlighted that sustainable practices, such as environmental conservation, social responsibility, and ethical governance, can positively impact a company's financial performance. These practices were found to enhance the company's reputation, attract investors, and lead to cost reductions and risk mitigation, thereby driving profitability. However, it is important to note that the study was limited to Indian companies and did not explore the specific dimensions of sustainability that influenced financial performance.

The findings of this research contribute to the understanding of the relationship between sustainability and profitability in the Indian context, providing insights for companies operating in emerging economies. Further research is warranted to expand the scope of investigation to other countries and economic contexts. Additionally, future studies could delve deeper into the specific sustainability dimensions and mechanisms through which sustainability performance influences financial performance, providing a more comprehensive understanding of this relationship. Overall, Aggarwal's (2013) study provides evidence of a positive link between sustainability performance and financial performance in the context of listed Indian companies. However, additional research is needed to generalize these findings and explore the underlying mechanisms and dynamics involved in this relationship

Kumar et al. (2015) conducted a study that compares the sustainability reports of Indian companies from various sectors using a stakeholder perspective. The research aims to analyse and compare the information content of sustainability reports from 36 Indian companies across different industries. The study focuses on the economic, social, and environmental dimensions of sustainability and considers the stakeholders included in the reports as differentiators. The findings reveal that there are no significant differences in the content of sustainability reporting among Indian companies from different sectors in terms of the environmental, social, and economic dimensions. However, variations arise in the broader understanding and perception of sustainability presented in the reports.

Notably, differences are observed when examining the contents of sustainability reporting from the perspective of different stakeholder groups. The paper concludes by acknowledging the limitations of the study and suggesting potential avenues for future research. Bhatia and Tuli (2017) conducted a study to explore the relationship between sustainability reporting and corporate attributes in the context of Indian companies. The research aims to identify significant determinants of sustainability reporting and highlights the variation in reporting scope among companies and industries. The study employs content analysis on a sample of 158 Indian companies selected from the BSE 200 and utilizes multiple regression analysis to identify significant corporate attributes.

The findings indicate that companies with larger size, older age, multinational operations, and belonging to the Software, IT, ITES, and Oil and Gas industries exhibit significant sustainability disclosure. However, variables such as company profits, leverage, growth, and advertising intensity are found to be negatively associated with the extent of sustainability disclosure. Other variables examined were found to be insignificant. The study acknowledges limitations related to the subjective judgment involved in classifying and identifying sustainability information through content analysis. However, it contributes to the literature on international sustainability disclosure practices and their determinants, providing implications for various stakeholders such as investors, accounting bodies, regulatory authorities, companies, government, stock exchanges, general public, academicians, and researchers.

The sustainability reports prepared by the companies can also be influenced by the stakeholders. According to (Fernandez-Feijoo et al., 2014) stakeholders such as employees, investors, consumers pose a higher level of pressure on companies to report on sustainability. The authors conducted a study on companies following GRI framework to analyze the effect of pressure from various stakeholders. A regression model was built based on 4 categories such as customer-proximity, employee-orientation, environmental-sensitive and investor-oriented industry and the findings show that investors and employees put more pressure on reporting about sustainable business practices.

Research Method

This research aims to explore the sustainability practices of listed Indian companies by studying their sustainability reports and business responsibility reports. The focus will be on understanding the sustainability practices of Indian listed companies.

Research Objectives: The objective of this study is to study sustainable business practices of select listed companies and test the impact of the same on their financial performance.

Sample size: This study adopts Nifty-fifty companies as a sample for secondary data analysis. Since Nifty-fifty represents 13 different sectors of the economy, it would give us a better picture of the corporate sectors in India.

Data Collection: Sustainability Reports and Business Responsibility Reports are studied to gain insights into the process of sustainability reporting. The ESG scores were collected from the Bloomberg terminal, which measures the sustainability practices of companies and the Net profit margin, Earnings per share and Dividend per share is also collected from the same database, that represents the financial performance. The data relates to the study period from 2019-2023.

Data Analysis: The collected data was analysed using various statistical tools such as sentimental analysis and multiple regression analysis. The tests were conducted on python and SPSS software packages.

Results

Sentiment Analysis

Table 1: Details of Sentiment Analysis

Detected Entities	Type	Magnitude	Sentiment Score
Sustainable Development Goals	**ORG**	0.81	+0.567
India	**LOC**	0.62	+0.530
2025	**DAT**	0.12	-0.220
CSR	**ORG**	0.37	+0.158
Maggi	**PER**	0.43	+0.143

Source: Compiled from Python Programming

The sentiment analysis represented in Table 1, indicates an overall positive orientation of the text toward sustainability-related themes. The *Sustainable Development Goals* exhibit strong positive sentiment with high emotional intensity of (+0.567), highlighting their central importance in the discussion. Similarly, references to *India (+0.530)* are associated with favourable sentiment, suggesting an optimistic national context. In contrast, the temporal reference *2025* reflects mild negative sentiment with low emotional emphasis (-0.220), indicating limited concern or uncertainty regarding future outcomes. Mentions of *CSR* and *Maggi* carry moderately positive sentiment (+0.158 and (+0.143), suggesting general approval without strong emotional intensity.

Table 2: Sentence core analysis

Core sentences	Magnitude	Sentiment Score
Nestle The company has announced that key brands have become plastic neutral.	0.45	0.137
Nescafe KitKat and Maggi .	0.43	0.143
Focus on innovation – 71 innovations since 2016 committed to make in India – 98% of sales are manufactured in India.	0.78	+0.496
Focus on 5ps – people planet performance partnership and performance – accelerating sustainability journey target to achieve 100% recyclable or reusable packaging by 2025 Ensuring Support Across Our Value Chain Sustainable Future – Environmental sustainability social initiatives people initiatives long lasting partnerships.	0.86	-0.545
Over 70% women workforce at the factory State of the Art factory reinforcing our sustainability journey Maruti Suzuki Highlighted value creating process – financial capital manufactured capital intellectual capital social and relationship capital human capital natural capital.	0.81	+0.604
Clearly indicated triple bottom performance – financial performance environmental performance and social performance Clearly defined stakeholder engagement channels for all stakeholders Important Stakeholder Queries and Expectations Identified during Engagement Contribution to Sustainable Development Goals is clearly explained.	0.66	+0.506
Best people practices are highlighted.	0.94	+0.519
GRI content index Alignment with UNGC Principles is also provided Adoption of Strong Hybrid Intelligent Electric Hybrid Technology which Offers superior energy efficiency and lower CO2 emissions.	0.60	-0.101
Clearly identified different types of risks their materiality.	0.43	0.142
Material Topics Relevance to the Company Boundary Associated Capitals Alignment with SDGs Location in the annual Report is clearly mentioned as a Metrix.	0.86	+0.573
This serves as snapshot of everything that the company is doing Bajaj Finance Full and detailed disclosure of CSR spending – a separate CSR report of 12 pages available which gives details of various projects and amount spent.	0.64	+0.553

Source: Compiled from Python Programming

The sentence-level sentiment analysis as represented in Table 2, indicates a predominantly positive tone across the sustainability disclosures, with high sentiment magnitudes reflecting strong emphasis on innovation, people practices, and triple bottom line performance. Statements related to workforce diversity, stakeholder engagement, and alignment with Sustainable Development Goals exhibit notably positive sentiment. A few sentences associated with future targets and technology adoption show mild negative sentiment, possibly reflecting cautious or forward-looking commitments. Overall, the findings suggest that the disclosures strongly emphasize sustainability performance, governance, and social responsibility.

Multiple Regression Analysis

The Multiple regression test was conducted on each of company's ESG scores on their respective financial performance variables such as Net Profit margin, Earnings Per share and Dividend Pers share. Among the 50 companies, 14 companies' results show a significant positive impact of ESG scores on corporate performance. The same has been interpreted below:

Table 3: Impact of ESG on Net Profit Margin, Earnings Per share and Dividend Per Share.

Company	R	R Square	Adjusted R Square	Std. Error of Estimate	Durbin–Watson	F Value	Sig. (p-value)
Axis Bank	0.675	0.455	0.572	2.045	1.975	89.090	**0.048***
HDFC Bank	0.935	0.874	0.666	5.606	2.458	9.048	**0.002***
HDFC Life	0.569	0.323	0.912	4.356	2.110	16.832	**0.012***
HDFC Financial Services	0.914	0.835	0.632	3.908	1.904	26.698	**0.006***
Infosys	0.780	0.608	0.511	1.389	2.111	8.525	**0.032***
Reliance Industries (RIL)	0.941	0.885	0.768	7.046	2.037	13.397	**0.030***
TCS	0.547	0.299	0.356	2.387	1.924	10.379	**0.028***
Adani Enterprises (AEL)	0.662	0.438	0.479	1.889	2.110	9.038	**0.038***
Bharat Petroleum	0.766	0.586	1.089	3.020	2.048	11.030	**0.014***
Cipla	0.610	0.372	3.105	1.940	3.309	9.029	**0.048***
Coal India	0.662	0.438	0.479	1.889	2.110	9.038	**0.038***

Hero MotoCorp	0.437	0.190	0.807	1.534	1.179	9.137	**0.030***
JSW Steel	0.769	0.591	1.193	1.730	2.190	16.640	**0.042***
Nestlé India	0.619	0.383	0.749	0.015	0.224	2.008	**0.005***
Sun Pharma	0.511	0.261	1.965	3.293	2.157	15.471	**0.027***

**5% level of Significance*

The regression models of 14 companies represented in Table 3, indicate that, at the 5% level of significance, the estimated models are statistically significant. This is evidenced by the p-values (Sig.) being less than 0.05, implying that the ESG scores have a significant impact on the dependent variables such as Net Profit, Earnings Per Share and Dividend Per Share.

The R values, which measure the strength of correlation between the observed and predicted values, range from 0.437 (Hero MotoCorp) to 0.941 (Reliance Industries). This suggests that the degree of association varies across sectors, with companies such as Reliance Industries, HDFC Bank, and HDFC Financial Services exhibiting very strong relationships, while firms like Hero MotoCorp, TCS, and Sun Pharma show relatively weaker but still meaningful correlations.

The R Square values, representing the proportion of variation explained by the model, indicate moderate to high explanatory power for most companies. For instance, HDFC Bank (87.4%), Reliance Industries (88.5%), and HDFC Financial Services (83.5%) demonstrate strong explanatory ability, suggesting that the selected independent variables effectively explain variations in the dependent variable. In contrast, companies such as Hero MotoCorp (19.0%), TCS (29.9%), and Sun Pharma (26.1%) show lower R Square values, indicating that a substantial portion of variation is influenced by factors outside the model.

The Durbin–Watson statistics for most companies are close to 2, implying the absence of serious autocorrelation in residuals. The F-statistics across all models are statistically significant, confirming the overall goodness of fit of the regression models.

Conclusion

The present study adopts secondary research methods to study the sustainability reporting practices of Nifty-fifty companies and tested the impact of ESG scores on the financial performance indicators such as Net Profit, Earnings per Share and Dividend per Share. The combined results of regression analysis, sentiment analysis, and core sentence analysis, sustainability-related practices play an important role in company performance. The regression results of 14 out of 50 companies show that sustainability and related factors have a significant impact on firm outcomes. The sentiment analysis reveals that topics such as Sustainable Development Goals, CSR, innovation, and people practices are discussed in a most positive manner.

The core sentence analysis further confirms that companies strongly highlight innovation, workforce diversity, stakeholder engagement, and long-term sustainability efforts. Although a few statements show mild negative sentiment, these are mainly linked to future targets and do not indicate poor performance. While, many companies did not show significant regression results, which indicates that the sustainability factors may not have an immediate impact on their performance. This could be due to industry differences, short study periods, or the influence of other factors not included in the model. Overall, the findings suggest that companies focusing on sustainability and transparent reporting tend to project stronger performance and long-term value creation.

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Textile Industry in India at Crossroads: The Loom Is Ready; The Threads Are Aligned

Jai Kumar, Neelam Tandon**, Deepak Tandon****

Abstract

Textile industry in India directly employs 45 million people. It is rooted in a rich culture and Khadi traditions, and its export patterns have shifted amid a changing geopolitical landscape. Dependence on US exports and shifts in US trade policies have adversely affected export revenues. Currently, political and economic instability in Bangladesh presents a unique opportunity for India to expand its market share by utilizing abundant raw materials and strategic planning. The Indian government's structural and policy initiatives, along with increased investment in capacity, research, technology, digitally integrated infrastructure, and green-compliant production, are key factors driving the sector's growth within the global value chain.

Keywords: GST 2.0, Political Instability, Structural Policy Initiatives, Tariff Troubles, US Trade Policy.

Introduction

India's textile sector has deep roots in centuries-old traditions that have shaped both culture and economy and have become part of the country's fight for independence. India being the second largest producer of textiles and garments contributes to 2.3% to the country's GDP, 13% to industrial production and 12% to exports. The CAGR is US$ 225 billion as on 2025. Since India gained independence, promoting Khadi has been seen as a symbol of self-sufficiency, supporting rural economies, and giving textile mills a new identity. Over time, the industry slowly evolved from hand-spun methods to modern, machine-driven production with automation, eco-friendly dyes, and strong ties to global supply chains. However, the main challenge for India's textile industry remains its higher costs compared to global competitors, stemming from a lack of localization and a complex value chain. The factors which add to the vantage India are:

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(i) *Competitive advantage:* innermost skilled manpower, cost of production with respect to other producers.

(ii) *Robust Demand:* The Indian technical textiles market is expected to expand to US$ 23.3 billion by 2027, driven by increased awareness of goods and higher disposable incomes. The total exports during FY26 (April-June 2025) stood at US$ 9.40 billion, with RMG (45%), Cotton Textiles (30%), and Man-Made Textiles (12%) as key contributor

(iii) *Policy and regulators support:* FDI is 100 percent (Automatic route) . The Union Budget 2025-26 allocated Rs. 5,272 crore (US$ 607 million) for the Ministry of Textiles, a 19% increase from the previous year. It also introduced a five-year Cotton Mission to boost cotton productivity, reduce import dependence, and enhance MSME-driven textile competitiveness

(iv) *Investments push up:* Total FDI inflows in the textiles sector stood at Rs. 43,363 crore (US$ 4.8 billion) between April 2000-June 2025

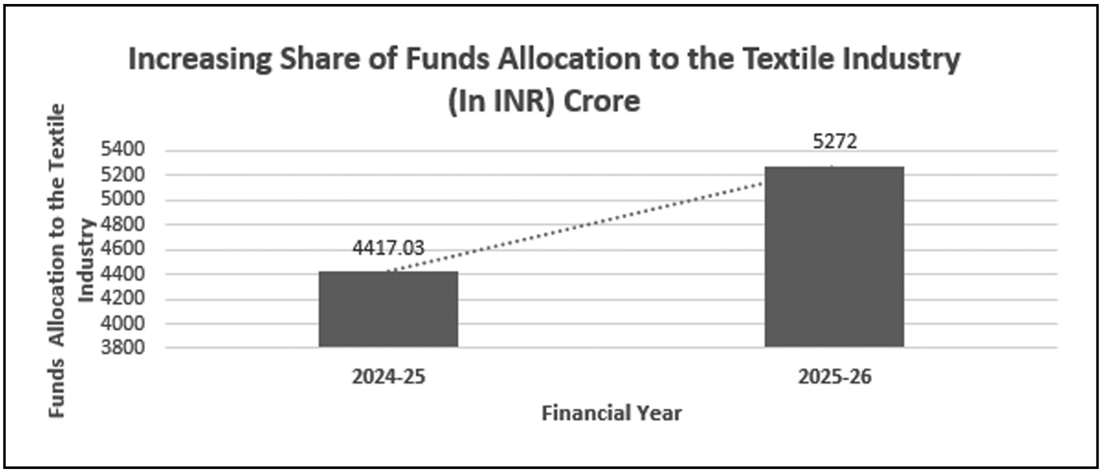

Figure 1: **Enhancing India's Textile Industry Capacity Expansion with an increase in the Central government of India's Budget allocation**

The launch of a five-year Cotton Mission, with an allocation of INR 600 Crore to revitalise India's cotton sector, by providing science and technology support to farmers and adopting global agronomy best practices and promoting clean cotton production, the policy initiative seeks to ensure a steady raw material supply, reducing imports, boosting competitiveness, and enhancing farmer incomes.

Union Budget 2025-26 also provides significant support for the handicrafts sector, which represents India's rich Cultural heritage. The duration for exporting handicrafts made from duty-free inputs by bona fide exporters has been extended to one year, further extendable by three months. Additionally, nine new items, including wool polish materials, seashells, Mother of Pearl (MOP), and cattle horn, have been added to the list of duty-free inputs, reducing input costs for handicraft exporters and further promoting traditional Indian arts and crafts. Recognising the importance of MSMEs in the textile sector, the Government of India introduced initiatives such as enhanced credit access, export promotion measures, and the creation of the Bharat Trade Net. The Bharat Trade Net digital platform will streamline trade documentation, facilitate smoother global integration, and ease market access for small and medium textile enterprises.

Tariff Troubles with the U.S: A New Problem or a Chance to Diversify

*India's t*extile exports to the United States have been quite unstable, especially over the last decade, the core reason for the change in U.S. policies related to tariff imposition. It is noteworthy that with structural policy reforms, India's export competitiveness increased to about USD 9.3 billion by Financial Year 2024, from USD 6.5 billion in Financial Year 2015. In 2025, with the change in leadership, the U.S. tariff policies introduced new hurdles for Indian exporters. Before 2017, U.S. tariffs on Indian textiles were between 8% and 12% which, for the most part, was manageable, and Indian exports were still doing well. In 2018, the Trump administration increased tariffs on Indian textiles. It was a challenging time for India's textile sector, but somehow, it absorbed the shock while staying resilient and managed to show some growth.

August 2025 was a catastrophic phase for the Indian textile industry due to the sudden imposition of a 50 percent tariff on selected segments of the Indian textile sector by the US president. Indian exports are now seeing higher landed costs, and they're starting to lose their edge in the market. The U.S. has been using tariffs more as a strategy to protect its own market. It's a lesson for the Indian textile industry to understand the reduction in its concentration risk on the US market for its export proceeds. What's more worrying is that with exponentially high tariffs, value-chain-based trade is getting disproportionately affected, especially products like textiles, which cross borders multiple times during production. In the textile industry, even a marginal increase in duties increases transaction costs and reduces the export competitiveness of the supply of intermediate goods within the textile network.

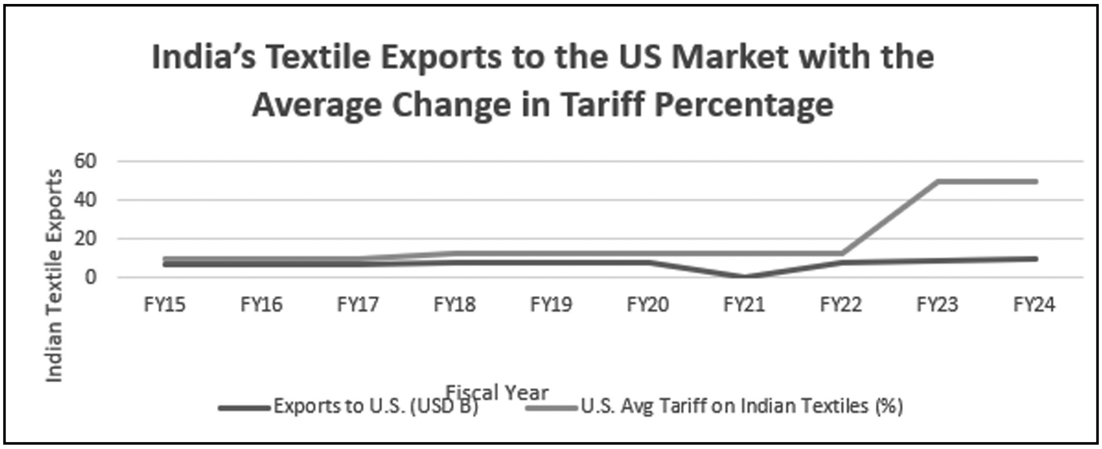

Figure 2: India's Textile Exports to the US Market

It will be difficult for the Indian textile sector to compete in the U.S. market, where margins are already razor-thin. But this is also a wake-up call for India to diversify its trade, and that's where India's expanding FTA (Free Trade Agreement) network comes in as a counterweight. The India–UK FTA, which removes tariffs on 99 per cent of Indian goods, including textiles, and deals with the European Free Trade Association (EFTA) blocs slated to phase out up to 12 tariffs, the UAE, and Australia are expected to almost double export opportunities and provide some relief to India from rising U.S. tariffs.

Bangladesh's Political Instability: An Opportunity for India

Bangladesh maintained a strong cost advantage in apparel exports for many years because of cheap labour, high production capacity, and duty-free access under schemes like GSP (Generalized System of Preferences) and EBA (Everything But Arms). In the year 2025, because of political instability, labour unrest, and growing ESG (Environmental, Social, and Governance) scrutiny, adversely impacted their cost-competitive benefits. And this is an opportunity for India to use its mature textile base and skilled workforce to capture the space that Bangladesh is slowly leaving behind. The Indian textile industry is improving its operational efficiency with an increase in automation.

Table 1: A Comparative Cost Competitiveness Analysis between India and Bangladesh

Factor	India	Bangladesh
Labour Costs	Automation and diversification increased India's textile sector operational efficiency and reduced its labour costs.	Bangladesh is losing its comparative Labour cost-benefits with an increase in the nominal wage rate by 30 to 40 per cent.
Raw Material	India's locally available raw material will gain the benefits of economies of scale with the introduction of textile cluster development schemes	Bangladesh is dependent on Indian raw materials for its apparel export competitiveness
Political Stability	India has a stable government and is signing FTAs actively	Facing political unrest and labour disputes
Competi-tiveness	Losing U.S. ground due to tariffs, but gaining in Europe, Australia, UAE	Still the cost leader but suffering due to political instability and ESG issues

If India's textile industry acts strategically and upgrades itself, improves logistics and supply chains, and gets the right policy support, then India can see its massive transformation with its increase in export Competitiveness, job creation opportunities in manufacturing and related sectors, stronger domestic production clusters, and Higher incomes and spending. India and Bangladesh have trade linkages and are complementary contributors in the textile value chain, and now, as Bangladesh faces disruption, India has a rare opportunity to expand its downstream capability and capture more global value, especially if it uses its FTAs and sustainable production strengths.

On September 22, 2025, the Indian government implemented the GST 2.0 reform, with the reduction in GST rates on man-made fibres, yarns, and garments (priced below 2500 per unit) from 12 per cent to 5 per cent GST. GST reforms and strengthening of the value chain, ease of working capital, and cash flow will help textile firms to overcome bottleneck challenges of outdated machinery, fragmented clusters, and delayed GST refunds.

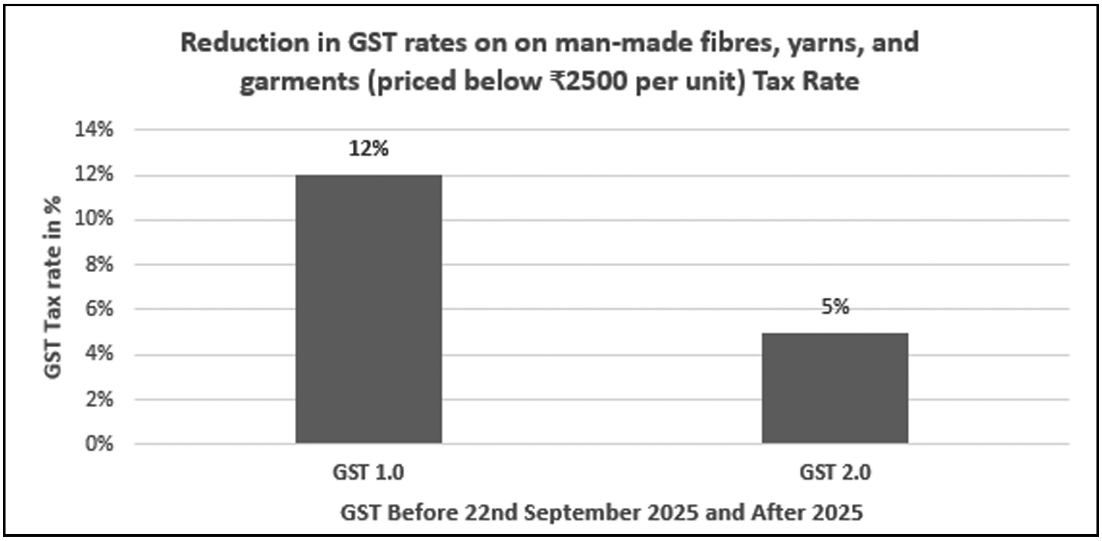

Figure 3: Reduction in GST Rates to Ease Compliance and Improve Operational Efficiency

Table 2: PESTLE Analysis of India Specific Cost-Benefit Competitiveness

Factor	India-Specific Insights
Political	• Political Stability ensures long-term policy planning. Such as GST reforms (reduction from 12% to 5%, strengthening the value chain, and modernisation of the textile sector. • FTA negotiations (UK, UAE, Australia, EFTA) will provide better global access
Economic	• Contributes around 2.3% to GDP and 12% of India's foreign exchange earnings. • The textile industry is the second largest employment provider after agriculture to more than 45 million people, and almost 80 per cent of its capacity is spread across MSME clusters in India. • India's textile sector, backed by government initiatives and a skilled workforce, is seeking a USD 350 Bn market with global export reach by 2030 • The Indian textile industry ranks fifth globally and produces 22,000 million pieces of garments per year • U.S. tariff policy may affect the revenue growth of the industry with the reduction in order volumes.
Social	• The Textile Industry holds a rooted cultural and historical value (e.g., Khadi movement, handlooms). A rising middle class means more demand for everyday wear that's affordable and easily available. • People now want clothes that aren't just stylish — but also sustainable and ethically produced.

Technological	• India's textile sector takes real steps toward using machines and making the whole process more eco-friendly. • The Amended Technology Upgradation Fund Scheme (ATUFS) incentive scheme of the Government of India seeks to incentivise technology upgradation and modernisation through capital investment subsidy for eligible investment in benchmarked textile machinery. • Many MSMEs still depend on outdated machinery and manual labour. Limited R&D in high-performance or technical textiles.
Legal	• GST simplification and rate cut help to formalise the sector, but refund delays create compliance stress. • Need strong and global-level labour laws. • Export-import documentation and duties need some relaxation for a smoother global trade.
Environmental	• Increasing domestic push for sustainable production and Global Organic Textile Standards (GOTS) compliance to gain global market share. • The Textile industry has high water consumption, also the use of chemical dyes production process raises environmental concerns. • Government schemes promoting circular economy, recycling, and green tech adoption. The Indian textile firms are practising green practices, and even smaller companies are adopting eco-friendly practices.

Table 3: SWOT Analysis of India's Textile Industry Export Competitiveness

Strengths	**Weaknesses**
• An industry that's been around for centuries — with workers who've mastered the craft over generations • Well-established supply of both natural and man-made fibres • Generates massive employment (45Million directly) • Strong position in upstream value chain (cotton, yarn, fabric) • Expanding FTA network opens new markets (UK, UAE, EFTA, Australia)	• Elevated U.S. tariffs are reshaping India's Competitiveness • Outdated machinery and technology in many clusters • Delays in GST refunds, compliance burden for MSMEs • Limited presence in high-value downstream products (e.g., fashion garments)
Opportunities • Global supply chain reordering post-COVID and geopolitical shifts • Instability in Bangladesh has created a vacuum that India can fill	**Threats**

• FTA access can reduce dependency on the U.S. market • Buyers around the world now want textiles that are not just good-looking, but also good for the planet and ethically made • With the GST rate reduction and simplification of the tax, India's export competitiveness has increased.	• Volatility in global trade policies (esp. U.S.) • ESG scrutiny and rising global sustainability standards • Labour cost disadvantage vs. low-cost competitors • Over-dependence on select export markets • Possible delay in policy execution and reform implementation

Table 4: Impact Matrix: Macro Policies on Powerloom Productivity

Policy Initiative	Core Impact on Powerloom Industry	Productivity Enhancement Factor
PM MITRA & Textile Parks	Centralizes production units with plug-and-play infrastructure.	**Reduced Overhead:** Lowers logistics costs and downtime through integrated shared utilities.
National Technical Textiles Mission	Encourages a shift from plain fabrics to high-value technical textiles (geotextiles, meditech).	**Value Addition:** Increases revenue per meter and opens high-margin export markets.
PPP Projects	Infuses private capital and management expertise into aging powerloom clusters.	**Modernization:** Faster adoption of shuttleless looms and automated processing.
Khadi Promotion & Institutional Demand	Creates a steady, domestic demand for hand-spun and semi-automated weaves.	**Capacity Utilization:** Provides consistent order books for small-scale units, reducing idle time.
Global Diversification	Opens new markets beyond traditional Western exports.	**Market Resilience:** Diversifies risk and encourages adherence to international quality standards.
Tex-RAMPS Scheme	Provides funding for startups and data-driven planning.	**Innovation Cycle:** Faster troubleshooting of manufacturing bottlenecks and tech-driven supply chains.
Organic Cotton Scaling	Secures a supply of high-demand, eco-friendly raw materials.	**Compliance & Speed:** Meets global "Green" regulations, preventing export rejections and delays.
Sustainable Innovations	Focuses on recycling and circular economy in textiles.	**Resource Efficiency:** Lowers waste and energy consumption, reducing the cost of production.

Table 5: Macro Policy Initiatives Transforming Surat's Textile Productivity Landscape

Macro Initiative	Specific Impact on Surat Cluster	Primary Productivity Driver
PM MITRA Park (Navsari)	The Navsari PM MITRA textile park, located in the Surat Economic Region, is under development in 2026 to integrate the entire value chain.	**Logistics Efficiency:** Hub-and-spoke model reduces transport costs for Surat's 65,000+ factories.
Technical Textiles Mission	Focuses on shifting Surat's traditional saree/dress output toward high-margin technical fabrics.	**Market Diversification:** Reduces dependence on volatile local fashion trends.
Budget 2026: CER & G-HUB	The **Surat Economic Region (SER)** is designated as a high-growth City Economic Region under NITI Aayog's G-HUB initiative.	**Investment Attraction:** Aims for a regional economy of **$1.3–$1.5 trillion by 2047**.
Textile University & COE	Union Budget 2026-27 announced **Centres of Excellence (COE)** for major clusters and a potential Textile University in Surat.	**Skill & R&D:** Addresses the lack of advanced training for the region's massive migrant workforce.
CGTMSE Scheme Expansion	The limit for credit guarantees for MSMEs was increased to **10 crore per unit** in the 2026 Budget.	**Working Capital:** Vital for Surat's smaller powerloom operators to fund technology upgrades.
Tex-RAMPS Scheme	Approved at 305 crore to support startups and digital monitoring.	**Digital Transformation:** Targets the digitisation of Surat's 65,000 largely manual factory units.
Policy Initiative	**Specific Takeaways & 2026 Status**	**Productivity & Economic Impact**
PM MITRA Park (Navsari)	The Navsari PM MITRA Park (1,142 acres) is integrating weaving, processing, and printing units near Surat.	**Operational Efficiency**: Substantially reduces the logistics "bottleneck" that previously added 10-15% to production costs.
Tex-RAMPS Scheme	Approved with 305 crore (FY 2025-26 to 2030-31) to bridge gaps in research and data.	**Innovation Lead:** Supports local startups in smart fabrics and process efficiency, reducing machine downtime via digital diagnostics.
National Technical Textiles Mission (NTTM)	Target of 87,450 crore in exports; 16 new research projects approved in Feb 2026.	**Value-Addition:** Shifts Surat from low-margin sarees to high-margin Agro-textiles and Geotextiles used in national infrastructure.

G-HUB & City Economic Region	Surat is a lead CER under NITI Aayog's G-HUB initiative to boost high-value manufacturing.	**Investment Influx:** Expected to attract massive foreign and domestic capital, modernizing traditional "shuttle-less" loom clusters.
CGTMSE Credit Scheme	Loan limit for Micro & Small Enterprises increased to 10 crore per unit in the 2026 Budget.	**Capital Accessibility:** Enables small powerloom owners to finance the transition from second-hand looms to automated machinery.
GREAT Initiative (under NTTM)	Provides grants up to 50 lakh for aspiring innovators in technical textiles.	**Entrepreneurial Growth:** Encourages Surat's youth to innovate in technical fabrics like Meditech and Mobiltech.
Tex-Eco & Organic Cotton	National push for sustainable manufacturing through the Tex-Eco Initiative.	**Market Resilience:** Ensures Surat meets strict EU and US "green" compliance, preventing trade rejections.

Conclusion

The Indian textile industry is at a point where what's happening around the world and what's changing within the country are starting to line up. On one side, FTAs are opening up new markets, and on the other, Bangladesh is going through instability. Add to that the relief GST has brought for MSMEs, and it's clear that India finally has the momentum to go beyond just being strong in the upstream part of textiles and actually become a full-scale textile powerhouse. The 50 per cent duty hike on Indian textiles by the U.S., though definitely concerning, also pushes India to diversify its trade channels, strengthen its policies, and grab the opportunities created by the reordering of global supply chains.

India should look at this as an opportunity to take the textile sector into its next growth phase. Given the existing political unrest in Bangladesh, there's now a textile vacuum being created globally, and if Indian exporters make a real push, they can capture this space. The GST reform is a significant policy initiative that's going to push the industry, with financial and technical assistance for MSMEs. To overcome the constraints of India's contribution in the global value chain of the textile industry, the Government has developed a one-location, large-scale, and modern industrial infrastructure ecosystem, PM Mega Integrated Regions and Apparel (PM MITRA) Parks. The shift from commodity weaving to value-added manufacturing is the primary driver of enhanced productivity of the textile industry in India.

By moving into Technical Textiles and Organic Cotton, powerloom operators can escape low-margin traps, while schemes like PM MITRA provide the physical infrastructure needed to scale without massive individual capital expenditure. These parks will create an opportunity for an integrated textiles value chain from spinning, weaving, processing/dyeing, and printing to garment manufacturing at one location, which will reduce the logistics cost of the industry. The integrated digital infrastructure ecosystem will enable the textile industry to become globally competitive, attract large investment, and boost employment generation by more than one lakh direct jobs and two lakhs indirect employment opportunities per park. Thus, as laid above in the trends and way forward measures, textile sector is becoming the more future ready industry in terms of exploiting investments , research , design , technology .

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Women Empowerment through Microfinance and Self-Help Groups: A Case Study of Rayagada District, Odisha

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Abstract

Women's empowerment is central to inclusive rural development, especially in districts where poverty, low education, limited market access and dependence on informal credit restrict women's economic agency. Microfinance, delivered through Self-Help Groups (SHGs), Joint Liability Groups (JLGs), banks, cooperatives and microfinance institutions, has emerged as an important mechanism for promoting savings, collateral-free credit, livelihood diversification and women's participation in household and community decisions. This study examines the role of microfinance and SHGs in promoting women empowerment in Rayagada district of Odisha, with special reference to socio-economic conditions, group functioning, sources of finance, credit use, repayment behaviour and entrepreneurial outcomes. The study is based on a descriptive case-study design and adopts multi-stage non-probability sampling, including purposive and snowball sampling. Primary data were collected from 100 SHG members and 100 JLG members through interview schedules and focus-group discussions, supported by secondary information from NABARD, NGOs, banks and microfinance institutions. The findings indicate that SHG and JLG participation improves access to credit and savings, but the level of empowerment varies across models. JLG members show relatively higher autonomy in loan decisions, higher involvement in entrepreneurial activities and better repayment outcomes, whereas SHG members continue to depend more on husbands and group-level inter-loaning. The study concludes that microfinance contributes to women's empowerment when it is supported by adequate credit, training, market linkage, digital and financial literacy, and safeguards against over-indebtedness..

Keywords: Credit Autonomy, Entrepreneurship, Financial Inclusion, Joint Liability Groups, Repayment Behaviour.

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Introduction

Women's empowerment is a multidimensional process through which women gain greater control over resources, income, mobility, household decisions, social participation and public voice. In rural and tribal regions, empowerment cannot be understood only through income; it also includes access to credit, participation in collective institutions, confidence in public interaction, control over loan use, awareness of rights and the ability to take livelihood decisions. Kabeer (1999) explains empowerment through the interaction of resources, agency and achievements, while Narayan (2002) links empowerment with the expansion of choice, institutional access and participation. In this context, microfinance and Self-Help Groups have become important instruments for transforming women from passive recipients of welfare into active participants in household and community development.

Microfinance provides small and accessible financial services, especially savings and collateral-free credit, to people who are often excluded from formal banking systems. In India, the SHG-Bank Linkage Programme promoted by NABARD has played a major role in connecting poor women with banks and in encouraging regular savings, internal lending and collective repayment discipline (Satish, 2005; NABARD, 2024). The Joint Liability Group model and microfinance institution model have also expanded credit outreach, especially for women who need larger and more frequent loans for enterprise and livelihood activities (Sa-Dhan, 2025; Microfinance Institutions Network, 2025). The Reserve Bank of India (2025) has further clarified the regulatory framework for microfinance loans, emphasizing collateral-free credit, borrower protection, household-level income assessment and responsible repayment obligations.

Odisha provides an important setting for studying women empowerment through microfinance because the state has implemented Mission Shakti as a major women-centred development initiative. Mission Shakti promotes Women Self-Help Groups through institution building, financial inclusion, livelihood promotion, capacity building and market linkage (Government of Odisha, n.d.). The Mission Shakti Loan and interest-subvention framework has also aimed to reduce the cost of credit for women SHGs and encourage livelihood investment (Government of Odisha, n.d.). Evidence from Odisha indicates that Mission Shakti-assisted SHGs have contributed to regular savings, income improvement, participation in group meetings, leadership and social confidence among rural and tribal women (Tripathi & Indian Institute of Public Administration, 2023).

Rayagada district is socially and economically significant because of its tribal population, rural livelihoods, uneven access to formal finance and dependence on agriculture, wage labour and small enterprises. Women in such districts often face multiple constraints, including low literacy, limited independent assets, weak market linkage, dependence on husbands for financial decisions and limited exposure to formal institutions. Therefore, examining the impact of SHG and JLG-based microfinance in Rayagada helps understand whether financial inclusion is translating into real empowerment or remaining limited to credit access alone.

The present study evaluates how microfinance and group-based lending contribute to women empowerment in Rayagada district. It focuses on the socio-economic profile of SHG and JLG members, functioning of groups, sources of finance, pattern of borrowing, decision-making over loans, repayment behaviour, entrepreneurial engagement and perceived improvement in economic condition. The study also compares SHG and JLG members because both models serve women, but they differ in loan size, institutional mechanism, repayment structure, autonomy and enterprise orientation.

Review of Literature

The literature on microfinance and women empowerment shows that credit alone does not automatically empower women; the empowerment effect depends on how women access credit, who controls the loan, whether credit is used for productive activity, and whether the group creates social confidence and decision-making capacity (Mayoux, 2001). Early studies on rural credit and SHG-Bank Linkage highlighted that market failures in rural credit justify institutional interventions for the poor and that SHGs can reduce dependence on moneylenders by building savings discipline and trust-based lending (Besley, 1994; De Silva & Penby, 1992; Jain et al., 2003).

Recent evidence has broadened this view by measuring empowerment through both economic and social indicators. Kumar et al. (2021) found that SHG membership in India improves women's aggregate empowerment and reduces gender gaps in empowerment, particularly through control over income, credit decisions and active group participation. Maity (2023) argued that SHG-led microfinance can support financial and social inclusion in backward regions. Pandhare et al. (2024) found that microfinance and entrepreneurial engagement among SHG members have positive effects on social, economic and psychological empowerment. Survase (2024) further showed that access to banking services and business correspondents improves social well-being among SHG households.

At the same time, recent studies caution that empowerment remains incomplete where women receive loans but do not control their use. The present study therefore includes loan decision-making, loan utilization, enterprise establishment, repayment status and perceived livelihood improvement as key indicators. Studies on sustainability and inclusion show that SHG performance depends on trust, managerial functioning, proper fund utilization, easy access to finance, training and institutional support (Ghosh et al., 2023; Silweru, 2025). Digital and financial literacy have also become important in the post-COVID and fintech era because women increasingly interact with bank accounts, mobile payments, digital records and formal credit channels (Mishra et al., 2024).

Odisha-specific literature and policy documents support the relevance of this study. The Government of Odisha's Mission Shakti framework emphasizes financial inclusion, institution building, livelihood promotion and market linkage for Women Self-Help Groups. Tripathi and the Indian Institute of Public Administration (2023) found that Mission Shakti-led SHGs in KBK districts have influenced savings, income, living standards, leadership and social participation among rural and tribal women. However, the literature also indicates that skill-development participation, asset creation, market access and control over credit remain important gaps. These gaps are directly relevant to the Rayagada district context examined in the present study.

Table 1: Summary of Literature Review

Author/Source	Method/Context	Major finding/s	Relevance to present study	Nature of source
Kabeer (1999)	Conceptual paper	Resources, agency and achievements are the core dimensions of empowerment.	Used to define empowerment beyond income and savings.	Conceptual foundation
Mayoux (2001)	Gender and microfinance analysis	Microfinance produces empowerment only when credit is linked with gender-aware institutional support.	Supports inclusion of decision-making and social autonomy indicators.	Classic theoretical anchor
Kumar et al. (2021)	Panel study of SHG membership in India	SHG membership positively affects aggregate women empowerment and reduces gender empowerment gaps.	Supports the present focus on collective action and credit decision-making.	Recent peer-reviewed evidence
Al-Kubati and Selvaratnam (2023)	Study of SHG-Bank Linkage Programme	The SHG-BLP can support sustainable development when credit is accompanied by institutional strengthening.	Useful for interpreting SHG-bank linkage in Rayagada.	Recent development perspective

Maity (2023)	SHG-led microfinance in Assam	SHG-led microfinance can advance both financial inclusion and social inclusion in backward regions.	Relevant to tribal and backward-region context of Rayagada.	Regional Indian evidence
Ghosh, Ray and Nair (2023)	PCA-based study on SHG sustainability	Managerial functioning, trust, fund utilization and easy financing affect SHG sustainability.	Explains why regular meetings, savings and repayment matter.	Sustainability factors
Pandhare, Bellampalli and Yadava (2024)	Mixed-method study on SHGs and entrepreneurship	Microfinance and entrepreneurial engagement have positive effects on social, economic and psychological empowerment.	Directly supports the entrepreneurship dimension in this study.	Latest empirical SHG study
Survase (2024)	SEM study of 424 SHGs in Maharashtra	Banking access, business correspondents and facilitators improve social well-being among SHG households.	Supports the need for bank linkage and financial literacy.	Financial inclusion evidence
Mishra et al. (2024)	Digital financial literacy and women's decision-making	Digital financial literacy and financial access improve financial decision-making among women.	Supports updated suggestion on digital and financial literacy training.	Digital inclusion angle
Sinha (2024)	SHGs and resilience	SHGs can strengthen livelihood and community resilience when embedded in local support systems.	Relevant to vulnerable rural households and tribal livelihoods.	Resilience perspective
Silweru (2025)	Micro-level study of Dalit women and SHGs	SHGs combine savings, internal lending and social issue engagement among marginalized women.	Strengthens the discussion on caste and social inclusion.	Inclusion lens
Justin (2025)	Bibliometric review of women SHGs	SHGs contribute to micro-savings, micro-loans, income-generating activities, confidence and rights assertion.	Confirms the continued relevance of SHGs for SDGs.	Recent review
Government of Odisha, Mission Shakti (n.d.)	Policy programme source	Mission Shakti links women SHGs with financial institutions and promotes credit, livelihood and market linkage.	Provides state-specific background for Odisha.	Official state source

RBI (2025)	Regulatory FAQ on microfinance loans	Collateral-free loans to low-income households are classified as microfinance loans; borrower protection and repayment-burden rules are emphasized.	Updates the regulatory context of microfinance.	Official regulator source
Ministry of Rural Development (2025, 2026)	DAY-NRLM/PIB updates	Large-scale SHG mobilisation and formal credit disbursement show the continuing policy relevance of SHGs.	Updates national context and policy importance.	Official national source
Sa-Dhan (2025) and MFIN (2025)	Sector reports	SHG and JLG models remain important channels of microfinance delivery in India.	Supports the comparison between SHG and JLG models.	Latest sector data

Objectives of the Study

1. To study the socio-economic conditions of SHG and JLG members in Rayagada district of Odisha.
2. To study the functioning of SHG and microfinance models in Rayagada district.
3. To explore the various sources of finance available to SHG and JLG members in Rayagada district.
4. To analyze women empowerment through microfinance in Rayagada district.
5. To compare the impact of SHG and JLG-based microfinance on women's entrepreneurship, credit autonomy and economic improvement.

Research Questions

1. What are the socio-economic conditions of SHG and JLG members in Rayagada district?
2. How are SHGs and JLGs functioning in Rayagada district?
3. What are the major sources of finance available to SHG and JLG members?
4. How is women empowerment taking place through microfinance in Rayagada district?
5. What is the comparative impact of microfinance on SHG and JLG members in Rayagada district?

Research Method

This study adopts a descriptive and qualitative-cum-quantitative case-study design. The study area, Rayagada district of Odisha, was selected purposively because SHG and JLG-based microfinance activities are functioning in the district and the area represents a socially important rural and tribal context. The study uses multi-stage non-probability sampling methods, particularly purposive and snowball sampling, for selecting SHG and JLG respondents. The field survey was conducted from 15 July 2019 to 15 July 2020 and was updated where required. One SHG federation and one microfinance institution were selected for in-depth data collection. Saheli Samiti-supported SHGs and Ujjivan Microfinance-supported JLGs were selected for interviews in the study area. A total of 12 SHG clusters and 10 JLG centres were covered. From these, 100 respondents were selected from the SHG model and 100 respondents from the JLG model.

Primary data were collected through structured interview schedules and focus-group discussions. Secondary information was obtained from NABARD, banks, NGOs, MFIs and group-level records. The analysis uses percentages, frequencies, ratios, variations and simple arithmetic mean. For decision-making and empowerment indicators, the study uses before-after interpretation and SHG-JLG comparison. The methodology is suitable for understanding the lived experience of women members and the functioning of microfinance institutions in the selected district.

Table 2: Methodological Snapshot of the Study

Component	Description
Study area	Rayagada district, Odisha, India.
Research design	Descriptive case-study design using both qualitative and quantitative information.
Sampling method	Multi-stage non-probability sampling, including purposive and snowball sampling.
Respondents	100 SHG members and 100 JLG members from selected clusters/ centres.
Data sources	Primary survey, interview schedules, focus-group discussions, and secondary information from NABARD, NGOs, banks, MFIs and group records.
Period of field survey	15 July 2019 to 15 July 2020, with subsequent updates where applicable.
Method of analysis	Percentages, frequencies, ratios, arithmetic mean, before-after comparison and SHG-JLG comparison.

Results and Discussion

Socio-Economic Conditions of SHG and JLG Members

The socio-economic profile of respondents shows that most women associated with SHGs and JLGs fall in the productive age groups of 20-50 years, with the highest concentration between 30 and 40 years. The majority are married. Education levels are low among both groups, though JLG respondents show slightly better educational exposure. SHG membership is dominated by Scheduled Caste and Scheduled Tribe women, reflecting the role of SHGs in reaching socially and economically weaker groups. The occupational profile of SHG members is more traditional, including agriculture, animal husbandry and related work, whereas JLG members show greater participation in small enterprises and market-oriented livelihood activities.

Functioning of SHG and JLG Models

The analysis indicates that government subsidy, savings, group support and access to small loans are major reasons for women to join SHGs. In contrast, JLG members are more strongly driven by enterprise development and access to higher loan amounts. SHGs provide a platform for internal lending, meetings, savings and collective support; however, some members join mainly to avail subsidy benefits. This tendency may weaken long-term group participation unless credit is supported by training, counselling, market access and enterprise guidance. JLGs show stronger orientation toward productive credit, although they require careful monitoring to prevent over-indebtedness.

Sources of Finance

The results show that SHG inter-loaning and bank linkage are the major sources of finance for SHG members. JLG members depend mainly on MFIs and cooperative societies. SHG members prefer SHGs because of proximity, low interest, easy procedure, lack of collateral and flexible repayment. JLG members prefer MFIs mainly because of easy procedure, low formal requirements and access to larger credit amounts. These patterns support the continued relevance of both the SHG-Bank Linkage model and the JLG/MFI model in rural finance.

Table 3: Favourite Source of Loan for SHG/JLG Members

Favourite source of loan	SHG respondents	SHG (%)	JLG respondents	JLG (%)
SHG	61	61.0	9	9.0
Bank	38	38.0	1	1.0
Cooperative Society	-	-	20	20.0
MFI	1	1.0	70	70.0
Total	100	100.0	100	100.0

Table 4: Reasons for Favourite Source of Loan

Reason	SHG respondents	JLG respondents
Close location	16	1
Low interest rate	42	32
Easy procedure	26	24
No formal requirement	2	38
Sufficient finance	3	4
Loan at time	-	1
No collateral	11	-
Total	100	100

Table 5: Sources of Loan by Respondents in the Last Three Years

Source of loan	SHG frequency	SHG (%)	JLG frequency	JLG (%)
SHG	98	40.5	17	10.2
SHG Federation	31	12.8	1	0.6
Bank	58	24.0	2	1.2
Cooperative society	1	0.4	35	21.0
MFI	11	4.5	95	56.9
Money lender	19	7.9	4	2.4
Relative	24	9.9	13	7.8
Total frequency of loans	242	100.0	167	100.0

Loan Decision-Making and Credit Autonomy

Loan-related decision-making is an important indicator of women empowerment. Among SHG respondents, husbands remain the main decision-makers for a large share of loan decisions. In contrast, more than half of JLG respondents report self-decision in borrowing. This shows comparatively higher financial autonomy among JLG members. The pattern also suggests that access to credit should be accompanied by financial literacy, confidence building and household-level gender sensitisation so that women are not only loan recipients but also active decision-makers.

Table 6: Decision-Maker for Loans

Decision-maker	SHG respondents	JLG respondents
Self	29	54
Husband	42	19
Jointly	18	26
Other	11	1
Total	100	100

Loan Size, Interest and Utilisation

The loan pattern shows that SHG members generally borrow smaller amounts, with the majority of loans falling below Rs. 10,000. In contrast, JLG members access larger loans, especially in the Rs. 10,001-50,000 range. The average interest rate reported for SHG loans is higher than JLG loans, partly because SHG members also borrow from informal or non-institutional sources when formal credit is insufficient. Loan utilisation further indicates that SHG loans are often controlled or used by husbands, whereas JLG loans are more frequently used by the respondents themselves. Therefore, JLG members show stronger evidence of economic agency in loan utilisation.

Table 7: Total Amount of Loan Taken in the Last Three Years

Range of loan amount (Rs.)	SHG frequency	SHG (%)	JLG frequency	JLG (%)
100-1,000	5	2.1	2	1.2
1,001-10,000	165	68.2	31	18.6
10,001-50,000	71	29.3	106	63.5
50,001-100,000	1	0.4	22	13.2
100,001-400,000	-	-	6	3.6

Table 8: Last Amount of Loan Taken

Range of loan amount (Rs.)	SHG frequency	SHG (%)	JLG frequency	JLG (%)
100-1,000	59	24.4	14	8.4
1,001-5,000	74	30.6	6	3.6
5,001-10,000	92	38.0	104	62.3
10,001-20,000	12	5.0	18	10.8
20,001-30,000	5	2.1	6	3.6
30,001-70,000	-	-	19	11.4
Total	242	100.1	167	100.1

Table 9: Interest Rate of Loan Per Annum

Interest rate (%)	SHG frequency	SHG (%)	JLG frequency	JLG (%)
0-12	21	8.7	54	32.3
13-24	200	82.6	109	65.3
25-36	4	1.7	4	2.4
37-48	17	7.0	0	0.0
Total	242	100.0	167	100.0
Average interest rate	-	21.52	-	18.87

Table 10: Utilisation of Loan

User of loan	SHG frequency	SHG (%)	JLG frequency	JLG (%)
Respondent	77	31.8	110	65.9
Husband	147	60.7	57	34.1
Other	18	7.5	-	-
Total	242	100.0	167	100.0

Repayment Behaviour

Repayment behaviour is stronger among JLG members than SHG members. A higher proportion of JLG loans has been fully paid, and outstanding amounts are comparatively lower. The dominant repayment mode for both models is fortnightly repayment, although SHG members also repay during harvesting periods due to their link with agriculture. Better repayment behaviour among JLG members may be due to higher involvement in enterprise activities, closer monitoring and regularised repayment schedules.

Table 11: Repayment Status of Loans

Repayment status	SHG frequency	SHG (%)	JLG frequency	JLG (%)
Fully paid	151	62.4	119	71.3
Being paid	91	37.6	48	28.7
Total	242	100.0	167	100.0

Table 12: Outstanding Amount of Loan

Outstanding loan range (Rs.)	SHG frequency	SHG (%)	JLG frequency	JLG (%)
1-1,000	26	28.6	1	2.1
1,001-10,000	56	61.5	37	77.1
10,001-20,000	7	7.7	5	10.4
20,001-30,000	2	2.2	1	2.1
30,001-50,000	-	-	1	2.1
50,001-70,000	-	-	3	6.2
Total	91	100.0	48	100.0

Table 13: Mode of Repayment of Loan

Mode of repayment	SHG respondents	SHG (%)	JLG respondents	JLG (%)
Weekly	-	-	2	2.0
Fortnightly	80	80.0	98	98.0
During harvesting	20	20.0	-	-
Total	100	100.0	100	100.0

Women Entrepreneurship through Microfinance

Entrepreneurial engagement is a major outcome of microfinance. Approximately half of SHG respondents and about seven out of ten JLG respondents are involved in some form of entrepreneurial activity. SHG members are engaged in animal husbandry, dairy, carpet weaving, small shops and related activities. JLG members show higher involvement in shops, tailoring, sari weaving, gemstone work, pickle making and other market-linked activities. A large share of entrepreneurs started the enterprise by themselves, especially among JLG respondents. The main reason for choosing the present enterprise is the expectation of earning higher income, followed by skill and network availability.

Table 14: Present Entrepreneurial Activities of Respondents

Business / entrepreneurial activity	SHG respondents	SHG (%)	JLG respondents	JLG (%)
Animal husbandry/dairy	10	10.0	9	9.0
Broom business	1	1.0	-	-
Leather processing	4	4.0	2	2.0
Tailoring	3	3.0	8	8.0
Vendor/hawker	4	4.0	7	7.0
Gemstone work	-	-	9	9.0
Pickle making	-	-	3	3.0
Sari weaving	-	-	9	9.0
Galicha seller	-	-	5	5.0
Carpet weaving	16	16.0	-	-
Shops: vegetable, general store, sari shop	10	10.0	18	18.0
No work	52	52.0	30	30.0
Total	100	100.0	100	100.0

Table 15: Establishment of Enterprises by Members

Response	SHG frequency	SHG (%)	JLG frequency	JLG (%)
Yes	34	70.8	68	97.1
No	14	29.2	2	2.9
Total	48	100.0	70	100.0

Table 16: Reasons for Choosing Present Business/Entrepreneurial Activity

Reason	SHG respondents	SHG (%)	JLG respondents	JLG (%)
Had nothing else to do	12	25.0	5	7.1
Expected to earn higher income	24	50.0	43	61.4
Need for supplementary income	6	12.5	3	4.3
Future prospect is better	3	6.2	1	1.4
Had necessary skill and network	3	6.2	18	25.7
Total	48	100.0	70	99.9

Table 17: Whether Respondents Were Doing Another Work Before This Business

Response	SHG frequency	SHG (%)	JLG frequency	JLG (%)
Yes	10	20.8	27	38.6
No	38	79.2	43	61.4
Total	48	100.0	70	100.0

Impact of Microfinance on Women Empowerment

The study shows that microfinance has contributed to women empowerment in several ways. First, it has improved access to finance and reduced dependence on informal moneylenders. Second, it has created a habit of savings and repayment discipline. Third, it has supported small-scale entrepreneurship and supplementary household income. Fourth, it has increased the ability of some women to participate in decisions related to credit, enterprise and household expenditure. Fifth, group participation has improved social interaction, confidence and exposure to banks and institutions.

However, the impact is not uniform. SHG members still face constraints such as low loan size, dependence on husbands, inadequate training, limited market linkage and subsidy-oriented participation. JLG members show better enterprise involvement and autonomy, but the JLG/MFI model also requires responsible lending practices to avoid debt stress. Thus, microfinance should be understood as an enabling mechanism rather than a complete solution. Its empowerment effect becomes stronger when it is combined with training, market support, digital financial literacy, social awareness and institutional monitoring.

The findings of this study are consistent with recent literature that views SHGs as platforms for both financial and social empowerments. Kumar et al. (2021), Maity (2023), Pandhare et al. (2024) and Survase (2024) emphasize that SHG participation can improve access to credit, decision-making, social inclusion and confidence. The present study confirms these findings in the Rayagada district context, especially through evidence on savings, credit access and entrepreneurial activities. At the same time, the study supports Mayoux's (2001) argument that microfinance may not empower women fully unless women retain control over credit and gain institutional support.

The comparison between SHG and JLG respondents reveals that both models have strengths. SHGs are more inclusive of socially weaker women and promote savings, internal lending and collective solidarity. JLGs provide larger credit and appear more enterprise-oriented. Therefore, policy should not treat one model as a complete replacement for the other. Instead, SHGs may be strengthened through enterprise training, market linkage and higher need-based credit, while JLG lending should be monitored to ensure borrower protection and sustainable repayment.

Suggestions

- More need-based funds should be provided to SHG and JLG members, but credit disbursement should be linked with enterprise planning, skill training and market guidance.
- Banks, MFIs and SHG federations should assess the actual livelihood requirement of women borrowers rather than meeting only credit targets.
- Financial literacy, digital financial literacy and bookkeeping training should be made compulsory for new SHG and JLG members.
- Women should be encouraged to make independent or joint decisions on loan use, repayment and business planning. Gender sensitisation of husbands and family members may improve women's control over credit.
- Market linkage should be created for SHG products through Mission Shakti outlets, fairs, local procurement, e-commerce support and cluster-based production.
- A mechanism should be established to prevent multiple membership and debt stress among borrowers who access loans from more than one group or institution.

- Subsidy support should target genuinely needy members and should be linked with productive livelihood activities to avoid misuse.
- NGOs, banks and Mission Shakti institutions should provide handholding support after loan disbursement, particularly for first-generation women entrepreneurs.

Conclusion

Microfinance, when implemented with proper institutional support, can become a powerful instrument for women empowerment and rural entrepreneurship. The study of Rayagada district shows that SHG and JLG-based microfinance has improved access to credit, savings behaviour, repayment discipline, enterprise participation and women's exposure to formal financial institutions. JLG members show higher loan autonomy, larger credit access and stronger entrepreneurial engagement, whereas SHG members benefit from group solidarity, inter-loaning and inclusive access for socially weaker women. However, empowerment remains partial where women do not control loan decisions or where credit is not supported by training and market linkage.

Therefore, the future of women empowerment through microfinance in Rayagada depends on strengthening SHGs and JLGs as livelihood institutions rather than treating them merely as credit channels. A balanced approach involving adequate finance, skill development, responsible lending, market access, digital literacy and family-level support can convert microfinance into a sustainable pathway for women's economic and social empowerment in Odisha.

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Case Study 01

Bridging Science and Climate Action*

Climate change mitigation increasingly requires not only reducing emissions but also removing carbon dioxide from the atmosphere. Nature-based carbon removal solutions such as biochar and enhanced rock weathering (ERW) have emerged as promising approaches for achieving long-term carbon sequestration while improving soil productivity. This case study examines TerraGreen Labs, a climate innovation venture founded by Suman Mehta, which focuses on implementing carbon removal technologies in India. The case explores the motivations behind the venture, the technological approaches adopted, and the challenges faced in scaling climate solutions in an emerging market context. Particular emphasis is placed on the issues of market awareness, policy limitations, and resource constraints, as well as the strategies employed by the organization to overcome these barriers. The case provides insights into sustainability entrepreneurship and the role of science-based innovation in addressing environmental challenges.

Introduction

Climate change has emerged as one of the most pressing global challenges of the twenty-first century. Rising concentrations of greenhouse gases, particularly carbon dioxide (CO), have resulted in global warming, extreme weather events, biodiversity loss, and declining agricultural productivity. According to the Intergovernmental Panel on Climate Change (IPCC), limiting global temperature rise to 1.5°C will require not only significant reductions in greenhouse gas emissions but also the large-scale removal of carbon dioxide from the atmosphere (IPCC, 2023).

Carbon Dioxide Removal (CDR) technologies have therefore gained increasing attention as an essential component of climate mitigation strategies. Among the various CDR approaches, nature-based solutions such as biochar and enhanced rock

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weathering (ERW) are considered particularly promising. These technologies not only capture and store atmospheric carbon but also enhance soil fertility, improve agricultural productivity, and contribute to sustainable land management (Beerling et al., 2020). In countries like India, where agriculture plays a critical role in livelihoods and economic development, such solutions offer a dual benefit of climate mitigation and agricultural sustainability. However, the large-scale implementation of these technologies requires innovation, entrepreneurship, and strong institutional support.

TerraGreen Labs is a climate-tech startup founded by Suman Mehta with the objective of implementing science-driven carbon removal technologies in India. The company focuses on developing and deploying biochar-based carbon sequestration and enhanced rock weathering solutions to address climate change while simultaneously improving soil health and farm productivity. Despite the significant potential of these technologies, climate startups like TerraGreen Labs face several challenges including limited market awareness, evolving carbon credit policies, financial constraints, and technological adoption barriers.

The success of such ventures depends on their ability to bridge the gap between scientific research and practical field implementation. This case study examines the entrepreneurial journey of TerraGreen Labs and explores how the company attempts to scale nature-based carbon removal solutions in India. It analyzes the company's business model, technological innovations, and the key challenges associated with implementing climate solutions in an emerging economy. The case provides valuable insights into sustainability entrepreneurship, climate technology adoption, and the evolving ecosystem of carbon markets.

Background

The idea for TerraGreen Labs emerged from the growing environmental concerns experienced by its founder, Suman Mehta. Observing rising temperatures and climate instability, Suman recognized the need for practical environmental solutions. He described this realization as: "It started as a problem-solving journey. We are feeling the heat ourselves. The global temperature rise and climate changes were a wake-up moment." Before launching the venture, Suman had actively participated in environmental initiatives such as plantation drives and sustainability programs. These experiences contributed to his interest in ecological restoration. The scientific foundation for the venture was developed with the support of Dr. Shanta, the Managing Director of TerraGreen Labs. Mr. Suman says, "The core idea came from our Managing

Director Dr. Shanta, who has the expertise in the science behind it. I joined as part of restoring nature."

While carbon removal technologies such as biochar and enhanced rock weathering offer promising solutions for mitigating climate change, their large-scale adoption remains limited, particularly in developing economies like India. Climate innovation startups face significant barriers including low stakeholder awareness, limited financial resources, regulatory uncertainty, and challenges in measuring and verifying carbon sequestration outcomes.

TerraGreen Labs, a climate-tech startup working on nature-based carbon removal solutions, aims to bridge the gap between scientific research and real-world implementation. However, the company is currently operating in a pilot stage and must determine effective strategies to scale its technologies, build market acceptance, and develop sustainable revenue models. The central problem addressed in this case is: How can TerraGreen Labs successfully scale its nature-based carbon removal technologies in India while overcoming challenges related to market awareness, policy uncertainty, financial constraints, and technological adoption among farmers and industries? Understanding these challenges is essential for evaluating the role of climate entrepreneurship in addressing environmental sustainability and enabling the transition toward a low-carbon economy.

The founders identified several limitations in existing carbon mitigation approaches. According to Suman: "The gaps were scalability, robust science, and an on-ground implementation roadmap." Many climate solutions remained confined to research environments without practical application at the field level. TerraGreen Labs was therefore created to bridge the gap between scientific innovation and real-world implementation.

The TerraGreen Labs Model

TerraGreen Labs operates as a private limited company focused on carbon removal technologies and sustainability innovation.

The company's operational model emphasizes:

- in-house research and development
- field implementation of climate technologies
- integration with agricultural systems Suman explained:

"Our strength lies in in-house R&D, on-ground implementation, and access to local culture combined with science-backed solutions."

Technology Solutions

Biochar: Biochar is produced through pyrolysis of biomass and acts as a long-term carbon storage material. Studies suggest that biochar can store carbon in soils for hundreds to thousands of years while improving soil fertility (Janssens et al., 2022). According to Suman: "Biochar works as a carbon locking material. It stores carbon for nearly 1000 years." Additional benefits include:

- Soil fertility improvement
- Natural fertilization
- Support for vermicomposting
- Sustainable construction material

Enhanced Rock Weathering (ERW): Enhanced rock weathering accelerates natural geological processes by spreading silicate minerals on agricultural land, which react with atmospheric carbon dioxide. Suman explained the process: "Enhanced rock weathering is an engineered process of locking carbon using agriculture by spreading silicate minerals on farming land." Research indicates that ERW can contribute significantly to global carbon removal while improving soil chemistry and agricultural productivity (Beerling et al., 2020).

Business Model

TerraGreen Labs currently operates as a bootstrapped venture, meaning it relies primarily on internal funding. The company is currently focused on:

- Pilot implementation of carbon removal technologies
- Development of measurement systems for carbon sequestration
- Research and development of climate solutions

Suman emphasized the organization's ongoing innovation efforts:

"We are exploring R&D, products based on carbon removal, and measurement equipment."

Key Challenges Faced by TerraGreen Labs

Based on the case study, TerraGreen Labs faces several strategic, operational, and market challenges.

Lack of Market Awareness: One of the major challenges faced by TerraGreen Labs is the limited awareness of carbon removal technologies among farmers, industries, and other stakeholders. Many potential users are unfamiliar with concepts such as carbon sequestration, the benefits of biochar, and the functioning of carbon credit markets. Due to this lack of awareness, the adoption of these technologies remains slow, which makes it difficult for the company to scale its pilot projects and expand its operations.

Policy and Regulatory Uncertainty: Another important challenge is the evolving policy and regulatory environment related to carbon markets in India. The absence of clear regulatory frameworks, standardized mechanisms for carbon credit verification, and limited enforcement of climate policies create uncertainty for climate startups. These uncertainties make it difficult for TerraGreen Labs to plan long-term strategies and establish reliable revenue streams through carbon credit mechanisms.

Financial Constraints: TerraGreen Labs currently operates as a bootstrapped startup, which means it relies primarily on internal funding. Limited financial resources restrict the company's ability to invest in large-scale pilot projects, expand its operations, and undertake extensive research and development activities. Financial constraints can therefore slow down the company's growth and its ability to implement innovative climate solutions at a wider scale.

Technology Adoption Barriers: The adoption of new climate technologies among farmers is another challenge faced by the company. Farmers may hesitate to adopt innovative solutions such as biochar or enhanced rock weathering due to limited technical knowledge, perceived risks, and concerns regarding initial costs and uncertain returns. This reluctance can delay the diffusion of sustainable agricultural practices and limit the widespread application of carbon removal technologies.

Measurement and Verification Complexity: Carbon removal initiatives require accurate measurement, monitoring, and scientific verification to ensure that carbon is effectively captured and stored. These processes are necessary for generating credible carbon credits but are technically complex and often costly. As a result, TerraGreen Labs must invest considerable effort and resources in establishing reliable monitoring and certification systems.

Scaling Implementation: Moving from small-scale pilot projects to large-scale implementation presents a significant challenge for the company. Scaling these technologies requires strong partnerships with farmers, efficient logistics for the production and distribution of biochar, and reliable infrastructure for monitoring carbon sequestration. Managing these operational requirements is essential for TerraGreen Labs to expand its impact and contribute effectively to climate change mitigation.

Strategic Opportunity for TerraGreen Labs

Despite these challenges, TerraGreen Labs operates in a rapidly growing market. Key growth drivers include:

- Global net-zero commitments
- Rising carbon credit demand
- ESG investment trends
- Sustainable agriculture needs
- Climate technology innovation

Lessons Learned

Building a climate startup requires understanding multiple dimensions including science, markets, and sustainability. Suman reflected: "The learning is limitless understanding of science, market, finance, and sustainability." He also emphasized the importance of practical environmental solutions: "Work closely with nature. Tech and SaaS are just layers. The more we solve problems on the ground, the more change we can bring."

Current Situation

TerraGreen Labs is currently in the pilot stage of implementation. The company must now determine how to scale its technologies while overcoming challenges related to awareness, policy support, and financing. The future success of the venture will depend on its ability to expand its technological capabilities and build partnerships that support climate innovation.

Questions

1. What motivated the creation of TerraGreen Labs?
2. How do biochar and enhanced rock weathering contribute to carbon removal?
3. What challenges does TerraGreen Labs face in scaling its solutions?
4. How effective are the strategies used by the company to address these challenges?
5. What additional strategies could help TerraGreen Labs expand its impact?

Teaching Note

Bridging Science and Climate Action

1. A synopsis of the case

TerraGreen Labs is a climate-tech startup founded by Suman Mehta, focused on addressing climate change through nature-based carbon removal solutions such as biochar and enhanced rock weathering (ERW). The venture emerged from increasing environmental concerns and aims to bridge the gap between scientific innovation and real-world implementation of carbon sequestration technologies in India. The case highlights how TerraGreen Labs integrates scientific research, agricultural practices, and sustainability goals to develop scalable climate solutions.

Biochar technology enables long-term carbon storage while improving soil fertility, whereas ERW enhances natural carbon capture processes through mineral application on farmland. Despite its strong scientific foundation, TerraGreen Labs operates in a challenging environment characterized by low market awareness, policy uncertainty, financial constraints, and technological adoption barriers. The company is currently in the pilot stage and must determine effective strategies for scaling its operations. The case provides insights into sustainability entrepreneurship, climate innovation, and the complexities of implementing environmental solutions in emerging economies. It encourages students to analyze how startups can create impact while navigating market, regulatory, and operational challenges.

2. The target learning group

Management Students, UG & PG, Academicians, Management executives, Industrial professionals.

3. The learning/teaching objectives and key issues

- To understand the concept of sustainability entrepreneurship
- To explore carbon removal technologies (Biochar & ERW)
- To analyze climate-tech startup business models
- To evaluate challenges in scaling environmental innovations
- To understand the role of policy, finance, and awareness in climate solution

4. The teaching strategy

i. *Case-Based Learning*

Method: Present the case and divide students into groups to analyze TerraGreen Labs's business model and challenges

Goal: Develop critical thinking on sustainability and entrepreneurship Activity: Each group presents one challenge (e.g., finance, policy, adoption)

ii. *Role-Playing*

Method: Assign roles such as: Startup founder, Farmer InvestorPolicy maker

Goal: Understand stakeholder perspectives

Activity: Simulate adoption of biochar technology

iii. *Group Discussion*

How to achieve better shelf space Method: Discuss barriers in scaling carbon removal solutions Goal: Understand real-world constraints in climate startups Activity: Identify practical solutions for each challenge

Tentative timeline: Subject to change

Time frame	Steps for Teaching strategy:
This case is intended for a 50 to 60 minutes discussion focused on identifying sustainability challenges and developing strategic solutions for scaling climate-tech innovations. The discussion emphasizes understanding carbon removal technologies such as biochar and enhanced rock weathering, along with evaluating business models, market barriers, and policy implications in an emerging economy context.An additional 20 minutes may be allocated for question-and-answer sessions to deepen understanding of climate entrepreneurship, technology adoption, and environmental sustainability strategies	
10 to 20 mins	Chalk out the outline by discussing the factors for contributing business
15 to 20 mins	Identifying the key challenges and business models and technologies
10 to 15 mins	Understanding the business problem and the process and strategy formulations
20 mins	Conclusion and key learning and Q&A

5. Questions for discussion

1. What factors motivated the establishment of TerraGreen Labs?

The establishment of TerraGreen Labs was primarily motivated by rising concerns about climate change, global temperature increase, and environmental degradation. The founder, Suman Mehta, recognized the urgent need for practical and scalable solutions to mitigate carbon emissions. His prior involvement in sustainability initiatives and ecological restoration further influenced this vision. Additionally, the gap between scientific research and real-world implementation of carbon removal technologies inspired the venture. With support from scientific expertise, TerraGreen Labs aimed to develop solutions that not only address climate challenges but also improve agricultural productivity, thereby creating a dual impact on environmental sustainability and rural development.

2. How do biochar and enhanced rock weathering contribute to carbon removal and sustainability?

Biochar and enhanced rock weathering (ERW) are nature-based carbon removal technologies that contribute significantly to sustainability. Biochar is produced through biomass pyrolysis and acts as a stable carbon storage medium, sequestering carbon in soil for hundreds to thousands of years while improving soil fertility and water retention. ERW accelerates natural geological processes by spreading silicate minerals on farmland, which chemically react with atmospheric CO and store it in stable forms. Both technologies not only reduce atmospheric carbon levels but also enhance soil health, increase agricultural productivity, and promote sustainable land management practices, making them effective climate mitigation solutions.

3. What are the major challenges faced by TerraGreen Labs in scaling its operations?

TerraGreen Labs faces several challenges in scaling its operations, particularly in the context of an emerging economy. A major issue is the lack of market awareness regarding carbon removal technologies among farmers and industries, which slows adoption. Policy and regulatory uncertainty in carbon markets creates difficulties in revenue generation and long-term planning. Financial constraints, due to the bootstrapped nature of the startup, limit expansion and large-scale implementation. Additionally, technological adoption barriers exist as farmers are often hesitant to adopt unfamiliar practices. Measurement and verification of carbon sequestration also pose technical and cost-related challenges, further complicating scalability.

4. How effective are the current strategies adopted by the company?

TerraGreen Labs's current strategies are effective at the pilot stage but require strengthening for large-scale impact. The company's focus on in-house research and development ensures strong scientific credibility, while field-based implementation helps validate technologies in real-world conditions. Their approach of integrating carbon removal with agriculture adds practical value and enhances acceptance. However, these strategies are still limited in reach due to resource constraints and low awareness levels. While the foundation is strong, the effectiveness of these strategies depends on scaling efforts, stakeholder engagement, and improved financial and policy support to expand beyond pilot projects.

5. What additional strategies can help TerraGreen Labs achieve scalability and long-term sustainability?

To achieve scalability and long-term sustainability, TerraGreen Labs should adopt a multi-dimensional strategy. Building strategic partnerships with government bodies, NGOs, and agribusiness firms can enhance outreach and credibility. Accessing climate finance through venture capital, green bonds, and carbon credit markets can address financial limitations. Increasing awareness through farmer training programs and demonstration projects will improve adoption. Leveraging digital tools for monitoring and verification can reduce operational complexity. Additionally, aligning with global ESG and sustainability frameworks can attract international investors. These strategies will help TerraGreen Labs scale its operations while ensuring economic viability and environmental impact.

6. Analysis

- Method: Have students conduct a SWOT (Strengths, Weaknesses, Opportunities, Threats) analysis for TerraGreen Labs
- Goal: Develop strategic thinking and decision-making skills.

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8. Experience of using this case

This case study was administered to MBA and BBA students as part of their curriculum, offering a practical understanding of sustainability and climate-tech entrepreneurship. Students actively engaged in discussions, analyzing TerraGreen Labs' business model, technological solutions, and scaling challenges in an emerging market context. The case enabled learners to connect theoretical concepts with real-world issues such as carbon removal technologies, policy constraints, and market adoption barriers. It was observed that students could effectively relate the case to strategic decision-making, innovation, and sustainability practices. The discussion encouraged critical thinking on how startups can bridge the gap between scientific research and field implementation. Additionally, students gained insights into the importance of stakeholder awareness, financial planning, and technological adoption in scaling climate solutions. Overall, the case enhanced learners' understanding of sustainability entrepreneurship and the role of innovation in addressing environmental challenges.

Case Study 02

Niche over Scale: A Strategic ERP Transformation*

Background

On a quiet Sunday evening, Prabhat Kumar Sahoo, Managing Director of CyberPlusPoint Solutions Pvt. Ltd., found himself reflecting on a critical decision that would shape the future of his organization. After years of steady growth in the IT services industry, the company had built a strong presence by delivering customized technology solutions across multiple sectors. However, despite this growth, a deeper strategic question had begun to emerge—was continuing as a broad-based service provider enough to create long-term competitive advantage? At the same time, the company had started exploring the development of a specialized Enterprise Resource Planning (ERP) system tailored to the aluminium extrusion industry. This opportunity presented a contrasting path: instead of serving multiple industries with generalized solutions, CyberPlusPoint could focus on a single niche and build deep domain expertise.

This situation created a fundamental strategic dilemma—should the company continue pursuing a broad, service-based approach with stable but limited differentiation, or shift toward a focused, product-based strategy targeting a specific industry segment? The choice was not merely operational but strategic, involving trade-offs between scale and specialization, risk and differentiation, and short-term stability versus long-term value creation. This case examines the strategic considerations, decision-making process, and organizational transformation involved in moving from a broad-based service model to a niche-focused ERP solution.

This case was developed by Yogita Dhanesh Pati (G. H. Raisoni College of Engineering and Management, Jalgaon), Monika Soni (JK Lakshmipat University, Jaipur), Neha Kothari (St. Francis Institute of Management and Research – PGDM, Mumbai), Melba Judieth Fernandes (GITAM University, Hydrabad), Sakshi Khatri (Rohidas Patil Institute of Management Studies, Mumbai), and *Nivedita Pantawane (Nath School of Business and Technology, Sambhajinagar) during the 15th Online Case Writing Workshop organised by the Association of Indian Management Schools (AIMS) from March 23-25 2026.*

CyberPlusPoint Solutions Pvt. Ltd. helps businesses in various industries by giving them technology-based solutions. Under Prabhat Kumar Sahoo's leadership, the company improved its skills in worldwide delivery, IT consulting, and enterprise software, and it worked with clients in both the US and other countries. His involvement with firms like TCS, Satyam, and Zensar, as well as his experience in the US and Australia, helped the organization come up with a plan and figure out how to carry it out. At first, the company largely offered IT services that were tailored to each client's demands. This technique provided stability and consistent income, although it hindered expansion.

In its early years, the company primarily operated as a service-based organization, delivering customized IT solutions tailored to the specific needs of individual clients. This approach ensured steady revenue and client relationships; however, it also limited scalability. Growth remained dependent on project-based work, requiring continuous addition of resources and making it difficult to achieve economies of scale or build a distinctive market position.

Over time, the management began to recognize the limitations of this broad, service-oriented approach. While it offered stability, it lacked repeatability and long-term value creation. This realization prompted a strategic reconsideration of the firm's business model, with increasing emphasis on developing a product-based approach that could enable scalability, standardization, and sustained competitive advantage. As part of its engagements across industries, the company began working with firms in the aluminium extrusion sector. Aluminium extrusion is a manufacturing process in which heated aluminium is forced through a die to create specific cross-sectional profiles, widely used in construction, automotive, infrastructure, and consumer goods. The process involves multiple interconnected stages—heating, shaping, cooling, cutting, and finishing—requiring precise coordination across operations.

Despite the operational complexity, most firms in this industry relied on generic ERP systems that were not designed to handle the specific nuances of extrusion manufacturing. These systems lacked the ability to manage critical aspects such as production planning, die management, scrap tracking, and process integration effectively. Through its continued engagement with this sector, CyberPlusPoint developed deeper insights into industry-specific challenges. This exposure led to a key realization: addressing such complex and specialized needs required more than generic solutions—it demanded focused, domain-specific innovation. This insight laid the foundation for a strategic shift, positioning the organization toward developing a specialized ERP solution and moving from a broad service model to a more focused and differentiated approach.

Industry Context

Despite its operational complexity, the Aluminium industry has historically lagged in adopting specialized digital solutions tailored to its unique requirements. Most aluminium organizations relied either on generic ERP systems or manual tools such as spreadsheets, which were not designed to handle the specific nuances of extrusion operations. As a result, there existed a significant gap between operational needs and available technological solutions. One of the primary challenges was complex production planning, where multiple variables such as die changes, batch sizes, machine capacity, and order priorities had to be managed simultaneously. Generic ERP systems lacked the capability to optimize such dynamic and interdependent processes. Additionally, inefficient tracking of scrap and yield posed a major concern, as accurate measurement of material utilization is critical for cost control and profitability in extrusion industries.

Another key issue was the lack of integrated quality data, where quality checks were often conducted in isolation without seamless integration into the production and inventory systems. This led to fragmented decision-making and delayed corrective actions. Furthermore, the heavy dependence on manual systems, including Excel-based tracking and paper-based documentation, resulted in data inconsistencies, limited real-time visibility, and increased chances of human error. Therefore, the fundamental problem was not the absence of ERP systems, but the absence of a domain-specific ERP solution capable of addressing the unique operational, analytical, and integration needs of the aluminium extrusion industry.

Trigger for Strategic Shift

Direct engagement with industry stakeholders, including plant heads and operational managers, revealed a consistent gap between available technology solutions and actual operational needs. These insights acted as a catalyst for strategic transformation. The organization realized that:

Generic ERP solutions lacked depth: Conventional ERP systems were not designed to handle the complexities of aluminium extrusion processes such as billet tracking, die management, scrap control, and yield optimization. These generic systems provided broad functionalities but failed to deliver the process-level insights required by plant operators, leading to inefficiencies and limited decision support.

Industry-specific problems required specialized approaches: The aluminium extrusion industry involves highly technical and process-driven operations. CyberPlusPoint recognized that addressing challenges like production planning, real-time quality monitoring, and process traceability required a domain-specific solution. This led to the development of features tailored specifically to extrusion units, ensuring better alignment with operational workflows.

Untapped opportunity for differentiation: The lack of specialized ERP solutions in this niche industry presented a significant opportunity. The company has leveraged this gap to position itself as a focused and differentiated product, offering deeper functionality and higher value compared to generic alternatives. This marked the beginning of a strategic shift toward product innovation.

Strategic Dilemma

At a pivotal stage in its evolution, CyberPlusPoint faced a fundamental strategic dilemma—whether to pursue a Generic ERP model or develop a Niche ERP solution tailored to the aluminium extrusion industry. This decision was critical as it would determine the organization's market positioning, growth trajectory, and long-term competitive advantage.

Competitive Advantage: Generic Vs Niche ERP

Option	Description	Risk	Potential
Generic ERP	A standardized solution designed to serve multiple industries with common needs	Low risk due to broad applicability and established demand	Moderate potential due to high competition and limited differentiation
Niche ERP	A specialized ERP focused on aluminium extrusion industry requirements	High risk due to limited market size and need for deep domain expertise	High potential through strong differentiation, premium value, and customer loyalty

The Generic ERP approach provided the advantage of scalability and a wider customer base. Since such systems cater to general business processes, the risk associated with market acceptance was relatively low. However, this path also meant entering a crowded and highly competitive ERP market, where differentiation is difficult and value addition is often limited.

In contrast, the Niche ERP approach required the organization to focus deeply on industry-specific challenges such as production planning, scrap tracking, and quality integration. While this involved higher risk—due to dependence on a single industry and the need for specialized knowledge—it also opened avenues for creating a unique, high-value product. The dilemma essentially revolved around choosing between scale through generalization and depth through specialization. Opting for a niche strategy meant embracing innovation and differentiation over volume. This strategic crossroad ultimately became the foundation for designing ERP for a specialized, aluminium industry-focused solution.

Strategic Decision

After evaluating internal capabilities and market opportunities, the organization adopted a focused differentiation strategy. It decided to develop *ExtrusionERP* a niche solution tailored to the aluminium extrusion industry. This decision represented:

A shift from service to product-based business: Earlier, the company primarily operated as a technology consulting and software development firm offering customized services across industries. However, with the development of ExtrusionERP the organization transitioned toward a product-based model**.** This shift enabled the company to create a standardized yet scalable ERP solution rather than delivering one-off client projects. As a result, it moved from project-based revenues to building a reusable, marketable software product

Emphasis on domain expertise over market breadth: ExtrusionERP was specifically designed for aluminium, plastic, and related extrusion industries, addressing their unique operational challenges such as production control, quality management, and inventory integration. This indicates a strategic focus on deep industry knowledge rather than serving multiple sectors superficially. The solution's tailored features demonstrate how domain expertise became a core competitive advantage.

Commitment to long-term value creation: By investing in a specialized ERP product, the organization aimed to deliver continuous value through process optimization, real-time insights, and operational efficiency. ExtrusionERP integrates multiple business functions and provides real-time data for better decision-making, ensuring sustained benefits for clients.

The strategy aligned with the belief that specialization creates sustainable competitive advantage.

Adoption of a focused differentiation strategy

The organization adopted a focused differentiation strategy by deliberately targeting a specific niche market rather than pursuing a broad and generalized customer base. This strategic approach enabled the firm to concentrate its resources, capabilities, and expertise on addressing the unique needs of a particular industry segment. By leveraging deep specialization, the organization was able to develop tailored solutions that offered higher value compared to generic alternatives. This not only strengthened its competitive advantage but also enhanced its market positioning as a domain expert, allowing it to stand out in a competitive landscape and build long-term customer relationships.

Development and Execution Process

The development of ExtrusionERP followed a structured, insight-driven, and agile methodology, ensuring that the final product was closely aligned with real industry requirements rather than theoretical assumptions. The development and execution process was conducted in steps as:

Industry Immersion: A critical first step in the development process was deep industry immersion, which enabled the organization to gain first-hand understanding of the aluminium extrusion ecosystem.

- **Factory visits:** The development team conducted multiple on-site visits to extrusion plants to observe actual production environments. This helped them understand shop-floor realities such as workflow bottlenecks, machine dependencies, and operational challenges that are often overlooked in generic software design.
- **Process mapping:** Detailed mapping of end-to-end processes—from raw material handling to finished goods dispatch—was carried out. This allowed the team to identify critical control points, inefficiencies, and data gaps, forming the foundation for system design and module integration.
- **Stakeholder discussions:** Interactions with plant heads, production managers, quality controllers, and operators provided valuable insights into user expectations, pain points, and decision-making requirements. These discussions ensured that the ERP system was designed with a user-centric approach, addressing practical needs rather than just managerial perspectives. This immersive and exploratory phase ensured that

ExtrusionERP was built on real-world insights, enabling higher relevance, usability, and effectiveness, and laying a strong foundation for agile development and continuous improvement.

Technology Stack: The development of ExtrusionERP was supported by a robust and scalable technology stack, carefully selected to ensure performance, flexibility, and rapid deployment.

- The application was developed using a robust and widely adopted web-based technology framework that enabled the creation of a secure, high-performance, and scalable ERP system. The architecture supported modular design, allowing different components of the system to be easily developed, maintained, and upgraded in line with evolving industry requirements. For data management, a reliable and efficient relational database system was utilized as the backend, ensuring effective handling of large volumes of transactional and operational data. The database provided strong capabilities in maintaining data integrity, security, and real-time processing, thereby supporting accurate reporting, analytics, and informed decision-making within the organization.
- **CodeZenX (Low-Code Platform):** A key differentiator in the technology stack was CodeZenX, a low-code development platform. It significantly accelerated the development process by reducing manual coding efforts and enabling faster customization. This allowed the team to quickly adapt to changing client requirements, implement new features, and ensure rapid deployment without compromising quality

Execution Outcome: The execution phase of ExtrusionERP demonstrated efficiency, agility, and strong alignment with industry needs.

- **Functional Prototype within 6 Months:** The development team successfully delivered a working prototype in a relatively short span of six months. This rapid progress highlights the effectiveness of the chosen technology stack and the clarity gained through prior industry immersion. The prototype included core modules aligned with extrusion operations, enabling early validation of the product concept.

- **Rapid Iteration Based on Feedback:** Following the prototype launch, continuous feedback was collected from industry users, including plant managers and operators. This input was actively incorporated into the system through iterative improvements. The agile approach ensured that the product evolved in line with real user requirements, enhancing usability, functionality, and overall system relevance.

- **Strong Alignment with Industry Needs:** The ERP system demonstrated strong alignment with industry needs by effectively bridging the gap between technological design and real-world operational requirements. This alignment ensured that the system was not only technically sound but also practically applicable within the manufacturing environment. By focusing on actual user challenges and workflow complexities, the development approach emphasized usability and relevance. Furthermore, the adoption of an agile and user-driven development methodology reinforced the system's effectiveness, enabling continuous refinement based on feedback and ensuring that the solution remained responsive to evolving industry demands.

This approach ensured alignment between technological capabilities and real-world operational requirements.

Key Challenges Faced

While the development of *ExtrusionERP* reflected a strong strategic shift toward focused differentiation, its execution presented multiple challenges. Under the leadership of Prabhat Sahoo, the firm had to navigate tensions between customization and scalability, manage resistance during implementation, and address financial constraints associated with product development. These challenges highlighted that strategic success depended not only on choosing the right direction but also on effective execution and organizational alignment.

Customization vs Standardization: A key challenge in developing ExtrusionERP was balancing client-specific customization with product standardization. Clients demanded tailored solutions to suit their unique processes, which supported short-term revenue and satisfaction. However, excessive customization hindered scalability, making the system difficult to maintain, upgrade, and deploy across multiple clients.This created a strategic conflict between:

- Short-term gains from customization, and
- Long-term scalability through standardization

To address this, the company adopted a standardization-focused approach, identifying common industry requirements and integrating them into a core product. The system was then tested and refined across multiple clients to ensure broad applicability.)

Implementation Challenges: The implementation of *ExtrusionERP* faced several practical challenges at the ground level, particularly within factory environments:

- **Resistance to Change:** Employees and operators were accustomed to traditional methods and manual systems, leading to hesitation in adopting new digital processes. This slowed down system acceptance and required continuous training and change management efforts.
- **Lack of Process Documentation:** Many extrusion units operated without well-defined or documented processes. This made it difficult to standardize workflows within the ERP system and required additional effort in understanding and structuring operations.
- **Data Inconsistency:** Existing data was often incomplete, unstructured, or inaccurate, affecting system integration and reporting accuracy. Significant data cleaning and validation were needed before implementation.

These implementation challenges highlighted an important reality: *"Building software is easy, implementing it is difficult."* This reinforced the need for strong execution, user training, and process alignment to ensure successful ERP adoption.

Financial Constraints: The development and deployment of *ExtrusionERP* were also impacted by significant financial challenges:

- **Long Sales Cycles:** Enterprise software decisions in manufacturing firms involved multiple stakeholders and lengthy approval processes, leading to delayed deal closures and slower revenue realization.
- **Delayed Payments:** Even after successful implementation, payment cycles were often extended, affecting cash flow and creating financial pressure on ongoing operations.
- **Continuous Investment in Product Development:** As a product-based solution, ExtrusionERP required sustained investment in upgrades, feature enhancements, and maintenance to remain competitive and relevant.
- **Training Cost:** Niche ERP systems often have non-standard user interfaces and unique workflows. Employee training takes longer time thereby increasing the cost.

Organizational Transformation

The evolution of **ExtrusionERP** required a significant internal shift in mindset and culture:

- **Shift from Service to Product Mindset:** The organization moved away from delivering client-specific, project-based services to building a standardized, scalable product. This required focusing on reusable solutions, product roadmaps, and long-term value rather than immediate client demands.
- **Need for Ownership and Long-Term Thinking:** Teams had to adopt greater accountability for product quality, performance, and continuous improvement. Unlike service projects with defined timelines, a product demands ongoing commitment, strategic vision, and sustained innovation.

Outcome and Current Status

The implementation of the Extrusion ERP system has yielded significant positive outcomes, reflecting both operational success and strategic growth. The current status of the system highlights its effectiveness, scalability, and adaptability in dynamic manufacturing environments.

Multi-Client Implementation: The ERP system has been successfully deployed across multiple client organizations within the extrusion and manufacturing sectors. Each implementation addressed unique operational challenges, including production scheduling, raw material tracking, quality control, and order management. The ability of the ERP to adapt to varying client requirements demonstrates its flexibility and robust design. Over time, the implementation approach became more structured and efficient, reducing deployment time and ensuring smoother transitions from legacy systems. This multi-client success has established the ERP as a reliable and industry-relevant solution.

Cross-Industry Expansion: Within a short span, the adoption of the ERP extended beyond extrusion-specific firms to other related industries such as plastics, packaging, and light manufacturing. This expansion was driven by the system's modular architecture and its capability to be customized for different production processes.

The rapid cross-industry acceptance indicates strong market validation and highlights the ERP's potential as a scalable enterprise solution. It also reflects increasing awareness among organizations regarding the importance of digital transformation and integrated business systems.

Continuous Improvement: The ERP system continues to evolve through continuous improvements based on client feedback and technological advancements. Enhancements have been made in system usability, reporting features, and data analytics capabilities. Additionally, the ERP has demonstrated strong scalability, supporting growing business needs such as multi-location operations, higher transaction volumes, and integration with advanced technologies. Regular updates ensure that the system remains aligned with industry trends and organizational requirements.This ongoing development approach ensures long-term sustainability and positions the ERP as a future-ready solution capable of supporting business growth and innovation.

The current status of the Extrusion ERP reflects a successful transition from a customized implementation to a scalable and widely adopted enterprise system. Its proven track record across multiple clients, rapid industry expansion, and commitment to continuous improvement underscore its strategic value in modern manufacturing environments.

Future Strategic Direction

As manufacturing industries move toward digital transformation and Industry 4.0, the future strategic direction of the Extrusion ERP system is centered on enhancing intelligence, automation, and connectivity. The focus is on leveraging advanced technologies to create a more proactive, data-driven, and smart manufacturing ecosystem.

- **AI integration:** The integration of Artificial Intelligence (AI) into the ERP system represents a critical step toward enhancing intelligent decision-making capabilities within manufacturing environments. By embedding AI technologies, traditional ERP functionalities can be transformed into smart, adaptive systems that learn from data and continuously improve over time. AI enables more accurate demand forecasting by analyzing historical sales patterns and market trends, while intelligent production scheduling helps optimize machine utilization and minimize downtime.

  In addition, AI-driven quality control systems facilitate real-time detection of defects and inconsistencies, ensuring higher product standards. The use of chatbots and virtual assistants further enhances user interaction by simplifying system navigation and providing instant support. Overall, the incorporation of AI shifts the ERP system from a reactive operational tool to a proactive and predictive platform, enabling organizations to anticipate challenges, improve efficiency, and make data-driven strategic decisions.

- **Predictive analytics:** Predictive analytics will play a vital role in enhancing operational efficiency and strategic planning by enabling the ERP system to leverage large volumes of historical and real-time data to generate actionable insights. Through predictive maintenance, organizations can anticipate machine failures before they occur, thereby minimizing unplanned downtime and reducing maintenance costs. Inventory optimization becomes more effective as the system forecasts material requirements, helping avoid both overstocking and stockouts.

  Additionally, customer behavior analysis allows firms to understand purchasing patterns, leading to improved service quality and higher retention rates. Predictive analytics also strengthens risk management by identifying potential disruptions in supply chains or production processes in advance. Overall, the integration of predictive analytics transforms the ERP into a forward-looking system, empowering organizations to make informed decisions, reduce uncertainties, and enhance overall performance.

- **Smart factory solutions:** The development of smart factory solutions represents a key strategic priority in the evolution of the Extrusion ERP system, focusing on creating a fully connected and intelligent manufacturing environment. This involves integrating the ERP with IoT devices, sensors, and advanced automation technologies to enable seamless data flow and real-time decision-making. Through real-time data integration, machines and equipment can be continuously monitored, providing instant visibility into production processes. Automation and control systems help streamline workflows, reducing manual intervention and improving operational accuracy.

  The use of digital twins—virtual replicas of physical processes—allows organizations to simulate, analyze, and optimize production before actual implementation. Additionally, energy and resource management capabilities support sustainable operations by tracking and optimizing energy consumption. Overall, smart factory integration enhances transparency, agility, and efficiency, enabling organizations to respond swiftly to changing market demands and achieve higher levels of productivity.

Conclusion

The journey of ExtrusionERP highlights how a deliberate strategic focus on a niche market can lead to sustainable competitive advantage. Under the leadership of Mr. Sahoo, the firm moved beyond a broad service-based model and embraced a focused, product-driven approach built on domain expertise and differentiation. This transition not only strengthened its market positioning but also enabled the creation of a unique value proposition in an underserved industry segment. The case underscores a critical strategic insight: in an increasingly competitive and dynamic business environment, firms do not always succeed by expanding their scope, but by deepening their capabilities within a chosen domain. By prioritizing specialization over generalization, the organization was able to build both depth and scalability over time. Ultimately, the case demonstrates that focus can be a pathway to growth, and that strategic differentiation, when effectively executed, can allow firms not only to compete better but also to redefine the competitive landscape.

Questions

1. What were the key factors that led CyberPlusPoint Solutions to shift from a service-based model to a product-based ERP strategy?
2. Critically evaluate the strategic dilemma between developing a generic ERP and a niche ERP.
3. Analyse the major implementation challenges faced during ERP deployment.
4. Why was technology alone insufficient to ensure the successful implementation of ExtrusionERP? Explain with reference to organizational and operational factors.
5. How did the company's focus on a niche market create new opportunities for growth beyond the initial industry segment?

Teaching Note

Niche over Scale: A Strategic ERP Transformation

Synopsis

This case can be analyzed using Porter's Generic Strategies and Blue Ocean Strategy, which together explain the firm's strategic choice and its outcomes. Porter's framework suggests that firms achieve competitive advantage through cost leadership, differentiation, or focus. In this case, the dilemma between a generic ERP and a niche ERP reflects a choice between a broad market approach and a focused differentiation strategy. By choosing to develop *ExtrusionERP* Sahoo adopted a focused differentiation strategy, emphasizing domain expertise and industry-specific value creation over broad market coverage.

The case also reflects elements of Blue Ocean Strategy, which focuses on creating new market space rather than competing in existing markets. By targeting the underserved aluminium extrusion industry, the firm avoided intense competition and created a unique value proposition through specialized solutions. Together, these frameworks highlight that competitive advantage can be achieved not only by competing effectively but also by choosing where to compete and how to differentiate, demonstrating the strategic value of specialization and innovation.

Target Learning Group

As the Case focuses on strategic decision-making, niche positioning, and building competitive advantage through domain expertise. This case is suitable for:

- MBA and PGDM Students (Strategy, Operations, IT, Entrepreneurship) to understand strategic transformation and product innovation.
- Executive MBA and Working Professionals involved in ERP, digital transformation, and decision-making.
- Entrepreneurship Learners and Start-up Founders to learn the shift from service to product-based models.
- Engineering and IT Management Students to explore domain-driven software development and agile execution.

Learning/Teaching Objectives and Key Issues

- *Learning Objectives*

  After discussing this case, students should be able to:

  1. Analyze strategic decision-making between broad and focused strategies using Porter's framework
  2. Evaluate how niche positioning can create competitive advantage and new market opportunities (Blue Ocean)
  3. Assess the transition from a service-based to a product-based business model
  4. Examine the role of execution challenges (implementation, customization, and change management) in strategy success

- *Key Issues*

  1. Strategic choice between broad market (generic ERP) and focused differentiation (niche ERP)
  2. Creating competitive advantage through specialization and identifying new market space
  3. Managing implementation and scalability challenges (customization vs. standardization, resistance to change)

Teaching Strategy

An interactive and discussion-based approach ensuring active participation, conceptual clarity, and practical application of strategic management concepts will be adopted for the teaching.

Time (Minutes)	Activity	Description	Objective	Notes / Materials
Pre-class	Case Preparation	Students read the case and note key issues (dilemma, challenges, strategy)	Build foundational understanding and readiness	Case document and guiding questions can be given in advance
0–5	Introduction	Instructor introduces company, industry context, and session objectives	Set context and align expectations	PPT slides, brief overview

5–15	Problem Identification	Interactive discussion on key problems and industry gaps	Develop analytical thinking and problem identification skills	Whiteboard, student inputs
15–25	Strategic Dilemma Analysis	Discussion on Generic vs Niche ERP (risk vs return perspective)	Understand strategic trade-offs and decision-making	Table/chart comparison
25–35	Development Process	Explain industry immersion, agile approach, and technology stack	Link theory with real-world execution	PPT, process flow diagram
35–45	Challenges Discussion	Analyze customization vs standardization, implementation, financial issues	Enhance critical thinking and problem-solving	Case excerpts, discussion prompts
45–55	Strategic Outcome & Insights	Summarize transformation, differentiation strategy, competitive advantage	Reinforce key learning and strategic insights	Instructor summary, student reflections
55–60	Wrap-up & Q&A	Address queries and conclude session	Clarify concepts and ensure understanding	Open discussion
Post-class	Evaluation	Assignment/quiz on key learnings and strategic decisions	Assess application and comprehension	Short assignment or MCQ quiz

Question for discussion

1. **What strategic options were available to the organization at the time of decision-making?**

   The organization had two primary options:

   1. Continue with a generic ERP model, offering standardized solutions across multiple industries
   2. Develop a niche ERP solution, focusing on the aluminium extrusion industry

   These options reflected a choice between a broad market approach and a focused strategy.

		Competitive Advantage	
		Lower Cost	Differentiation
Competitive Scope	Broad Target	1. Cost Leadership	2. Differentiation
	Narrow Target	3a. Cost Focus	3b. Differentiation Focus

2. What is the core problem faced by the organization?

The core problem was the misalignment between existing generic ERP solutions and the specific operational needs of the aluminium extrusion industry**.** Most available systems lacked depth in handling process-specific requirements such as production planning, scrap management, and quality integration. Additionally, the organization faced a strategic dilemma—whether to continue offering generic IT services or shift toward building a specialized product. This created uncertainty regarding market focus, scalability, and long-term growth.

3. What triggered the shift from services to product innovation?

The shift was triggered by direct industry insights gained through factory visits, stakeholder discussions, and process mapping. These interactions revealed clear gaps in existing solutions and highlighted unmet needs. The realization that generic systems were insufficient and that there was a significant opportunity for a differentiated, industry-specific product motivated the organization to transition from a service-based model to a product-driven approach.

4. Compare the advantages and disadvantages of generic vs. niche ERP solutions.

Aspect	**Generic ERP**	**Niche ERP (ExtrusionERP)**
Advantages	Broad market, scalability, lower risk	High differentiation, better fit, strong value
Disadvantages	Limited customization, high competition	Limited market size, higher development risk
Focus	Standard processes across industries	Industry-specific solutions
Outcome	Moderate growth	High growth potential with strong positioning

5. Evaluate the strategic decision taken by the company.

The decision to develop a niche ERP solution reflects a focused differentiation strategy. It allowed the company to leverage domain expertise, address unmet industry needs, and create a unique value proposition. Although it involved higher risk, the decision was strategically sound as it enabled strong market positioning, customer loyalty, and long-term scalability. It also aligned with the shift toward a product-based business model.

6. How can the company sustain competitive advantage?

The Company can sustain its advantage by:

- Continuously enhancing domain expertise and product innovation
- Investing in R&D and technology upgrades
- Maintaining strong customer relationships and feedback loops
- Ensuring scalability with controlled customization
- Expanding into adjacent industries (e.g., plastics, metals)
- Building brand reputation as a specialized ERP provider

7. In what ways did focusing on the aluminium extrusion industry help create a differentiated value proposition?

Answer: Focusing on a specific industry allowed the development of tailored features such as production planning, scrap tracking, and quality integration. This improved operational efficiency and relevance, enabling the organization to offer a unique and high-value solution compared to generic ERP systems.

8. How did the chosen strategy help the organization reduce competition in the ERP market?

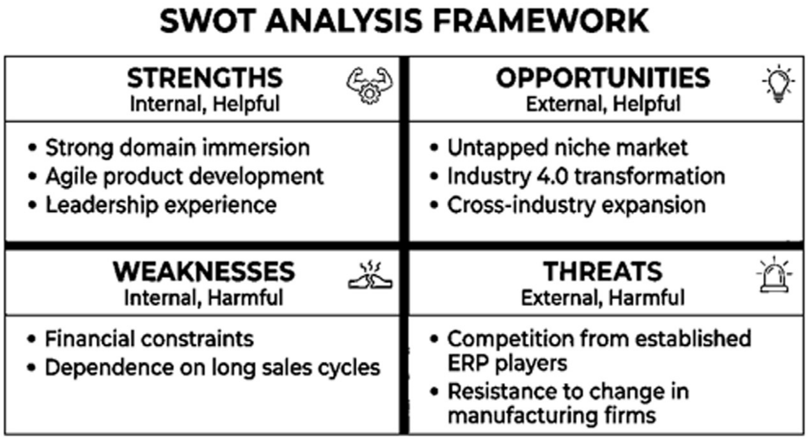
By targeting an underserved niche, the organization avoided direct competition with established ERP providers operating in a crowded market. Instead of competing on standard features, it created unique value through specialization, thereby reducing competitive intensity.

Analysis of Data

Strategic Analysis

- The company adopted a Focused Differentiation Strategy (Michel Porter Model)

- Moved from low-margin services ! scalable product model



Background Reading

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Experience of Using the Case

The case was administered to MBA students, where it generated strong engagement around strategic decision-making and competitive positioning. Students actively discussed the trade-off between generic and niche strategies, linking the case to concepts of differentiation and market focus. The case also prompted reflection on implementation challenges and the role of execution in strategy success. Overall, it facilitated meaningful discussion and helped students connect theoretical frameworks with practical business decisions.

Case Study 03

The Talent Acquisition Challenges at iSpyCyber*

Introduction

The need for cyber-security is rising rapidly with companies operating on cloud platforms and using artificial intelligence (AI) applications. The need for cyber-security is rising both at domestic and international level. The global cyber-security market is valued at $300 billion in 2026 and poised to grow to $700 billion by 2030 (Source: Gartner). Cyber-security has become a top priority not just for individual businesses, but all organizations around the world that are affected by the global shift toward digital commerce. Due to this ongoing threat of cyber-crimes and data breaches, there is growing demand for highly-qualified cyber security solutions that can provide adequate protection against these threats.

iSpyCyber is a leading cyber-security business based in Bhubaneswar, Odisha, India. It is considered one of the best application security testing businesses in India with a strong presence in the USA, UK and UAE. iSpyCyber provides businesses with technical solutions to combat rapidly evolving digital threats. The business focuses on Penetration Testing as a Service (PTaaS) enabling proactive and adaptable security solutions for their clients. By promoting its tagline "small changes for big cyber-security wins", iSpyCyber has positioned itself as an industry leader in cyber-security.

iSpyCyber started its operations in 2022 as a cyber-security awareness and education community. The company grew at a rapid pace and by 2023 had developed partnerships which led to formal incorporation of iSpyCyber Pvt. Ltd. In 2024, the company launched full-service Vulnerability Assessment and Penetration Testing

This case was developed by Saroj B. Patil (G H Raisoni College of Engineering and Management, Jalgaon), Jayanta Chakraborti (Kirloskar Institute of Management, Pune), Chitralekha Kumar (L.N. Welingkar Institute of Management Development and Research), Pravin Narang (Lala Lajpatrai Institute of Management),R. Mary Metilda (Sri Ramakrishna Engineering College), and Kunal L. Gaikwad (Nath School of Business and Technology) during the 15th Online Case Writing Workshop organised by the Association of Indian Management Schools (AIMS).

(VAPT) consulting services along with a client portal for client on-boarding and project management. In 2025, iSpyCyber received recognition from India's Startup India (DPIIT) program and expanded into artificial intelligence-based security services and developed advanced cloud protections.

iSpyCyber is committed to leveraging the knowledge gained in the community to provide enterprise quality security solutions. The company's mission is to ensure that the clients' networks, systems and data are protected from unauthorized access, disclosure or disruption through risk assessments, penetration testing, incident response, threat intelligence and on-going security management. Furthermore, they provide their clients with information about best practices to protect themselves or stay ahead of emerging threats. The core values of the

company are integrity, innovation, customer focus, excellence, agility, collaboration, accountability and community involvement, including support for non-profit organisations. Its flagship platform, iSpyCyber, enables organizations from diverse sectors such as banking, healthcare, retail, and IT services to strengthen their cyber-security frameworks and ensure regulatory compliance.

Details of the company

Name	iSpyCyber
Founder	Mr Rupesh Meher
Year of Incorporation	2022
Headquarters	Bhubaneshwar, Odisha, India
Geographical Area of Business	North America, Europe, Middle East
Business Domain	Application Security, Cloud & Infra Security Testing, Review Based Security Assessment, Adversary Simulation, Risk & Compliance Services, Reinforcement Cyber Security, Crowdsourced Security
Website	https://ispycyber.com

Business Strategy of iSpyCyber

Full-Spectrum Service Model

iSpyCyber created an extensive array of service lines that include Vulnerability Assessment and Penetration Testing (VAPT), Adversarial Simulations, Cloud and Infrastructure Security Tests, Review-based Security Assessments, Risk and

Compliance Services and Crowdsourced Security Services to lessen the dependency of clients on multiple vendors, to ensure greater depth of relationship per account, and to facilitate cross-selling among service lines. The Penetration Testing as a Service (PTaaS) model of delivering services provides the organisation with a base for generating a recurrent revenue stream, as opposed to one-off engagements, a key component of developing long-term financial viability.

Technology-Led Differentiation

In addition to iSpyCyber's proprietary platform, a key part of its strategy is delivering a value proposition that gives clients a 360-degree view of information security through dashboard reporting; the ability to provide clients updated views of their vulnerabilities in real time; and the ability to visually provide clients context for their data. Most of iSpyCyber's competitors offer their deliverables as static PDF reports, but the iSpyCyber platform allows clients to physically experience the deliverable — making them stickier — as well as providing an alternative to competitors. In addition, iSpyCyber gives the commitment of zero outsourcing and 100 percent in-house delivery that establishes a level of quality and data sovereignty unique to its industry — a requirement for all clients in regulated industries.

Industry Vertical Focus

iSpyCyber has categorized its service offerings into ten different industry areas, such as Banking, Financial Services and Insurance (BFSI), Healthcare, Government, Manufacturing, Oil and Gas and IT Services. By having this sector-specific focus, the company can match up its compliance related services (e.g. RBI/IRDA Auditing) to the regulatory obligations of each target sector, thereby making it a stronger and more relevant cybersecurity partner compared with generalist firms.

Geographic Expansion

iSpyCyber operates from its headquarters in Bhubaneshwar, Odisha, India but serves clients in North America, Europe and Middle East. Due to its commitment towards reliable, ethical and NDA-compliant service delivery, the company has created a strong positive reputation and has been getting repeated business from international clients.

Institutional Credibility Building

iSpyCyber has performed over 120 assessments, discovered more than 5,100 vulnerabilities, and gained more than 20 reputable customers in addition to winning a "2025 Excellence in Cybersecurity Innovation for Hospitality" award. The affiliations done with NASSCOM, DSCI, and STPI has further increased the credibility and reputation of the company. The company has a strong team of talented and certified professionals led by the founder Mr Rupesh Kumar Meher and the Vice President Hamza Aljawfi. The company is ISO 27001 certified and is a key member of Startup India. The rich blend of ethical hacking roots and enterprise scalability has positioned iSpyCyber as an agile Indian contender delivering resilient protection amid evolving threats in the Global level.

Navigating the Challenges

The main challenge for iSpyCyber is talent acquisition. Currently, there is a shortage of 50% trained and certified cyber-security professionals (Source: Gartner). iSpyCyber also faces an intense competition from multinational companies and large sized competitors who have easy access to talented manpower, all of whom pay significantly higher salaries and provide much greater benefits than iSpyCyber does.

In addition, iSpyCyber's commitment to zero outsourcing is an important quality differentiator from the competition. However, because of this commitment, the company is also under additional pressure to recruit qualified, certified employees, which affects how quickly they can develop and deliver their solutions. The company's workforce composition reflects the challenge on its business due to the lack of properly qualified/certified workers in the country. Currently, they have a small team of 32 individuals. While they have a mixture of experienced employees, mid-level career professionals, and junior employees, it is difficult for the company to maintain a proper balance of experience, skill, project requirements, etc.

The challenge faced by iSpyCyber reflects a global dilemma that affects all organizations regardless of geography, the cyber-security talent shortage, and reflects the need for effective practices regarding human resources' management including talent acquisition, talent development, motivation, and employee retention are necessary for companies to build a competitive advantage. This case study examins iSpyCyber's human resources challenges in the context of human resource theories such as skill gap theory and talent management theory. This case study also provides insight into how companies can strategically align their human resource practices to mitigate talent shortages and develop a sustainable pipeline of talent in the cyber security industry.

Theoretical Framework

Talent Management is an approach to identifying and attracting skilled employees; hiring them, and keeping them – who are aligned with the goals of the organization. Talent Acquisition is more of a long-term strategic approach than traditional recruitment. When an organization is recruiting, it is often required to fill a job immediately, whereas Talent Acquisition is a long-term strategy that includes planning for human capital and recruiting candidates for specialized roles, rather than just filling seats immediately. Talent Acquisition is generally part of an organization's HR department; however, it may function as a separate department that collaborates with HR. The theoretical frameworks of Skill Gap Theory and Talent Management Theory have been employed to analyses talent acquisition issues and resolve them.

Skill Gap Theory (McGuinness & Ortiz, 2016)

Skill gap theory addresses the mismatch between the skills employers require for a role and the actual skills possessed by their employees or the available workforce, often caused by rapid technological change, evolving industry standards, and inadequate training. It serves as a major driver for training investment, performance management, and workforce strategy, as gaps result in lower productivity and hiring challenges. At iSpyCyber, this gap is acute: industry demand calls for professionals holding advanced certifications such as CISSP, CEH, and OSCP. The non-availability of skilled personnel has a substantial impact on project delivery in terms of quality, efficiency, and timelines, with downstream impacts on client satisfaction.

Talent Management Theory (Lewis & Heckman, 2006)

Talent management theory focuses on strategically attracting, developing, retaining, and managing high-performing employees to gain a sustained competitive advantage. It aligns human resource practices with business goals to maximize employee value, often focusing on identifying high-potential (HiPo) individuals, though inclusive approaches also exist. iSpyCyber's current approach—reactive, demand-driven recruitment with minimal workforce planning—stands in contrast to the proactive, pipeline-based model that talent management advocates. A robust talent management system would include competency mapping, succession planning, and structured learning and development pathways.

Conclusion

Cyber Security is a high potential business that is growing exponentially with increasing need due to the adoption of Cloud Computing and artificial intelligence

(AI) applications. This business is characterized by niche companies that have expertise in thwarting the cyber threats and hacking vulnerabilities. iSpyCyber has created a good reputation in this business in a short span of time by providing secure, ethical and dedicated services to clients who are seeking cyber-security solutions. The company is presently run with a small team of 32 members. But now they are facing an increasing need for skilled and certified cyber security professional as they seek to scale up and expand their global footprints. This case study examines the talent acquisition challenges faced by iSpyCyber through the lens of Skill Gap Theory and Talent Management Theory to examine how the company can streamline the talent acquisition process.

Questions

1. Applying Skill Gap Theory, analyze the root causes of the talent shortage at iSpyCyber.

2. Explain with the help of Talent Management Theory, how iSpyCyber can mitigate the talent acquisition challenges?

3. What specific hygiene factors and motivators should the company institutionalize to reduce attrition risk?

4. What specific elements — such as competency mapping, succession planning, or certification pipelines — would you prioritize, and why?

5. How can iSpyCyber create an employer brand that attracts top cybersecurity professionals despite compensation constraints?

Teaching Note

The Talent Acquisition Challenges at iSpyCyber

Synopsis of the Case

This case study examines the talent acquisition challenges faced by iSpyCyber through the lens of Skill Gap Theory and Talent Management Theory to examine how the company can streamline the talent acquisition process. iSpyCyber is a leading cyber-security business that provides cyber-security solutions like Penetration Testing as a Service (PTaaS) and Vulnerability Assessment and Penetration Testing (VAPT), enabling proactive and adaptable security solutions for their clients. By promoting its tagline "small changes for big cyber-security wins", iSpyCyber has positioned itself as an industry leader in cyber-security. The company is now providing cyber security solutions to companies in North America, Europe and Middle East. The company is now facing an increasing need for skilled and certified cyber security professional as they seek to scale up and expand their global footprints.

The Target Learning Group

The target learning groups are:

- Post graduating MA and MBA/PGDM Students
- Company Executives who are undergoing Executive Leadership Program
- Final-year undergraduate students in management programs with exposure to HR

Learning/ Teaching Objectives and Key Issues

The following are the teaching objectives of this case:

- Understand HR and compliance challenges in high-growth tech firms.
- Develop recommendations for sustainable recruitment, retention and client management.
- Evaluate the limitations of reactive hiring strategies and contrast them with proactive talent acquisition models.
- Analyze the nature and causes of skill gaps in a specialized, high-growth industry using established theoretical frameworks.

- Assess the role of employer branding, institutional credibility, and culture in attracting talent when compensation parity with larger competitors is not feasible.
- Formulate a scalable workforce strategy aligned with a company's international expansion goals

Teaching Strategy

Phase I: The individual members will be provided with the case well in advance. The learners will prepare the analysis of the case for the first 05 minutes.

Phase II: All learners will be divided into small groups of 4 to 5 members. Each member will share his / her analysis between the group members and the group will arrive at some consensus.

Group	Focus Area
Group 1	Diagnosing the skill gap using Skill Gap Theory
Group 2	Designing a motivation and retention strategy
Group 3	Building a proactive talent acquisition framework using Talent Management Theory
Group 4	Developing an employer branding and pipeline strategy for global expansion

Phase III: One of the members i.e., the group leader will present the opinion of the group with the class. Other members can pose questions to the group leader who can be supported by the group members in providing the answers. The activity will be carried out for 20 minutes.

Phase IV: In this final phase, the facilitator will act as a bridge and relate the case situation with the theoretical model. This activity may be carried out for the next 20 minutes

Questions for Discussion

1. **How can iSpyCyber shift from a reactive hiring model to a proactive workforce planning approach? What specific tools or methods should be used?**

   Points for discussion:

   - Students should highlight the transition from reactive to proactive planning, forecast future talent needs based on project pipeline and expansion plans

- Align hiring with business strategy.
- Use Workforce Demand Forecasting (trend analysis, scenario planning), Competency Mapping (identify required vs. existing skills), Talent Pipeline Development (campus hiring, partnerships with institutes), Succession Planning for critical roles.

2. **Should iSpyCyber focus more on hiring experienced professionals ("buy") or developing internal talent ("build")? Justify your answer.**

Points for discussion:

- A balanced "Build and Buy" strategy should be implemented in order to fill immediate project needs by hiring experienced professionals and developing internal talent for sustainability, cost reduction, and employee retention.
- This method addresses short term operational efficiencies and long-term strategic growth.
- A balanced approach is expected.
- Focus on increasing productivity and gaining expertise in global certifications

3. **How can iSpyCyber strengthen its employer brand to attract top cybersecurity talent despite offering lower salaries than MNCs?**

Points for discussion:

- Strengthen employer brand by positioning as a high-growth, learning-oriented, and purpose-driven organisation.
- Attracting top talent in the area of cyber security by investing in certification programs, providing opportunities for rapid career advancement, creating an innovative and flexible work culture, and using social media (e.g., LinkedIn) to build its employer brand.
- Emphasize on non-monetary compensation and meaningful work that enhances its attractiveness as well as competitiveness in the marketplace
- Giving opportunities to work on global projects; promoting an innovative culture using the latest technology; and attracting talent who are motivated by their desire for learning and growth instead of just salary.

4. How can iSpyCyber leverage technology and AI in improving its talent acquisition and development processes?

Points for discussion:

- Attracting and developing talent will all be made faster, smarter, more predictive through an integrated learning environment using Artificial Intelligence and digital technology.
- The use of technology and AI can integrate AI-based recruitment tools, predictive analytic tools, and digital learning platforms into talent management.
- AI can also be used to screen resumes automatically and to improve candidate experience through chatbots as well as to provide evidence-based decisions in hiring.
- AI-based learning systems can provide customized training and continuous development of skills
- Integrating technology will improve the efficiency of the talent acquisition process, lower the risk involved in making hiring decisions, enhance employee development and deliver a competitive advantage that is sustainable.

5. What are the strategic risks iSpyCyber faces if it fails to address its talent shortage effectively?

Points for discussion:

- Risk of having an impact on iSpyCyber's long-term growth rate as well as the ability to remain competitive in the cybersecurity marketplace.
- Experience major strategic risks related to delays in timelines for client projects; the potential for lost business; employee fatigue/burnout; increased costs associated with hiring; and ultimately providing lower quality services.
- Possibility of reputational damage, weakened employer branding (especially on platforms like LinkedIn), and reduced competitiveness in the cybersecurity market
- The inability to secure and develop talent can hinder innovation, limit growth, and threaten the long-term sustainability of the organization.

Analysis of Data

The following SWOT analysis can be used for the analysis of data:

Strengths	**Weaknesses**
It offers specialized services like VAPT, Cloud etc.	It is an early-stage startup
The structure of the organization is Agile and flexible	Facing competitive market for brand recognition
Innovation focused and early mover advantage	Limited skilled local talent
Opportunities	**Threats**
Greater demand in the cybersecurity space	Global competition from large IT and cybersecurity firms
Collaboration with state and central government projects in IT and cyber security space	Requires constant upskilling and new firm entrance
Global expansion into space of AI, IoT and cloud	High risk in case of security breaches

Background Reading

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Experience of using the case

The case study was administered to PGDM students at Kirloskar Institute of Management Pune. Number of Participants were 120 (2 Divisions)

Sl No	Parameter	Remark
1	Comprehension	The students were able to understand the content of the Case Study
2	Learning and Teaching Objectives	The students were able to assimilate the information and analyse the Case Study
3	Process and approach	The case was conducted as group activity leading to analysis and inferences
4	Participants' experience	The students were able to relate to the practical problems faced by companies in talent acquisition and offer solutions by applying theoretical models like Skill Gap Theory and Talent Management Theory

List of Abbreviations

Abbreviation	Full Form
APAC	Asia Pacific
BFSI	Banking, Financial Services and Insurance
CEH	Certified Ethical Hacker
CISSP	Certified Information Systems Security Professional
DPIIT	Department for Promotion of Industry and Internal Trade
DSCI	Data Security Council of India
OSCP	Offensive Security Certified Professional
NASSCOM	National Association of Software and Services Companies
PTaaS	Penetration Testing as a Service
STPI	Software Technology Parks of India
VAPT	Vulnerability Assessment and Penetration Testing

Case Study 04

Crossing the Chasm*

Introduction

Cloud Excel Solutions is a startup based out of NOIDA (National Capital Region - Delhi) was founded in 2016 by five professionals hailing from diverse but complementing backgrounds in terms of their educational pedigree, skill sets and work experience . Rohan was deeply involved in enterprise systems and cloud architecture, while Vanshika's role was from the standpoint of product management and cloud-native applications. Vishal was the one handling finance and strategic planning, while Aman was the one dealing with sales, partnerships, and stakeholder management. With her specialization in human resources and administration, Sunita was given the task of developing the organization's people processes. The company had purposely situated its head office in Noida, as the location provided access to a large pool of technical talent, lower rental costs as compared to central Delhi, and a very short distance to clients and partner organizations, among other things. The initial idea was essentially to identify the market need. A large proportion of mid-sized Indian companies, especially from the new sectors, were showing interest in the adoption of cloud technologies but on the other hand, they did not have the internal capabilities necessary for managing such changes.

In order to brand the company as the one that could be a trusted partner not only to finish cloud migration projects but also to give continuous managed services, Cloud Excel Solutions did such a great job in the relevant market niche that it had really got a pretty good reputation. Initially, the company kept itself active, agile and focused. It was the company's primary work to support businesses in the transfer of their cloud presence from one environment to the other via the use of platforms like AWS and Azure. Cloud Excel Solutions also gave special attention to Kubernetes deployments,

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** This case was developed by Garima Sharma (Prin. L.N. Welingkar Institute of Management Development & Research - PGDM, Mumbai), Khushboo Vora (Chetana's Institute of Management and Research, Mumbai), Mridula Manoj Deshpande (G H Raisoni College of Engineering & Business Management, Jalgaon), Shubhangi Padhye (ITM Business School, Kharghar, Navi Mumbai), Baquia Iatchoumy (M.O.P Vaishnav College for Women, Chennai) and L Tej Wundavalli (National Cancer Institute) during 15th Online Case Writing Workshop organized by the Association of Indian Management Schools (AIMS) from March 23-25, 2026.*

application refactoring, monthly managed services, and application modernization. In an effort to achieve higher transparency and win customers' trust simultaneously, the company created a customers' portal where customers are granted real-time access to their usage and billing. Highly efficient working method and fast reaction to the customers are among the major attributes of the company. Actually, those are the traits that convinced the company first customers to collaborate with the company.

Early Growth and Market Validation (2016–2019)

During Phase 1 (2016-2019), the company mainly focused its efforts on edtech companies and SFIs, as these sectors needed scalable infrastructure and were more open to trying new technologies. The company's starting point was client acquisition through full migration projects from which clients would be gradually converted into long-term managed services contracts or subscription-based engagements. Concurrently, Cloud_Excel Solutions was establishing stronger ties with the AWS and Azure partner teams and getting faster early sales with the help of co-selling opportunities and technical referrals. The company reached its break-even point very quickly with this strategy. By 2017-end, it had managed to form a small but steady group of 12 recurring clients that together covered its running costs. Particularly early adopters who highly regarded technical expertise over formal systems were increasingly whispering about the company's outstanding hands-on engineering skills, rapid response times, and effective solutions.

In fact, these early accomplishments only served to highlight the existence of many operational and financial issues. Revenue appeared erratic and uncertain owing to the long time taken to deliver project-based engagements. The entrepreneurs really went through a lot of hard times when it came to their decisions - for example, taking on the risk of accepting low-margin fixed-price deals to gain trust or insisting on time-and-materials contracts to secure profits. The recruiting of highly skilled cloud engineers/professionals with salary expectations far exceeding a startup's capacity had become yet another major problem. As a result, the company took the decision to hire and train new graduates rather than having to face senior specialists at high costs. Besides, all the five founding members had done several tasks which did not leave them with sufficient time for focusing on the company's strategic growth.

Scaling the Model: Productization and Market Expansion (2020–2022)

When the company was continuously growing, it was quite clear that intensifying the use of standardization was the only way to continue growth sustainably. Hence, in Phase 2 (2020-2022), Cloud Excel Solutions completely redirected its focus from merely doing project work to productization as well as enhancing the repeatability of GTM activities. The team had also structured their service offerings, for instance, they prepared migration checklists, created automated Terraform modules and developed a managed Kubernetes baseline. Meanwhile, the team introduced different levels of managed service plans such as Silver, Gold, and Platinum that provide a service portfolio framework and scalability. To further extend their market reach, the company made the decision to bring a Head of Sales onboard who will establish channel partnerships and an Enterprise Sales Lead who will deal with current customers.

Right now, the team upgraded their customer site - sliding in tools such as usage tracking and clearer bill views, cutting down delays and slips for employees. Those moves actually worked. Yearly repeat income shot up fast; nearly six out of every ten dollars now comes from steady streams instead of single jobs. They built a practical guide for deliveries, complete with clear performance goals and promises to back them. Teaming up with an internet provider helped land two medium financial firms plus one big name, marking real progress into tightly controlled industries.

However, expansion had brought a multitude of new issues. The company had really become quite a problematical situation of whether to go for standardization or customization. Regular clients, even though they sought stable prices and standard SLAs, pioneers, on the other hand, still went for tailored solutions and were willing to pay for the same. So, scalability and flexibility were at loggerheads Besides, large clients wanting more detailed SLAs, quality on a permanent basis and definite delivery times. The informal ways that had worked so far did not work. The founders had thought about introducing the most rigorous quality assurance procedures, excellent documentations and a centralized Platform/Enablement team to enforce standard practices. But they were reluctant... ... increasing costs in the short term. Capacity planning was also an issue as on the one hand, hiring more led to an increased burn, but on the other hand, hiring less meant loss of opportunities.

Strategic and Operational Trade-offs (2022-2025)

By Phase 3 (2022-2025) Cloud_Excel Solutions had expanded to a team of nearly 60 employees and entered regulated sectors such as mid-sized banks and logistics. It was no longer a small, experimental startup. It was stepping into a space of risk averse, compliance driven clients. On the surface, things looked promising. The company earned certifications (SOC2 and ISO 27001), strengthened its market presence, accelerated its growth, attracted large clients. But internally things were getting more complicated.

As Vishal examined the company's financials more closely, he began to see more complex pictures emerging. Growth was no longer just an opportunity; it had become costly and inherently risky proposition. The company had reached a classic **"crossing the chasm"** stage (Exhibit1). It meant company now had to move from early adopters to mainstream customers. These customers demand not just innovation but predictability, reliability, consistent delivery, strong systems, standardization and governance. Successfully crossing the chasm required more than technical expertise. It demanded financial discipline, scalable processes and organizational maturity. The company was still evolving in these areas. Company's growth was not constrained by opportunity, but by the firm's ability to sustain it financially and operationally.

Financial Pressures: Growth versus Financial Discipline

Financial pressures were the most immediate concern. Scaling the business required investments across multiple fronts. Company had to spend money on marketing to build visibility, a dedicated sales team to manage long and complex enterprise sales cycles, on customer support functions to formalize process and on infrastructure to continuously upgrade technology. Individually, each of these investments was justified and necessary. However, collectively they significantly increased monthly costs and accelerated cash burns. The reserves that once felt adequate now appeared increasingly constrained.

Winning clients and acquiring customers was no longer simple it was resource intensive. Deals took time due to multiple meetings, product demonstrations, pilot engagements and extended negotiations. Thus, customer acquisition cost had increased substantially and were to be made upfront. Salaries, marketing expenses and infrastructure costs required immediate payment. Whereas the revenues were realized gradually over the project duration. This timing gap created a clear mismatch between cash outflow and inflows and persistent liquidity pressure.

Vishal began to recognize that even a growing company could face a liquidity crisis if growth was not financially disciplined. Revenue predictability was another layer of complexity. While some clients contributed steady subscription-based income, others generated irregular or project-based revenues. This inconsistency made sales forecasting difficult and reduced confidence in long-term planning. Without predictable sales, committing to large investments became increasingly risky. Cash flow management, therefore, emerged as a critical constraint.

Pricing didn't help either. To remain competitive, the company often agreed to lower prices and closed the deals. In one case, a long-term contract with a logistics client was secured at rates below internal benchmarks. While the deal strengthened market presence, heavy customization made it difficult to sustain healthy margins. This led to a growing realization, the firm was delivering substantial value but was not always able to capture it effectively. It became clear that company was creating value but was not always capturing the same value. Margins were tightening, costs were rising and even thought the revenues were growing the quality of that growth was questionable. The relationship between customer acquisition cost (CAC) and customer lifetime value (CLV) became critical, again raising concerns about the quality of scale. Growth was visible in topline numbers, but its quality remained uncertain.

Funding appeared to be a potential solution, but it introduced its own set of challenges. Investors would closely scrutinize and evaluate margins, cost structures, revenue stability and overall financial discipline. Weak unit economics or inconsistent performance could result in unfavourable terms or difficulty in raising capital altogether.

Financial Literacy and Governance as a Strategic Constraint

Alongside financial pressures, financial literacy and governance readiness at the leadership level became a concern. While the co-founder agreement provided clarity on ownership, roles, ESOPS and exit mechanism; scaling and growth introduced more complex decisions and interpretations. Issues such as equity dilution, ESOP valuation and funding structures required deeper financial clarity.

ESPOs introduced as a retention tool amongst employees, lost their effectiveness as an incentive mechanism. This was due to limited communication around valuation, liquidity timelines and wealth creation potential. Founders also had different views on funding and control, making decisions slower and harder. Governance, therefore, was no longer just a structural framework. It had evolved into a financial decision-making challenge that required a level of sophistication which the company was yet to develop.

4.1.3 Operational Challenges: Scalability vs Complexity

Operationally, the company struggled to build a scalable delivery model. A key tension emerged between standardization and customization. While standardization offerings were essential for scalability and efficiency, enterprise clients often demanded tailored solutions. In one case, a healthcare client required extensive customization and generated higher revenue but consumed disproportionate engineering bandwidth and delayed other deliveries. Over time, such exceptions began to disrupt the company's ability to build a repeatable and scalable model.

Sales and delivery misalignment also began to emerge. The sales team acquired new clients, but delivery teams struggled to keep pace due to shortage of experienced cloud architects. This created onboarding delays, increased reliance on a few employees and heightened burnout risks.

The company also faced execution challenges in enterprise client engagement. Enterprise clients expected strict SLAs, structured reporting and proactive communication. In one instance, a delayed escalation, despite timely technical resolution, led to dissatisfaction with the client. This highlighted the gaps in process maturity rather than capability.

Additionally, earlier-built tools were not designed for scale, leading to inefficiencies and increased manual intervention.

4.1.4 Human resource Challenges: Capability, Culture and Retention

Human resource challenges further compounded the situation. The earlier strategy of hiring and training junior engineers had worked initially but now experience mattered more due to increased complexity. The demand for experienced employees and professionals grew faster than the company's ability to hire or develop them. Senior management talent was difficult to attract and retain given market competition and internal uncertainties. Attrition among mid-level managers began to rise. Employees cited high workloads, lack of clarity in career progression and uncertainty in organizational direction as key concerns. This weakened execution as founders continued to be deeply involved in operational decisions, thereby limiting their leadership bandwidth.

While ESOPs had been introduced to attract and retain talent, their perceived value weakened due to limited transparency around valuation and liquidity. The organization also began to experience signs of cultural dilution. What once had been an agile, founder driven environment had now evolved into a layered structure. Communication had slowed, alignment had weakened and inconsistencies in execution had increased.

Strategic and Market Challenges: Positioning and Risk Exposure

As the company grew, strategic positioning became less clear. Some clients viewed it as a management services provider, while others a platform-enabled solutions firm or an emerging product-oriented company. Different clients perceived it differently. This ambiguity made it complicated to sell, price, position and meet customer expectations. On top of that, significant portion of revenue was dependent on a few enterprise clients. Losing even one major client could impact financial stability.

Leadership Alignment: The Hidden Constraint

Leadership alignment emerged as a critical concern. While the co-founder agreement had provided clarity in early years, it offered limited guidance for resolving strategic disagreements, conflict resolution, evolving responsibilities and potential exit pathway at this stage of growth. Differences in perspective particularly around growth pace, cost structures and risk appetite became more pronounced. Decision making slowed, execution lost momentum and inconsistencies began to emerge across teams. Employee confidence was impacted contributing to rising attrition. Over time, even delivery quality began to face risks.

Emerging Reality

Taken together, these challenges pointed out a clear pattern; financial pressures, operational inefficiencies, human resource constraints and strategic misalignment were not isolated issues. They were deeply interconnected and were collectively shaping the company's ability to scale and cross the chasm. Cloud_Excel solutions was no longer just a growing startup, it was an organization at the threshold of scale.

Financial Pressures, Governance and Strategic Crossroads

By this stage, Cloud_Excel Solutions stood at a decisive moment in their journey. The opportunity ahead was undeniable. The company had validated its business model, built credibility in the market and established a pathway into larger and more regulated sectors. Demand was visible and the potential to scale was real. The product was working. Customers were interested. The market ahead looked large. Growth seemed possible. The pathway to scale appeared real and achievable. But so were the risks.

For all founders, the situation had become clearer than ever before. The challenge was no longer abound addressing isolated concerns like cash flow, pricing, hiring, customer acquisition or governance. It was about choosing nature and direction of growth itself. Deciding between quality of growth and speed of growth.

Path 1: Aggressive Expansion

The company could choose to scale rapidly by investing heavily in marketing, expanding its sales force , strengthening capabilities and accelerating entry into new markets. This approach would allow Cloud Excel Solutions to capture market share and establish a strong competitive position in a fast-evolving industry. Early mover advantage in regulated and enterprise segments could create long-term strategic benefits and reinforce the company's market presence.

However, this path would significantly amplify financial risk. Higher spending would increase cash burn and deepen dependence on future revenues. Pricing challenges could persist under competitive pressure limiting margin expansion. Operational inefficiencies and capability gaps could worsen under strain of rapid growth. Human resource challenges about attrition, cultural misalignment and leadership bandwidth could intensify under the pressure of rapid expansion. Growth in this scenario would be fast but exposed to multiple risks. Higher risk, higher return.

Path 2: Controlled Consolidation

Alternatively, the company could choose to slow down and focus on strengthening its internal foundations. This would involve improving pricing discipline to better capture value, optimizing cost structures, strengthening contribution margins and stabilizing cash flows. Equal emphasis would be placed on addressing internal challenges. Greater emphasis could be placed on building predictable revenue streams and improving financial viability, leadership alignment, improving talent retention, clarifying career paths, formalizing governance mechanisms and reinforcing culture. The company could also invest in standardizing delivery processes, reducing over dependence on customization and diversifying its client base to mitigate concentration risk.

This approach would create a more stable and resilient company, better equipped to scale sustainably over the long term. However, the trade-off would be slower growth. Competitors could move faster, capture key enterprise clients and establish stronger positions in emerging segments. Growth in this scenario would be disciplined but potentially delayed. Delay may result it loss of first mover advantage and client base.

The central Dilemma

The question before the founders was no longer whether to grow. It was about how to grow without compromising financial discipline, operational stability and organizational readiness. Should they pursue aggressive expansion, accepting financial strain and organizational stress in the hope that scale would eventually resolve inefficiencies? Or should they prioritize consolidation, strengthening their financials, systems and people first even if it meant slowing down and risking competitive disadvantage? The opportunity to scale was real. So were the risks. The decision was no longer abstract. It was immediate, consequential and defining. The path they chose would shape the future of Cloud Excel Solutions.

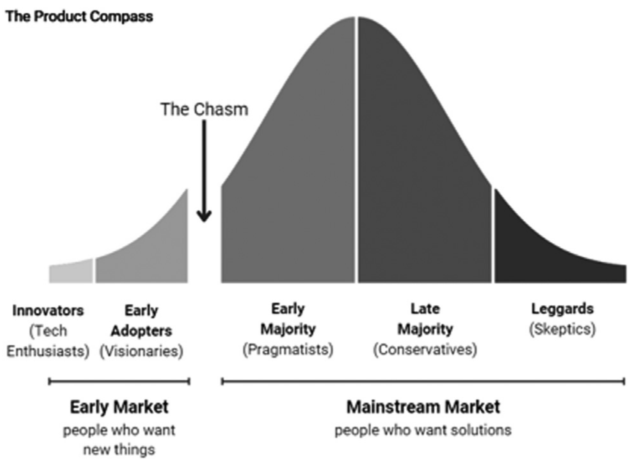

Exhibit 1: Crossing the Chasm: From Early Adopters to Mainstream Markets

Source: Moore, G. A. (2014). Crossing the chasm: Marketing and selling disruptive products to mainstream customers (3rd ed.). New York, NY: Harper Business.

Note: "The technology adoption lifecycle highlights the gap—or "chasm"—between early adopters and the early majority. While early adopters are willing to experiment with new technologies, mainstream customers require proven reliability, structured delivery, and reduced risk. Firms often struggle to transition across this gap, as it demands not only product capability but also organizational maturity and market credibility" (Moore, 1991; Rogers, 1962).

Exhibit 2: Revenue Composition (FY 2024–25)

Revenue Type	% Contribution
Recurring (Subscription / Managed Services)	58%
Project-Based (One-time / Custom Engagements)	42%

Exhibit 3: Client Concentration

Client Category	% of Total Revenue
Top 3 Clients	46%
Top 5 Clients	63%
Remaining Clients	37%

Exhibit 4: Enterprise Customer Acquisition Funnel

Stage	Avg Time	Key Activities	Key Challenges
Lead Generation	2–3 weeks	Marketing campaigns, referrals	Low conversion rate
Initial Meetings	3–4 weeks	Requirement discussions	Multiple stakeholders
Product Demo	2–3 weeks	Technical demos, solution fit	Custom expectations
Pilot Project	6–10 weeks	Proof of concept	High resource allocation
Commercial Negotiation	4–6 weeks	Pricing, contract terms	Price pressure
Deal Closure	2–3 weeks	Final approvals	Delays in decision-making
Onboarding	4–8 weeks	Integration, setup	Delivery team constraints

Exhibit 5: Standardization versus Customization Matrix

Type of Client	Revenue Potential	Customization Need	Scalability Impact
SME	Low	Low	High
Mid-market	Medium	Medium	Moderate
Enterprise	High	High	Low

Exhibit 6: Cloud_Excel Solutions - Unit Economics Overview

Metric	SME Clients	Mid-Market Clients	Enterprise Clients
Average Deal Size (per year)	6,00,000	18,00,000	48,00,000
Average Contract Duration	1.5 years	2 years	3 years
Customer Lifetime Value (CLV)	9,00,000	36,00,000	1,44,00,000
Customer Acquisition Cost (CAC)	2,50,000	8,00,000	28,00,000
CAC Payback Period	10 months	14 months	22 months
Contribution Margin (%)	35%	28%	18%
Avg Customization Cost (per client)	Low	Moderate	High
Support Intensity	Low	Medium	High

Exhibit 7: Scenario Comparison Table

Factor	Aggressive Growth	Controlled Growth
Cash burn	High	Moderate
Risk	High	Low
Market capture	High	Moderate
Organizational strain	High	Low

Teaching Note

Crossing the Chasm

1. Synopsis of the Case

A cloud services startup by the name Cloud Excel Solutions was founded in Noida in 2016- it started by initially targeting mid-sized Indian companies looking for cloud adoption. In its early stage, the company depended on project-based work, and then it slowly started converting its consumers into long-term managed service contract users. This facilitated them to bring about financial stability and trustworthiness, even though the processes remained highly dependent on the founder's involvement and customised solutions.

As the company began to grow, it gradually shifted its focus towards a more scalable model by standardising services, enhancing and developing reusable assets, as well as further strengthening its market approach. This resulted in improved efficacy and augmented recurrent revenue. Though the growth into enterprise and regulated sectors exposed deeper challenges, which included increasing acquisition costs, operational complications, margin pressures, and gaps in internal competencies, leadership alignment and governance systems were still maturing.

The firm reached its turning point in 2015, though it did not face any lack of opportunities, but it did face the challenge of sustaining growth, compelling founders to choose between speedy expansion and a more controlled, stability-focused approach.

2. Target Learning Group

The case has been designed to be versatile and can be successfully used across several learning frameworks:

Postgraduate students (MBA/PGDM): This case study can be particularly useful in courses such as Entrepreneurship, Strategic Management, Financial and Operations Management. The case offers a combined viewpoint, making it ideal for capstone deliberations.

- **Participants of executive education:** Mid- to senior-level managers who contribute to scaling businesses or leading transformation in an enterprise will find this case extremely relatable.
- **Startup founders and entrepreneurs:** The case shows the real-world scaling-up challenges that founders come across from time to time, which are beyond the initial startup phase.
- **Corporate training programs:** This case is particularly relevant for leadership development, decision-making under ambiguity, and cross-functional alignment.

The case can be very helpful for learners who already have an elementary knowledge of business concepts such as cost structures, organisational design and revenue models.

3. Learning / Teaching Objectives and Key Issues

Learning Objectives

This case intends to give its learners a multidimensional and thorough understanding of growth and scaling in any enterprise. Precisely, it helps the learners to:

1. **Imparts a complete understanding of the transition from startup to scale-up:** Learners discover how challenges grow as an enterprise moves from early traction to organised growth, predominantly when it targets the more demanding customer segments.
2. **'Assess the value of growth:** In this case, the students are encouraged to look beyond revenue growth and weigh stability through maximising profits, stable cash flow, and operational efficiency.
3. **Evaluate financial decision-making with reference to :** This case helps the learners to understand metrics such as contribution margins, customer lifetime value, customer acquisition cost and payback periods. The learners also tend to understand their implications for strategy.
4. **Recognise operational blockages in scaling up service-based businesses:** The issues, such as process standardization, capacity constraints, and delivery consistency, have been highlighted in this case.
5. **The role of people and leadership has been examined.** Issues such as to talent management, organisational structure, leadership alignment, and cultural evolution during scaling have been dealt with.
6. **Encourage strategic thinking under uncertainty:** Decisions must be made in situations where options involve trade-offs and risks.

Key Issues

The case dwells on numerous interrelated issues:

a) A conflict between quick expansion and sustainable growth

b) Growing cost of obtaining and servicing customers

c) Trouble in balancing customisation with scalability

d) Weaknesses in pricing strategy and value capture

e) Organisational processes and systems

f) The difficulty faced in enticing, developing, and retaining talent

g) Over-dependency on limited key clients

h) Founder divergence resulting in governing gaps.

All these issues are interrelated, and they reinforce each other, creating a intricate decision-making situation.

4. Teaching Strategy

The best method to teach this case is interactive format instead of lecture format.

Session Flow (90 Minutes)

Opening (10 Minutes)

Opening of the discussion should be with a thought-provoking question

- "Can a company grow too fast for its own good?"

The central dilemma can be framed by encouraging the students to share examples or experiences and insightful responses.

Case Understanding (10 Minutes)

Students should summarize:

- What the company does
- How it evolved over a period of time
- What has changed in its current phase

Make sure that all the participants are aligned on the context before meaningful analysis begins.

Group Work (25 minutes)

Segregate students in various groups. Each group will focus on one focus area:

- Financial Group: Analyze cost structures, margins and cash flow structures

- Operations Group: Identify scalability and process-related issues
- Strategy Group: Evaluate growth options and competitive positioning

Each group should prepare a set of recommendations.

Discussion (30 minutes)

A structured discussion should happen among the groups. Thus, the themes needs to move across:

- Financial sustainability
- Operational readiness
- Strategic Decision

Students should be able to justify their viewpoints with references from the case.

Decision Point (10 minutes)

Ask each group to clearly explain:

1) Which path do they recommend?
2) Why do they believe it is the better option?

Closure (5 minutes)

Summarize key insights:

- Growth must be supported by systems, processes and financial discipline
- Strategic decision making often involves trade-offs rather than perfect solutions

5. Questions for Discussion

The following questions are designed to stimulate crucial thinking:

1. **How can Cloud Excel Solutions successfully cross the chasm from early adopters to enterprise clients?**

   Cloud Excel Solutions must shift from a flexible, innovation-driven approach to a more structured, reliability-focused model. This will help the startup to successfully transit from early adopter to enterprise client. Early adopters are ready to experiment however, the enterprise clients demand proven solutions, risk mitigation and strong service assurance. The company should focus on building standardized offering, industry-specific solutions and strong case studies that demonstrate measurable outcomes. Establishing credibility through certifications, partnerships and robust service-level agreements (SLAs) is critical. Furthermore, aligning sales, delivery and support functions to handle longer and more complex enterprise buying cycles will help bridge the gap. This transition requires product maturity and organizational readiness.

2. **How do high CAC, long sales cycles and raising OPEX impact financial sustainability?**

   High customer acquisition cost (CAC) along with long sales cycles results in delays in revenue realization. This results in increased financial burden on the company. When upfront investment in sales, marketing and client onboarding are high and returns are slow, there is pressure on cash flow. Profitability is strained further due to rising operating expenses (OPEX), like talent, infrastructure and support costs. For a sustainable business model, the customer lifetime value (CLV) must exceed CAC. A mismatch between CLV and CAC may result in imbalance in revenue generation and may result in debt and the business may depend on external financing sources. Thus, improving conversion rates, shortening sales cycles, optimizing cost structure, and enhancing pricing strategies are essential for long-term financial health and sustainability.

3. **How can a strong CRM system improve customer retention and lifetime value?**

   Customer Relationship Management (CRM) systems have a significant role in managing customer interactions, tracking engagement and identifying opportunities for growth. It enables a company to analyze customer needs, monitor user patterns and proactively address issues. CRM system enhances customer satisfaction and reduces churn by improving communication and service responsiveness. CLV can be improved as CRM supports cross-selling and upselling opportunities. In a cloud services business recurring revenue is key to the predictable revenue stream. Strong CRM capabilities can significantly improve the retention rate of customers and thereby improving revenue streams.

4. How does high customization affect scalability and how can it be balanced with standardization?

Initially, customers may be attracted due to high levels of customization. This enables the company to attract more customers by addressing their specific needs. Customized solutions are resource intensive, difficult to replicate and reduce operational efficiency. This results in higher costs and inconsistent service delivery. To balance this, Cloude Excel solutions should adopt a modular approach by developing standardized core offerings with limited customization layers. This allows the company to maintain flexibility while achieving economies of scale. Standardization improves efficiency, reduces delivery time and enhances profitability, resulting in sustainable growth rate.

5. Why are leadership alignment, governance and founder exit clauses critical at this stage of growth?

Leadership alignment becomes critical as the company scales up. This helps the management in consistent decision making and execution of the same. Misalignment among founders can lead to strategic conflicts, delayed decisions and operational inefficiencies. Defined roles, structured decision-making processes and accountability frameworks results in strong governance which ensures stability and transparency. Additionally, clearly defined founder exist clauses are essential to manage potential conflicts, ownership transition or strong changes in strategic direction. These clauses protect the organization from uncertainty and ensure continuity, especially during periods of rapid growth or external investment.

6. Analysis of Data

The case data highlights key concerns in Cloud Excel Solution's growth model. Cloud Excel Solution is able to generate high long-run revenue from the enterprise clients, however, acquiring an enterprise client involves a high CAC. This results in lower margins and extended payback periods pressurizing the cash flows. Although the shift towards recurring revenue improves predictability, continued reliance on project-based income indicates incomplete revenue stability. In addition, a high dependence on a few major clients increases business risks, as the loss of one client may result in significant impact on performance. The company is experiencing growth in revenue. However, the company is facing an issue of lack of sustainability and efficiency of that growth. Without better cost control, pricing strategies and margin improvement and further expansion may result in amplifying risks instead of creating long-term value.

7. Background Reading

For better understanding, additional reading is required for the below topics:

- Concepts related to technology adoption and market transition
- Frameworks for analysing competitive strategy
- Literature on Startup scaling and growth management
- Financial metrics used in subscription based and service businesses

Faculty may also extend the discussion by exploring hypothetical future scenarios, such as successful scaling up through funding or challenges arising from overexpansion.

Suggested Readings

Moore, G. A. (2014). *Crossing the chasm: Marketing and selling disruptive products to mainstream customers (3rd ed.).* New York, NY: Harper Business

Ries, E. (2016). *The lean startup by eric ries*. *The Starta*.

Masters, B., & Thiel, P. (2014). *Zero to one: notes on start ups, or how to build the future*. Random House.

8. Experience of using the case

When used in classroom settings, this case typically generates high engagement.

Observed Patterns

- Students often initially favor rapid expansion due to its visible growth potential
- As financial and operational constraints are discussed, many consider their position
- Discussions become more nuanced and focus on balancing growth with stability

Common Learning Objectives

Participants gain a clearer understanding that:

- Revenue growth alone does not guarantee success
- Cash flow management plays a crucial role in scaling up
- Organizational readiness is as important as market opportunity

Instructor Insight

The case works particularly well when instructors:

- Encourage debate rather than seeking a single correct answer
- Push students to support arguments with data
- Highlight the interconnected nature of business decisions.

Final insight

The central takeaway from this case is:

Sustainable success is not determined by how fast a company grows, but by how well it manages the complexities that growth brings.

Case Study 05

Bridging the Professional Gap*

"Simplifying Real Estate, Amplifying Wealth" - this tag line is the mission for the four founders of AssetNX, which provides integrated real estate services including portfolio advisory, transaction execution, and asset management for high-net-worth individuals (HNIs), ultra-HNIs, and Non-Resident Indians (NRIs). Their motto is to ensure a fair deal for clients wanting to buy, sell or rent their properties by remaining involved in every step of the property transaction process. In India, on one end of the spectrum are the multinational asset management companies mostly dealing with high end corporates. On the other end of the spectrum are the small-time brokerage firms who thrive on deal making. Starting their journey in 2022, AssetNX is creating a very special place for themselves in a largely unorganized sector by building trust and becoming a full-service provider of solutions for clients who have the funds but not the time to think about every nitty gritty of real estate ownership and management. Their expertise ranges from advisory, property search, documentation, valuation and due diligence all the way up to interior, maintenance, tenancy management, government liaisoning and financial planning. In their operational journey of four years, Asset NX was faced with several challenges which led them to make strategic innovations and find solutions for successful outcomes.

Background

The Indian real estate sector remains one of the most dynamic yet unorganized industries, characterized by high growth potential alongside regulatory complexities and trust deficits. In metropolitan cities such as Hyderabad, rapid urbanization and increased investment from domestic and international clients have created opportunities for professional service providers.

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* *This case was developed by Shoma Mukherji (Delhi School of Business), Kunmun Mishra (GITAM), Kavita Pratap Patil (G H Raisoni College of Engineering and Management. Jalgaon), Subhada Jena (IMI Bhubaneswar), Rupen Pilankar (Institute for Future Education, Entrepreneurship and Leadership), and Arya Sanjay Patil (Nath School of Business and Technology) during the Online Case Writing Workshop organized by the Association of Indian Management Schools (AIMS) during March 23-25, 2026.*

Against this backdrop, a group of four entrepreneurs established a real estate wealth management firm in 2022, aiming to bridge the gap between informal brokerage systems and highly structured multinational consultancy services. The firm sought to deliver end-to-end solutions under a single platform, combining advisory, execution, and asset management services. Nishit Shah was born and brought up in Hyderabad. Starting from 2000, he transitioned through three companies till 2006 before settling in for 16 years with a global technology company.

He led a team as Head of Channel Sales, handling customers in the United Kingdom. Nishit was sure of one thing- he would never move out of India in the interest of a career. He felt he was not being able to build a network of like-minded people with whom he could spend his leisure hours and was looking for new challenges. His friend Siddharth Shah with whom he had been associated since childhood, was also looking for some new challenge. Siddharth had been in insurance and a multinational bank and had also founded Indiassetz. Veeresh Jetla and Srinivas Pasununti had also been in banking and been Siddharth's colleagues in Indiassetz and were looking for new challenges to explore and grow.

Nishit's expertise was in business development and sales across IT, insurance, online services, and education. Siddharth brought with him a deep understanding of finance and real estate which could enable clients achieve their wealth management objectives. Veeresh and Srinivas also had expertise in real estate advisory, financial planning, business development, and client servicing. All of them were driven by the desire to pursue their entrepreneurial ambitions and build a strong local business network with the following agreements:

1. The company would be headquartered in Hyderabad.
2. A bootstrap method of investment would be followed whereby personal savings and sweat equity of the entrepreneurs would be used instead of external capital.
3. Employees would necessarily be domiciled in Hyderabad as they would have genuine regional expertise and understanding of the people and the localities
4. The client base would be a mix of high networth individuals (HiNI), ultra high networth individuals (ultra HiNI), and non-resident Indians (NRI) who do not bargain over small deals and look forward to professional service.
5. Well thought out policies and processes would be the bedrock of operations.

The company operates in a highly fragmented and unorganized real estate industry, where issues such as lack of transparency, legal complexities, and information asymmetry are prevalent. Customers often face challenges in making informed investment decisions due to the absence of reliable guidance and structured processes. In such a context, AssetNX identified an opportunity to position itself as a trustworthy and professional advisory firm that not only facilitates transactions but also focuses on long-term wealth creation for its clients by offering a comprehensive suite of services, including

- Real estate portfolio management
- Property advisory and investment planning
- Buying, selling, leasing, and renting services
- Asset management and valuation
- Legal and compliance services
- Property maintenance and will management

This "one-stop solution" approach reduces client effort and enhances trust by centralizing all real estate-related activities.

The organization operates on a transaction-based revenue model, with an average deal size ranging from 4 to 5 crores. Revenue is generated through service fees associated with advisory and transaction execution. The firm follows a pre-payment model, ensuring financial discipline and minimizing risk. A significant portion of the client base consists of NRIs, accounting for around 55%, while HNI clients make up roughly 40–45%. Despite having a strong and diverse clientele, the firm currently does not offer specialized customer services for repeat clients, suggesting a potential gap in relationship management and customer retention strategies. Nevertheless, the company enjoys a strong market reputation, reflected in its 4.8 rating on Google reviews.

Operational Strategy

Initially, the company focused on hiring experienced professionals from the real estate industry. However, this approach proved ineffective as such employees brought rigid mindsets and lacked adaptability. Hence, the organisation started actively seeking out talent from Tier 2 and Tier 3 institutes of Hyderabad as they realised the value of recruiting youngsters with 'blank slate' mindset over those with elite degrees. Subsequently, the firm shifted its strategy to hiring fresh graduates, emphasizing:

- willingness to learn and unlearn

- adaptability to new business models
- long-term development potential
- entrepreneurial mindset

Of the current team of 45, barring the four founders and three others, the company has a young workforce, predominantly aged between 21 and 24 years. A good level of gender diversity is ensured (around 60:40), and people are hired based on their mindset rather than just their academic background. The Company also insists on hiring those who live within 15 Km of the office so that they do not waste time and energy in long commutes.

There are three primary departments, each playing a critical role in ensuring seamless service delivery.

1. **Business Development**

   Team members meet potential clients, answer their queries with the objective of bringing them on board as clients of AssetNX. Female members are usually part of this team as they have the soft skills required in the interaction with potential clients.

2. **Transaction Management**

   This requires a lot of physical running around, going to various authorities for obtaining clearances, legal verifications, field surveys,and property evaluations. Male employees are preferred for these jobs.

3. **Digital Marketing**

   Handling social media, preparing reels for Instagram, YouTube and LinkedIn, responding to customer queries, preparing advertisement spots. This team requires people with good data and digital operations abilities. Both male and female employees are part of this team.

   The firm adopts an entrepreneurial approach to human resource management by:

   - treating employees as "entrepreneurs" rather than subordinates
   - providing autonomy, flexibility, and creative freedom
   - encouraging innovation through task-based challenges

The organization employs a Customer Relationship Management (CRM) tool entitled 'SalesForce' to manage client interactions, operational workflows, and recruitment processes. This enhances efficiency and supports data-driven decision-making. The cost structure primarily includes employee salaries and office infrastructure. The asset-light model minimizes capital requirements while enabling scalability. Finance and Accounting operations have been outsourced.

Key Challenges

The company has a large employee pool of Gen Z individuals who are often eager to move on as fast as possible for higher-paying opportunities. Thus, attrition and employee turnover remains a major challenge. Though they have a good number of employees in the pipeline to replace the employees who exit, investment in the training and development of the newcomers is an expense and a major challenge. However, the organization has seen that there is a trend of employees returning after short periods, indicating a relatively positive work environment. Finding high-caliber employees who are good learners and can scale up fast is challenging, as a career in real estate is not considered to be prestigious in the long run. This company wanted to position itself as one of the top 10 recruiters in the colleges of Hyderabad. Fulfilling this aspiration has been a challenge.

The real estate sector is highly competitive and unorganized dominated by local brokers. Real estate transactions involve compliance risks and legal hurdles and thus expertise in this field is important. In countries like the USA, Japan, Australia, S. Korea where one has to obtain a licence after going through some rigorous training, before they are allowed to become a real estate agent. This practice does not exist in our country. RERA requires real estate firms to register but not employees. There is a lack of standardized practices and professional code of conduct. Therefore, AssetNX finds it challenging to maintain their objective of following good procedures and processes.

One of the primary challenges faced by AssetNX was establishing credibility and building trust. As a relatively new entrant, the company also had to overcome issues related to customer acquisition, brand recognition, and market positioning. Additionally, there is a need to educate their local clients about the benefits of structured real estate investment and differentiate itself from conventional transaction-based approaches. Client Acquisition depends on the strength of the personal network which brings in referrals. It becomes difficult to attract new clients as the channels for creating awareness are limited. The threat of potential competitors cannot be ignored. Though

AssetNX is of the opinion that they do not have to face competition at present, the potential of having rivals impacting their business remains a challenge.

Strategic Innovation

Management initially believed that high-value real estate transactions could not be driven through social media platforms. However, input from the young team members motivated the management to reconsider the approach taken so far. The Digital Marketing team was given a specific performance target related to;

- increasing social media followers and engagement with them
- enhancing customer enquiries
- increasing the conversion rates of the enquiries.

The management was pleasantly surprised to note that this intervention generated very encouraging results such as:

- a boost in social media following (from 1,000 to 12,000)
- increase in daily enquiries to 250–300
- and a successful high-value transaction worth 9.1 crore

This initiative transformed social media into a viable revenue channel and reshaped organizational strategy. Now they are focusing more on digital media and hiring people in this area to expand further. They are currently facing a significant challenge in managing inquiries about their properties. For instance, one property they posted on Instagram received approximately 2,000 inquiries in a single day, making it difficult to address each one manually. To streamline their processes, they are considering the implementation of cutting-edge technology, such as AI-driven chatbots. However, to successfully incorporate these solutions, they will require professionals with expertise in this area, who are currently lacking within their organization.

It would be in order to mention an interesting case which was handled successfully by the Company owing to their insistence on following processes diligently. A buyer had finalized purchases of a property worth 36 Cr. in the Jubilee Hills area. While doing due diligence the company found certain anomalies. There was a mismatch in physical measurement of the property as compared to the area specified in the sales deed. Usually property brokers would not have insisted on actual survey of the land and compare it with the available documents. It was found that the neighbour of the adjoining property had encroached and reduced the physical availability of the land parcel. A lot of hard work and sincere effort were required to convince the neighbour and resolve the matter amicably.

Managerial Insights

The case provides several key managerial insights;

- Hiring for attitude and adaptability can be more effective than hiring for experience
- Empowering employees with autonomy fosters innovation and engagement
- Digital transformation can redefine traditional industries
- Local expertise is critical in real estate markets
- Entrepreneurial leadership plays a vital role in navigating uncertainty

Questions

1. To what extent is AssetNX's success dependent on the founders' hyper-local Hyderabad network, and can their "bootstrap and local-hire" model be successfully replicated in Tier 1 markets like Bengaluru and Pune without losing operational control?

2. How can AssetNX evolve its blank slate recruitment strategy into a robust retention framework to mitigate high GenZ attrition while maintaining its entrepreneurial culture?

3. To what extent can AssetNX's integrated service model create a sustainable competitive advantage, and what challenges might arise in scaling this model?

4. As the firm eyes expansion into Bengaluru and Pune, how can it replicate its "regional expertise" model without losing the localized trust and "sweat equity" foundation that fueled its success in Hyderabad?

5. How effective is AssetNX's use of digital platforms (such as LinkedIn) in building credibility and acquiring customers in the real estate sector?

Teaching Note

Bridging the Professional Gap

Synopsis of the Case

The case titled *"Bridging the Professional Gap: A Strategic Case of AssetNX"* presents a startup real estate wealth management firm established in 2022 in Hyderabad. The company operates in a highly fragmented and unorganized real estate sector characterized by trust deficits, legal complexities, and lack of transparency. It differentiates itself by offering a one-stop solution that includes advisory, transaction execution, and asset management services for HNIs, ultra-HNIs, and NRIs. The founders adopted a bootstrap approach and focused on building a professional, trust-based service model.

The case highlights key managerial challenges such as high employee attrition, recruitment strategies focused on fresh graduates, dependence on referrals for client acquisition, market positioning, and the need to scale operations in a competitive environment. A major turning point in the case is the successful adoption of digital marketing, which significantly increased customer engagement and led to high-value transactions. It provides insights into entrepreneurship, human resource innovation, digital transformation, and strategic decision-making in a startup environment.

Target Learning Group

The target learning groups for the case suggested are undergraduate final year Management students, MBA/PGDM students, and students of technical courses. It can also be discussed among employees during induction or training programs in organizations, particularly in areas related to Strategic Management, Entrepreneurship, Marketing, and Human Resource Management.

Learning/Teaching Objectives

1. To promote critical thinking and analytical skills through the study of a startup operating in an unorganized sector.
2. To impart understanding of entrepreneurial decision-making and business model innovation.
3. To make students understand the challenges of managing a young workforce and high attrition.

4. To analyze the role of digital marketing in transforming traditional industries.
5. To explore strategies for building customer trust and long-term relationships in service industries.

Key Issues

AssetNX faces several managerial and strategic challenges, and the key issues are highlighted below:

1. High employee attrition due to a predominantly Gen Z workforce seeking rapid career progression.
2. Dependence on referrals and limited marketing channels for client acquisition.
3. Lack of structured customer retention strategies despite having high-value clients.
4. Challenges in scaling operations while maintaining service quality in a competitive and unorganized market.
5. Need to manage legal, regulatory, and compliance complexities in real estate transactions.
6. Initial resistance and later adaptation to digital marketing as a key revenue-generating tool.

Teaching Strategy (75 minutes)

Phase - I: The individual members will be provided with the case well in advance. The learners will prepare the analysis of the case for the first 10 minutes.

Phase - II: All learners will be divided into small groups of 4 to 5 members. Each member will share the analysis within the group for arriving at a consensus. This activity will be held for 20 minutes.

Phase - III: The group leader will present the opinion of the group to the class. Other members can pose questions to the group leader, who can be supported by the group members in providing the answers. This activity will be carried out for 20 minutes.

Phase - IV: In this final phase, the facilitator will act as a bridge and relate the case situation with theoretical models such as HRM practices, digital marketing strategies, and entrepreneurial frameworks. This activity may be carried out for the next 25 minutes.

Questions for Discussion

1. **How can AssetNX improve its client acquisition beyond referral-based networks? And how can diversified marketing channels help to grow?**

   AssetNX can enhance its client acquisition strategy by expanding its digital marketing efforts across multiple platforms such as social media, search engines, and real estate portals. By using targeted advertising and data analytics, the company can reach specific customer segments like HNIs and NRIs more effectively. Building a strong brand presence through consistent messaging and engaging online presence will further increase visibility and credibility. Additionally, collaborating with financial advisors, wealth managers, and institutions can open new channels for client acquisition. Developing high-quality content, such as market insights, investment guides, and thought leadership articles, can also position AssetNX as an expert in the field, thereby attracting potential clients beyond traditional referral networks.

2. **What are the key reasons behind high employee attrition at AssetNX? What strategic interventions can be implemented to manage and reduce it?**

   The high employee attrition at AssetNX can largely be attributed to the characteristics of the Gen Z workforce, which often seeks rapid career progression, higher compensation, and diverse opportunities. The lack of structured long-term engagement strategies within the organization further contributes to this issue. To manage attrition effectively, AssetNX should introduce clear career progression paths and performance-based incentives that motivate employees to stay longer. Investing in continuous training and development programs can enhance employee skills and engagement. Furthermore, implementing employee recognition systems and fostering a positive work culture can improve job satisfaction and loyalty, ultimately reducing turnover.

3. **Evaluate the hiring strategy of recruiting fresh graduates instead of experienced professionals.**

   The strategy of recruiting fresh graduates offers several advantages, including higher adaptability, lower salary expectations, and a greater willingness to learn and align with the company's culture. Freshers often bring enthusiasm and can be molded according to organizational needs, which is particularly beneficial for startups. However, this approach also has certain limitations, such as the need for extensive training and a lack of industry experience, which may affect short-term productivity. While this strategy is suitable for a startup environment that values flexibility and innovation, it must be supported by strong retention and development mechanisms. A balanced approach that combines fresh talent with experienced professionals could provide both innovation and stability to the organization.

4. **How did digital marketing transform the business model of AssetNX?**

   Digital marketing played a transformative role in redefining AssetNX's business model by significantly enhancing its market reach and customer engagement. The company witnessed a substantial increase in social media following and brand visibility, which translated into a higher volume of daily enquiries, ranging between 250 and 300 leads. More importantly, digital platforms enabled the conversion of high-value transactions, demonstrating their effectiveness as revenue-generating channels. This shift changed the initial perception of digital marketing from being merely a promotional tool to a strategic driver of business growth. Additionally, it encouraged innovation within the organization by empowering employees to experiment with new ideas and approaches.

5. **What strategic framework can AssetNX adopt to improve customer retention and relationship management while dealing with high-value clients?**

   To improve customer retention and relationship management, AssetNX should implement structured loyalty programs that reward repeat clients and encourage long-term engagement. Providing personalized advisory services tailored to individual client needs can enhance customer satisfaction and trust. Assigning dedicated relationship managers can ensure consistent communication and better service delivery. The effective use of CRM tools can help in tracking customer interactions, preferences, and feedback, enabling more targeted and efficient engagement strategies. Furthermore, maintaining post-transaction relationships through regular follow-ups, updates, and support services can strengthen client loyalty and increase the likelihood of repeat business and referrals.

Analysis of Data

This is a qualitative case study. There is no data set given for analysis.

Background Reading

1. Oberholzer-Gee, F. (2023). How small companies compete with—and beat—big ones. *Harvard Business Review*, May 24. Available at: https://hbr.org/2023/05/how-small-companies-compete-with-and-beat-big-ones

2. Harvard Business School Online. (2019). 4 startup challenges to avoid when scaling your business. Available at: https://online.hbs.edu/blog/post/scaling-startup-challenges-to-avoid
3. Kumar, V., & Gupta, S. (2020). Digital marketing strategies in real estate: A conceptual study. *International Journal of Marketing Studies*, 12(3), 45–56.
4. Mithas, S., Krishnan, M. S., & Fornell, C. (2005). Why do customer relationship management applications affect customer satisfaction? *Journal of Marketing*, 69(4), 201–209.
5. Kotler, P., & Keller, K. L. (2016). *Marketing Management* (15th ed.). Pearson Education.
6. Ries, E. (2011). The lean startup: How today's entrepreneurs use continuous innovation to create radically successful businesses. Crown Business.
7. Real Estate (Regulation and Development) Act, 2016

Experience of using the case

The AssetNX case was administered to MBA and PGDM students. Students felt that the case provided a practical and contemporary example of a startup operating in a traditional yet rapidly evolving industry. It enabled students to understand real-world challenges related to entrepreneurship, human resource management, and digital transformation. The case was found particularly useful in Strategic Management and Entrepreneurship courses, where students actively engaged in discussions on innovation, workforce management, and growth strategies. It was found to be useful for Leadership and Change Management course. Students related with the founders who also formed the senior management as they were willing to change course to get better outcomes from the GenZ employees.

Case Study 06

RUFIL - Striving for Growth*

Introduction

Rajendra and Ursula Joshi Food Industries Limited (RUFIL) came into existence in the year 2014. Dr. Rajendra Joshi, a clinical pharmaceutical scientist based at Switzerland had been actively involved in clinical research, working on developing and testing various drugs. His commitment to the cause of human wellbeing, and his passion for clinical research earned him a name in the field of medicine and healthcare. He concurrently nurtured the vision of contributing to health-related awareness and skill-development in India. Though these were two entirely different domains, it did not attenuate Dr. Joshi's intentions to pursue both at the same time. His dreams saw the day of light with the establishment of Bhartiya Skill Development University at Jaipur in the state of Rajasthan, the first University in this part of land that offered dedicated skills development programs in the field of vocational education.

For promoting public health and wellness, Dr. Rajendra Joshi and Ursula Joshi wished to venture in food industry with the objective to bring a range of high-quality food products to the markets in and around Rajasthan, their native land. They wanted to initiate with dairy and allied products in selected markets, with a steady expansion plan to grow across the country and eventually evolve as a global brand. The group as a whole owned four projects including RUJ Woodcraft Private Limited, a furniture manufacturing set-up; a fully automated micro to macro precision parts manufacturing unit, running as a joint venture with a Swiss organization; Bhartiya Skill Development University (BSDU), and Rajendra and Ursula Joshi Food Industries Limited (RUFIL).

Started in 2014, the first product under the umbrella of RUFIL came into market in September 2017, in the form of "packaged toned milk". With an existing capacity to process 50 thousand liters per day, the plant has the scope to be expanded to the capacity of processing up to 3 lakh liters per day. RUFIL is predominantly focusing on

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* *This case was developed by Shweta Jain and Archana Rathore (ICFAI Business School , The ICFAI University Jaipur) during the 14th National Case Writing and Teaching with Cases Workshop organized by Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore during May 23 – 27, 2022.*

promoting healthy food and lifestyle through innovative dairy products, with major emphasis on quality and nutrition richness.

RUFIL's product offerings include three prominent categories: fresh products including full cream, toned and double toned milk, fermented products like dahi (curd) and chaach [1](buttermilk), and value-added products with yoghurt and premium ice-creams. Particularly in yoghurt segment, RUFIL offers Swiss technology expertise in India, available at select locations in Delhi and Jaipur. The company owns two production facilities, operating under the product guidance of Swiss experts, known to be specialists in dairy business.

Operating at a multi-acre dairy processing unit at Mahindra World City, Jaipur (a multi-product Special Economic Zone), RUFIL has its separate Corporate Office housing a staff of 50 employees, in addition to the technical staff of 25 workers at the plant including operators, fitters, technicians and others. After Dr. Rajendra Joshi's demise in the year 2019, Ursula Joshi assumed the role of Group Chairman, and Abhishek Joshi continued as the Director at RUFIL. As a young and dynamic business leader, Abhishek Joshi with his core team ensured creating a robust organization structure with systematic role allocation.

The company operates under different functional heads, predominantly the Plant Head and Commercial Head. The Plant Head is entrusted with the responsibility to manage around five departments including Production, Quality Management, Engineering, Dispatch and Stores, majorly focusing on plant operations. Accordingly, the Commercial Head is spearheading verticals like Finance & Accounts, Procurement, Purchase, IT and MIS. Both the functional heads are reporting to the Director. The Sales and Marketing function is vested with expert handling Demand, Sales Administration, Market Research and MIS.

The roles further break down at the level of Production Heads, Quality Management Heads and Engineering Heads. The Engineering Heads include Electrical Head, Instrumentation Head and Maintenance Head. The company staffs two Production Heads, one each for fresh and fermented products category. With two Quality Management Heads, handling Quality Assurance and Quality Control, the company accords highest accountability to this function. With dedicated Dispatch Head and Store Head in position, the plant level responsibilities are delegated systematically. The Human Resource team has five members supporting the HR Head. The team along with people management contributes services for other administrative functions as well. The company accommodates employees across three levels, starting with

Workers at the base of the pyramid, the Technical and Administrative Staff at next level, helmed by Management Cadre Staff (MCS) ranging from Assistant Executive to the Director/Vice President level.

RUFIL is the first dairy company operating on 100% Bulk Milk Cooling (BMC) Model with 113 dedicated collection centers in and around Jaipur and Shekhawati area in the state of Rajasthan. Predominantly operating across these two belts, the company has initiated expansions towards all major locations in Rajasthan. Having the BMC Model in place, RUFIL has the advantage of minimizing contamination related risks and ensure freshness as the milk can be subjected to chilling treatment within half to one hour of collection. This serves as an edge in terms of quality and freshness compared to the Milk Collection Centers (MMC) Model, being adopted by major market players wherein the milk farmers are supplying at various collection centers located in close proximity. BMC though being an expensive approach is affordable for RUFIL at this level as they are operating in limited capacity. The company focused on maintaining the taste and texture of milk in its best form, and for the same reason identified milk farmers from the nearest location from Jaipur, Shekhawati and adjoining areas.

Dr. Rajendra and Ursula Joshi preserved the family tradition of managing dairy farms. The group owned 2 farms housing 350 cows, taken care of under the expert advice of experienced veterinary doctors, nutrition experts and farm specialists. These farms were not meant for commercial utilization, rather the facilities and cattle farming approaches adopted here served a model facility for the milk farmers associated with RUFIL, for benchmarking and emulating the same. The milk farmers had the provision to seek expert guidance from doctors and specialists offering services at these farms.

The company invests significantly in educating the milk farmers regarding clean milk production, time and again guiding them to adhere to the recommended practices, like cleaning the utensils multiple times, especially immediately before milking, avoiding plastic utensils for milking and maintaining farm hygiene. The company guided the milk farmers on nutrition management for the cattle by following a prescribed diet with balanced composition, avoiding medicinal treatments on the cattle and in case of emergency, the farmers were advised to seek guidance from their team of expert vets and approach government certified hospitals only if the cattle needed medical attention.

The fully automated plant owned by RUFIL is claimed to be a zero manual intervention unit with most advanced processing facility. The company is operating on a robust quality management system with several quality checks at each level, from milk collection to packaging, the product is subjected to as many as 103 specific checks. Their quality management contrivance would essentially serve as their growth driver, the company believes.

RUFIL owns the brand tagline "Zara Hatke" and believes that their superior quality products and focused market strategy would earn them a niche market that adopts the brand "RUFIL" owing to its "Zara Hatke" product offerings, unique in terms of quality and taste.

The Growth Plans – Driven with Focused Strategy

RUFIL is systematically adhering to the six guiding principles of bringing out healthy and nutritious dairy products for the consumers. The company invests significantly on R&D, in terms of time, money and expertise to explore and develop innovative food products. The company is actively considering the scope to expand beyond dairy products and work out possibilities to introduce alternative products in health food category.

For RUFIL, what makes the entire difference is the extensive Quality Management and Quality Assurance contrivance. Since the promoters were based at Switzerland and owned group companies at Switzerland, RUFIL has the advantage of Swiss technology and expertise. Particularly in the premium yoghurt category, RUFIL offered Swiss Yoghurt in collaboration with their Swiss counterparts.

Quality Management Department at RUFIL technically operated at three levels, Quality Checks (QC), Quality Assurance (QA) and Microbiological Analysis. At QC level, the multilevel chemical analysis of the milk procured and chilled at collection centers, further brought to the processing facility is ensured through various tests. Toned milk is the preferred product across Jaipur and adjoining belts. The company accordingly ensures proper examination of total Fat and Solids-Not-Fat (SNF) content in milk, further confirming checks for acidity, alcoholic contamination, various kinds of adulteration and other chemicals through specialized machines that are good to check multiple types of contaminations through 36 tests within 10 minutes. If it all any kind of adulteration, other chemical contamination or presence of antibiotics is observed, the company outrightly discards the milk and blacklists the milk farmers responsible for supplying impure milk. The company believes in draining the milk, rather than returning the same to avoid any further usage of the impure milk.

At QA level, RUFIL has secured quality certifications from various bodies including Food Safety and Standards Authority of India (FSSAI), along with the ISO certifications including ISO 9001, and ISO 22000/Food Safety Management System (FSMS). In yoghurt category, RUFIL has secured certification from Swiss Accreditation agencies that requires the company to follow multiple SOPs in terms of quality management, to adequately meet international quality standards. For all product categories RUFIL complies with FSSAI norms of packaging, including the grade, quality and thickness of packaging material. At micro level, all raw, semi-finished and finished material is subjected to extensive microbiological assessment, ensuring minutest checks to assess quality and purity in all respects.

RUFIL has a strong Supply Chain, in alignment with its quality-oriented strategy. The company owns dedicated milk collection centers in and around Jaipur, operating on 100% Bulk Milk Cooling (BMC) Model). The company has no third-party association; all collection vehicles are owned by RUFIL, with an objective to curtail any possible malpractices. The drivers are employed on company rolls and the entire movement is monitored through GPS. The company owns high quality refrigerated vans that are superior in technology as compared to regular insulated vans. Multipoint temperature checks are ensured to avoid any lapses on part of procurement department.

The company operates through three modes of distribution: the distributor to retailer channel in selected areas considered to be posh locations targeting consumers that represent the quality focused middle to upper class buyers, direct to home supply initiated during the Covid pandemic through company owned vans stationed at select locations along with bikers supplying at specific locations, and transporter cum distributor channel, applicable to semi-urban and rural areas where transporters were made the distributers keeping their reach to these markets into consideration. Prior to the launching of dedicated App, the company managed direct to home delivery through WhatsApp groups. Eventually, direct to home services were managed through orders placed over the App. Sales team is supported by the demand section that is responsible for computing requirement for each subsequent day. The company appointed bikers on company rolls for selected home deliveries, to cater orders received during day time.

RUFIL aspires to evolve as a global brand featuring in the list of leading brands in ten years span. With this objective in line, the company has initiated ambitious expansion plans. In the first stage, the company is looking forward to venture in newer markets with value-added product offerings including paneer, yoghurt and ice-creams.

Knowing that in food industry, the consumers' buying intentions are predominantly driven by quality and market reach, RUFIL has planned its growth strategy majorly focusing on these two aspects.

The company initiated systematic market research through structured surveys administered through established agencies. This has helped in drafting clear vision and approach for expansion. RUFIL's vision is capitalizing on brand image, and niche customer segment that includes elite and quality conscious clientele. The STP approach is clear, focusing on customers willing to pay high for quality. The company doesn't believe in reworking their pricing for premium products, though it is flexible to accommodate pricing experiments for traditional products, to help the company grow.

RUFIL believes that human capital is the success driver for an organization with limited size. The company banked significantly on the inputs coming from the small but highly committed and engaged team of employees. They encouraged frequent brainstorming sessions where employees were encouraged to think and discuss with no barriers. The Director emphasized on participative management, seeking lot of consultation through discussion forums, open houses and similar approaches. A team of 10-15 people was engaged in active brainstorming and experience sharing, investing lot of time and efforts in exploring and assessing the competitors' products.

The Talent Acquisition strategy at RUFIL included reaching out to markets, distributor points and industry referrals, to identify suitable talent. The company even went ahead with the strategy to source key resources from competitor brands like Amul, Nestle and Denham. Lot of unconventional approaches that may not sound standardized, but met RUFIL's objectives to invite right people in right place, were tried. The company's recruitment approach focused on strong personal networking for deeper assessment of candidates, to ensure person organization fit, over and above person job fit. RUFIL believed that for a start-up, it's imperative to have right people, from similar industry with relevant experience and right market knowledge. Initially, it selected key people from dairy industry and then entrusted them with the responsibility to source suitable candidates for subsequent staffing levels.

The owners believed that in a start-up arrangement, it is essential to provide autonomy and empowerment to the core team, listen to your people, invite ideas and suggestions, fix accountabilities, and develop attachment and person commitment. Employees must take pride in accomplishment coming through individual involvement. To promote a collaborative culture over working in silos, RUFIL emphasized on inviting suggestions from all verticals, for core business decisions including cost control, quality enhancement, and product innovation. The owners allowed autonomy to individual departments, including the flexibility to make department level purchase decisions independently and contribute to company's vendor database. RUFIL was looking at a holistic approach to growth through product innovation and expansion, fortifying supply chain and quality management, capitalizing on human assets and a focused strategy.

The Road Ahead

RUFIL's growth ambitions may relax the existing pressure on margins, owing to their high fixed cost. The company was operating largely self-owned collection and processing facility, and distribution channel. Projecting economies of scale, the initial investment though high, would lead to establish the quality driven brand reputation and further profits through expansion in premium product categories in potential markets. This investment would pay off in future, the owners believe.

Indian dairy industry is characterized by large intervention of unorganized players, and more so, there are thousands of dairy co-operatives present across the country enjoying significant state support and benefaction in various ways. Dairy co-operatives hold a substantial market share, in addition to the established private players. Striving to survive the competition, RUFIL believes that a growth from zero liters to 40 to 50 thousand liters demand in Jaipur itself, over a period of four years, including two years of slump during pandemic, is a manifestation of the trust and brand image the company has earned. Initial margins may be low for a start-up, but eventually picked up through home delivery, particularly through good margins in premium products like paneer. Margins derived through diversified value-added products are expected to add further. With the augmentation in home delivery segment through direct to home services the company has managed to achieve break-even point.

The company is anticipating promising surge in profits with the launch of premium and regular variants of ice-cream around Rajasthan and Delhi-NCR. The company has clear plans to launch over 150 variants of ice-cream under two categories: Regular and Premium. While the regular category would compete against Cream Bell, Havmor, Amul, Kwality Walls and other, the premium one would face competition from likes of Baskin Robbins, Magnum and Naturals. For premium product offering, RUFIL wishes to emphasize on procuring Swiss Certifications to position itself as a global brand.

RUFIL's growth ambitions would not come easy as competitors are exploring the possibility to sustain the pandemic induced crisis by reducing the margins partially. Major players may experiment with margins with relative ease compared to smaller ones like RUFIL. Albeit, the company plans to work on maintain margins systematically. The approach to expand towards potential markets targeting institutional customers, HoReCa sector, healthcare and allied segments, keeping in view that these segments represent relatively well-educated customers who carry awareness regarding quality and nutrition, and are likely to assess the product quality and ingredients while making purchase decisions. These consumers are expected to have higher willingness to pay for quality, which would help RUFIL maintain good margins.

To sustain fair margins, the company is focusing primarily on premium product offering like paneer, ice-cream and yoghurt. In all, RUFIL started as a 100-crore investment project. With the last two years profits, barring the pandemic phase, being 36 crores and 55 crores respectively, the company is at break-even. With enhancement in the product basket, possibly with other food products including bakery and confectionery, fruit juices and variety of beverages including flavored milk, whey drinks and similar variants, RUFIL is looking forward to growth in stages. Strong R&D to explore larger possibilities, experimenting with sugarcane-based products as well.

At this stage, where RUFIL is crusading against the market competition, ambitiously striving for growth, it is evident that the employee base needs to be strengthened proportionately. For catering to larger markets, having a sizeable people capital is an organizational imperative. RUFIL while venturing into newer markets and broader product lines, is quite confident about its talent enhancement approach. The organization eyes to capture talent from diverse verticals, people who bring diverse experiences and competencies, preferably from the same industry. For that reason, the company was planning to expand the employee base by hiring people resources who carry substantial knowledge about the industry, the best practices and approaches being adopted by the competitors, the trends determining industry benchmarks, and this feasibly calls for hiring through industry network and allied referrals.

To meet RUFIL's expansion plans, the talent acquisition strategy was on cards. At the same time, retaining the existing talent was a priority at equal. The company had never failed to take fair cognizance of the contribution the existing team has made to bring RUFIL to this level. For the employees who have been with the four and a half years old company for quite some time, the growth aspirations and appetite for better opportunities were quite natural. With the concurrent developments, employee retention would be a challenge for RUFIL. The writing is on the wall, and the management could gauge the same.

The HR team has come up with plans to introduce experiments in the talent management strategy. The team has been in discussion with the management and could convince them for bringing a systematic Retention Policy into practice. This included initiating mid-year performance reviews and appraisals, with an objective to reward and retain talent. The team believes, such tryouts often become imperative for smaller organizations. Additional benefits like transport facility, subsidized meals, periodic bonus, gratuity, medical insurance, well-defined leave policy, timely disbursement of wages/salaries and similar practices would help the company earn higher trust and commitment from employees.

As a well-thought initiative, RUFIL has introduced variable pay i.e., performance linked pay which by far is quite uncommon in this industry. Performance linked pay has been introduced for employees at all levels, focusing on larger employee motivation. Furthermore, the company is emphasizing on fostering employee engagement through personal connect and conducive work environment. Reaching out to employees, soliciting feedback and suggestions, establishing a dialogue and nurturing collaboration, the Director is personally engaged in all to ensure that these initiatives are viewed as sincere interventions, receiving best support and endorsement from top management. RUFIL is replicating its quality focused approach in HR practices as well, to ensure that employees develop trust and feel attached to the organization.

Work-life balance initiatives through fair people practices, balanced working hours, planned work load, and compensatory off against extra work hours were also incorporated. The company wishes to establish fair and transparent HR policies, that ensure "deliver what you promise", and communicate the same to potential employees during recruitment process. The company is endeavoring to develop HR as a core business partner, with a belief that good people bring in best practices and strengthen the commitment towards investing in developing human capital.

RUFIL was focused on capitalizing on its core strengths, predominantly the quality emphasis, in cognizance of the fact that consumers are turning increasingly quality conscious, particularly after witnessing the pandemic. With global endorsements, including the Swiss collaboration for technology support and quality certifications, RUFIL believes it can emerge as a brand with difference. The fully automated facility promises minimal wastage and overall process optimization, leading to high quality and operational excellence. The plant at Mahindra World City had all potential to offer best advantage in terms of location and operational feasibility. The company is quite optimistic about its broad product basket, including the three major categories viz. fresh, fermented and value-added products. The company's employee support initiatives, focusing on regular as well as contractual workers, particularly during the Covid crisis have earned it significant employee loyalty.

RUFIL is not in a position to turn a blind eye towards the ensuing challenges, not only the ones pertaining to surviving the market competition, maximizing operational efficiency or drawing better margins, but the other potential threats as well. A possibly negative perception, in fact a larger apprehension that a young organization if fails to grow as expected, might resort to cost-cutting or quality compromise approaches, or dilute the HR practices for that matter, cannot be discounted. Albeit RUFIL is constantly working on enhancing the company's goodwill, maximizing trust and employer branding efforts to focus both on potential customers and employees.

The top management is striving to set example and foster a positive culture in terms of open communication, commitment and hard work, promoting effective utilization of resources at all levels, aligning individual goals with organizational goals and result-orientation. RUFIL's core organizational values that each stakeholder is expected to practice include "Know Your Business", "Quality is Priority" and "Fair and Transparent Practices".

Questions

a) Assess the dynamics of Indian Dairy Industry, emphasizing on the role of unorganized milk/milk product suppliers against the organized brands.

b) How can the organization leverage upon its Quality Management Approaches, keeping in view that customer shift is a major predicament in the given product segment?

c) Attrition in FMCG sector has witnesses an increase over the years. Examine the adequacy of HR policies and approaches at RUFIL, in terms of effectively combating this challenge.

d) In light of the high market competition in the dairy industry, what strategies would you recommend for RUFIL to survive the competition?

Teaching Note

RUFIL - Striving for Growth

A Synopsis of the Case

In the domain of General Management, the case can be used to focus on the areas of Business Strategy, Supply Chain & Quality Management and People Management. The case highlights how focused strategy, quality orientation and product innovation serve as growth drivers. The case presents a compilation of facts and information about RUFIL, an establishment that came into existence as an innovation idea of Switzerland-based couple, in the quest to make high-quality dairy products accessible to the Indian consumers, including local households and institutional customers. RUFIL has developed a robust milk collection system and state-of-the-art processing plant, procuring fresh milk through the Bulk Milk Cooling (BMC) Model, ensuring purity, hygiene, taste and nutrition with several quality checks at multiple levels including milk collection source points, processing unit, and dispatch stations, to ensure safe and consistent product quality every day.

Also, the case focuses on the essential of sustainable strategies. This case presents a scope to analyze the challenges and opportunities that firms with relatively modest market share, driven with larger growth aspirations are likely to encounter. It also extends scope to discuss how focused approach in terms of Product Innovation; systematic Segmenting, Targeting and Positing (STP); progressive Talent Management Approaches and Leadership can serve as growth enablers.

The Target Learning Group

The case study will assist

a) Management students (undergraduates and postgraduates)

b) Aspiring entrepreneurs

c) Start-ups coaches/entrepreneurial mentors

d) Facilitators at innovation councils/incubation centres

The learning/teaching objectives and key issues

a) Understand the dynamics of FMCG industry

b) Leveraging on Quality Management Systems

c) Complexity of Supply Chain Management

d) Focused Product Innovation and Marketing Strategy

e) SWORT Assessment for small scale businesses

The Teaching Strategy

Prior to the proper case discussion, at the commencement, learners may be encouraged to share their understanding about the dairy and allied products industry in India. This discussion may help stimulating interest and lead to introducing relevant keywords and underlying issues and challenges. The discussion may further be driven through syndicates, expected to deliberate and present their responses to relevant questions pertaining to the case.

Questions for discussion

1) **Focusing on self-owned collection, processing and distribution facilities, correspond to increased fixed cost. How do you think it would impact the margins for RUFIL, being a relatively new and small organization? Suggest valid solutions.**

   RUFIL being a startup is in the initial stage of costing where the pressure on margin is high as company is to acquire the assets used in supply chain in order to maintain the quality. With major focus on quality and the same being the USP the organization wishes to capitalize on, having a direct control over collection, processing and distribution facilities is imperative to curtail the quality related perils. Nevertheless, the company can recover edge in terms of pricing power, particularly in the value-added products category - including paneer and yoghurt. The company can adopt well-planned strategies to minimize the short run cost and may focus on leveraging on sustainable practices for growth. The firm is a price taker playing in a perfect competition driven market.

2) **Indian dairy industry has a strong intervention of unorganized local markets and dairy cooperatives, over and above the big market players. Suggest how RUFIL can fortify itself on various fronts to combat the market competition.**

   While deliberating upon the challenges faced by the firms operating in unorganized markets, discussants may focus on SWORT analysis of RUFIL. This would lead to discussing the risk mitigation strategies that can help RUFIL achieve sustainable growth. The global expansion strategies to cater to larger markets, capitalizing on quality committed brand image, focused strategy (targeting premium customer base with paying capacity and purchase intent characterized by willingness to pay for quality), complemented by a partially kimming approach for pricing would help achieving an edge.

3) **Supply Chain Management is the backbone of FMCG Industry, more so with dairy and allied sectors. Discuss how RUFIL can develop further on this dimension to ensure best outcomes.**

RUFIL supply chain process includes a strong milk collection system and state-of-the-art processing plant, procuring fresh milk through 100% Bulk Milk Cooler (BMC) model and using high quality refrigerated vans that are superior in technology as compared to regular insulated vans. The organization has adopted these focused approaches to minimize the risk in logistics and operations, and can continue to fortify on:

- Hygiene awareness among milk producers
- Emulating the benchmark model
- Strictly following quality management practices at all levels of collection and distribution
- Exploring multiple distribution models to ensure larger market reach
- Implementing different distribution schema for different markets, to harness best benefits in alignment with the specific market requirements/preferences.

4) **Discuss the factors that would serve as enablers/bottlenecks in RUFIL's ambitions to evolve as a global brand.**

- Enablers: Swiss collaboration, bankrolling support, owning the key resources, strong HR practices, product innovation, delivery channels, mobile App, MMC model, sustainable practices like educating farmers for quality awareness, benchmarking, market research, introducing health food products, and quality management practices.
- Bottlenecks: relatively low market share as the market is characterized by large number of players including organized/unorganized/dairy co-operatives and others, perishable product, fluctuating demand dynamics, pandemic impact, wastage during quality check, big players as competitors

to compete with, and the complex quality accreditation framework in food industry.

Background reading

- Kotler, P., Armstrong, G, Saunders, J and Wong, V, (2001), *Principles of Marketing: Third European Edition*, Prentice Hall, Harlow
- Koontz, H., Weihrich, H, (2010), Essentials of Management: Tata McGraw-Hill Education
- William, Stevenson J., (2017), *Operations Management: Twelfth Indian Edition*, McGraw Hill Education

Case Study 07

From Product to Market Fit*

Background

This study investigates the start-up of a company producing health-oriented drinks that combine innovative, socially responsible, and sustainable business practices in the Indian market. The founder of the company is a female dentist with an MBA, who when pregnant had difficulty maintaining her health due to pregnancy related issues and, therefore, wanted to learn about the health benefits of drinking coconut water-based products. Her interest in understanding the benefits of drinking coconut water was based on its function to boost immunity. This ultimately led to the development of a series of natural beverages with no preservatives.

The company started in Hyderabad in 2014–15 with a small investment of 5000, two female employee and a limited number of products. Since then, the company has grown to employ approximately 12 women and demonstrates a commitment to creating opportunities for women through grassroots entrepreneurship. The company's ability to develop and formalize its operations has been greatly aided by assistance from Bharatiya Yuva Shakti Trust (BYST), which has provided necessary support for developing finance, training and mentorship that helped the company develop formal operations and improve its infrastructure.

The hybrid model of the business is made up of production and direct selling. The brand creates coconut-based products, coconut-based beverages, milk shakes, mocktails, fruit kafs, and coconut-based ice cream, and all products are marketed as dairy free and free of preservatives. Because the brand is responding to the growing trend of clean-label consumption, healthy eating, and plant-based living, it targets

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active health-minded consumers like people who work out intensely, professionals who do not have time to prepare a healthy meal, and people who cannot consume dairy because they are lactose intolerant. The health-minded female customers make up the bulk of its repeat customer base.

The brand has gone through many phases of evolution over time. The brand began looking for ways to develop its product through considerations of many different product concepts which resulted in over 120 product line extensions at the time. This caused some operational pain, so the company was able to narrow down to about 20 products and streamline them into a more efficient product line. During the COVID-19 pandemic, the company adopted the cloud kitchen model. Since that time, it has reduced its reliance upon aggregator platforms to ensure the quality of its products. Today, the brand operates an alienation of ways by operating through its own physical locations, institutional placements, and vending solutions, which reflects how the brand has evolved to fit different market conditions.

The company has innovative, health-oriented products, but it is struggling to find product-market fit due to its limited differentiation from traditional alternatives (e.g. fresh coconut water), lack of consumer awareness, and operational inefficiencies. The main challenge for the company is closing the gap between the perceived value of the products and the intrinsic value of the products. The company must create an effective marketing strategy that will improve consumer acceptance of the products while also ensuring that the company has a sustainable and scalable growth plan.

The key challenges for the company are:

a. *Consumer Perception Barrier*

Consumers often perceive packaged coconut-based drinks as less fresh, authentic and nutritious than drinking coconut water from a vendor on the street. The packaged coconut-based drinks provide advantages such as improved hygiene, consistency and convenience; however, many consumers view them as substitutes instead of a new category of beverage, which leads to very limited acceptance and repeat purchases.

b. *Marketing and Awareness Limitations*

The company has limited visibility and very low consumer awareness about the health benefits of its products. The company has not effectively leveraged digital marketing and it does not have an effective promotional strategy to reach its target customers. As a result, the company has not effectively communicated the value proposition of its products around the world.

c. *Short Shelf Life and Distribution Constraints*

Being natural and without preservatives means that the product has a short shelf-life and therefore requires cold chain logistics for its distribution. The use of cold chain logistics significantly increases operating costs and as such restricts the growth of the geographic footprint of the business. The use of advanced packaging solutions may prolong product shelf-life; however, they require significant capital investment and thus create further challenges for scalability.

d. *Operational and Quality Management Issues*

It is exceedingly difficult to maintain a level of consistency in quality across all locations, due in part to variances in sourcing of raw materials, and also due to variances in employee capability. Inconsistent training and adherence to standard operating procedures leads to inconsistent quality at ach location, and potentially decreases the credibility of the Coco brand and decreases customer trust.

Three Strategic Situations

The challenges faced can be grouped into three strategic scenarios, which each define a unique critical moment in time where the leadership of Coco Drink must choose between a number of conflicting alternatives. These three contexts operate simultaneously and interact with each other; they are not sequential. Each of these

Applicable Models, and Strategic Contexts.

Strategic Situation I: Overcoming the Consumer Perception Barrier

Coco drink faces an existential threat more from customer perceptions than product functionality. Consumers tend to select the fresh coconut water option over Coco drink (when both are priced equally) simply because of the perceived superiority of the fresh product. This customer preference continues post-purchase regardless of consumer recognition of superior taste consistency and hygiene of Coco drink based on surveys of consumers after their purchase of Coco drink and from observational data gathered from biz community placements of Coco drink.

Coco drink cannot develop product features to directly compete with the brand strength and credibility of the street corner vendor of fresh coconut water who uses a machete and straw to serve the product. The insight for repositioning Coco drink is that consumers are evaluating Coco drink in the wrong product category. If they consider it to be a packaged replication (mock) of real coconut water (like real coconut water), it will never be successful. The goal of repositioning Coco drink is to be perceived as the best option for products available in contexts where fresh coconuts cannot be obtained.

Strategic Options

Coco Drink has the following three strategies to address the perception barrier:

Option A - Channel Repositioning: Target distribution towards hospitals, gyms, business offices, airports and out-of-market places that are fundamentally lacking in fresh coconut. Coco Drink can act as a need-based solution in these types of environments instead of competing with fresh coconut. Coco drink will also benefit from favorable architecture of consumer choice. This architecture creates a favorable trial experience through association with the brand; therefore, establishing brand equity over time.

Option B - Education-Led Branding: Invest in an organized approach to content marketing and influencer engagement targeted to urban consumers aged 25 - 45 who value better health. Focus on women. Develop content that promotes the nutritional content of Coco Drink, highlights production transparency and reveals that it's free of preservatives. Be sure to include support from medical professionals as they provide an uncommon source of credibility to a physician-run business.

Option C - Hybrid Occasion Marketing: Position Coco Drink as the alternative for certain occasion-based consumption moments (e.g. post-workout recovery, during travel, as a gift, health-conscious hospitality) rather than as a daily replacement for coconut water. Each of these occasion-based campaigns will make Coco Drink more mentally accessible at key moments in time; therefore, Coco Drink will compare less directly to fresh coconut water.

Strategic Situation II: Operational Scaling While Maintaining Brand Integrity

Description of the Situation

Coco drink faces a classic scaling challenge in the form of operational constraints restricting its growth—i.e., short shelf life, low capacity, and high packaging costs. However, potential solutions to the identified constraints conflict with aspects of the Coco brand defining its market position. Use of preservatives to prolong the shelf life would allow additional distribution yet would conflict with the "preservative-free" pledge. Reducing packaging quality to reduce costs would in essence lower the product's premium status. Price reductions required to improve volume would affect the margin structure necessary to support new expansion.

Thus, Coco drink needs to identify scaling alternatives that enhance operational efficiencies and effectiveness while preserving brand integrity. As stated in Dyer and Gregersen's (2011) research on "constraint-driven innovation"—these limitations often generate more innovative and credible solutions than would otherwise develop in unconstrained conditions, when viewed as creative parameters rather than constraints.

Coco drink is confronted with a typical early-stage scaling conundrum: its expansion is hampered by operational restrictions, such as short shelf life, low-capacity utilization, and high packaging costs; however, the most obvious remedies to these constraints are at odds with the characteristics of the brand that characterize its market proposition. While using preservatives to extend shelf life would increase distribution, the "preservative-free" guarantee would be compromised. The company's premium standing would be compromised if packing quality was lowered in order to save money. The margin structure required to finance expansion would be undermined if prices were lowered to increase volume.

Because of this, Coco drink must find scaling strategies that increase operational economies without compromising brand integrity. According to research on "constraint-driven innovation" (Dyer and Gregersen, 2011), these limitations frequently produce more inventive and convincing solutions than unrestricted settings when they are viewed as creative parameters rather than obstacles.

Strategic Options

Option A - Technology Investment for Shelf-Life Extension: Conduct assessment to determine feasibility of HPP technology investments via shared HPP infrastructure or food technology partnership institution in Hyderabad. Even incrementally extending ambient shelf life from 6 hours to a 3–5-day timeframe would drastically increase addressable distribution network.

Option B - Demand Led Capacity Ramp: Targeting securing long term large institutional supply contracts (hospitals, corporate campus, hotel groups) that represent predictability through daily order basis before investing into capacity expansion or marketing. Guaranteed off-take minimizes production risk and allows for the justification of higher utilization thus compressing unit cost on an organic basis.

3. *Option C - Packaging Optimisation:* Contract a packaging designer to seek out opportunities to reduce costs from packaging designs that do not negatively impact product protection or brand image. Potential opportunities may include establishing standardisation of packaging formats throughout all SKUs, shifting from individual branded sleeves to printed cup formats or researching potential for compostable packaging to enhance brand's green positioning.

Situation III: Financial viability of a social enterprise

Coco drink is not a traditional startup and can be classified as a social enterprise. Social enterprises have a defined meaning based on the writings by Austin et al. (2006). They are organizations that utilize market-based instruments to achieve social objectives while remaining financially viable. Dr. Neelima's all-female workforce, commitment to no preservatives and affordability are not only ways to market her company but also part of the organization's overall identity and purpose. However, they can be seen at times as commercial limitations.

As Coco drink seeks to maintain its all-female workforce in a competitive labour market, it will struggle to fill the specialist roles such as middle management, technical production, and quality assurance through exclusively hiring women. This creates another unique challenge and increases both recruitment complexity and costs. Prices of 50-100 limit revenue per unit when compared to premium health brands who charge 150-250 for similar products as seen in Situation II. Eco-friendly/No Preservatives limits the distribution/shelf life of products as also discussed in Situation II. The fundamental question for Situation III is when and to what extent do these mission commitments jeopardise Coco drink's financial viability and how can Coco drink balance the competing priorities of mission fidelity with commercial necessity?

Strategic Options

Option A — Impact Investment: Create an investment plan for both Indian and foreign investors to fund Coco drink's impact and develop a social impact indicator system for Coco drink's job creation, through livelihood development and distribution of health supplies to impoverished communities. At Coco drink's current growth stage, there are various sources (SIDBI-SPEED, the Acumen Fund, and the Omidyar Network India) for social entrepreneurs to access capital through patient capital programs that provide no time constraints for loan repayments and equity investments to focus on technology and branding development.

Option B — Mission-aligned, premium tier: Offer a premium product line of "Coco drink Select" priced between 150 and 200 for high-end modern trade sales and distribution through health food stores and other export markets and made from high-end coconut varieties and special fruit combinations. The profits generated from these premium product lines will be used to cross-subsidize the lower-priced, core product line to keep price points low while ensuring financial viability.

Option C — Institutional B2B Focus as Revenue Anchor: To change from consumer B2C major source of sales to institutional B2B as the primary source of income through establishing long-term bulk supply agreements with health systems and hospitals using corporate wellness clients along with educational markets. Institutional clients provide reduced marketing expense per unit for the company because there will be consistent revenue and much larger quantities of products ordered from them. This will create a solid financial platform for creating consumer brand development.

Conclusion

The story of Coco drink is a classic example of the divide between having a great product and having a successful business. Although it has developed a unique beverage that has nutritional content, authentic ingredients and strong social purpose, the narrowness of its market reflects difficulties in achieving market acceptance rather than weakness in the product itself. Additionally, as this case illustrates, there are both perceptual and operational capacity pressures facing the company that are connected, i.e., excess demand with no supply readiness creates the potential for loss of consumer trust, rapid growth may mean a loss of authenticity, and a lack of financial stability may impact the company's social impact. If Coco drink can strategically establish strong demand from and for institutional markets, where its strengths are most evident and predictable revenue will help develop the brand, provide technological improvements and develop high-end products, these markets will provide some stability and capacity building to this business.

A three-prong strategy for Coco drink going forward is to focus on competing where the company has the most strength versus trying to compete against long-standing practices, increase the company's demand broadly and then build additional capacity to meet that demand, and use the company's social mission (including employing women and providing health-related credibility) as a strategic advantage. Coco drink currently finds itself at a critical point strategically; its success moving forward will depend on making disciplined, sequenced decisions that balance purpose and profit and position the company to realize opportunities in India's expanding health economy.

Questions

1. Evaluate the strategic position of the business and conduct a SWOT analysis.
2. Identify potential additional marketing initiatives that would assist the business in better scaling its products and increasing the business's market reach.
3. Which of the strategic options proposed should the business implement first? Justify your response with adequate rationale.

Teaching Note

From Product to Market Fit

1. Synopsis of the Case

The case is on an emerging beverage startup called Natural Beverages. This company specializes in creating coconut based, natural nutrition beverages with NO preservatives, that are convenient to consume. It was created from the original founder's experience to become a purpose driven company to help create female employment and to make a social impact. Natural Beverages has the challenge of trying to grow its business while providing a unique health beverage. The main challenge is that most consumers tend to prefer drinking fresh coconut water from a reputable source as it is more easily accessible, inexpensive and has built up a strong level of trust amongst consumers.

This study will illustrate the core management issue represented by Natural Beverages in that having a strong product does not guarantee market success. The study will discuss/illustrate the gap between a product's value and how consumers perceive the product, as well as provide challenges associated with changing existing habits of purchase/consumption. Furthermore, the study will present strategic questions regarding product positioning, creating distribution and avenues for business growth.

2. Target Learning Group

This case is suitable for:

1. Undergraduate students (BBA)
2. Postgraduate students (MBA)

It is particularly relevant for courses in:

1. Marketing Management
2. Strategic Management
3. Entrepreneurship
4. Operations and Supply Chain Management

3. Learning Objectives and Focus Issues

After a thorough analysis of this issue, students are expected to be able to do the following:

a. Identify the problems associated with the scaling of a startup company in the fast-moving consumer goods (FMCG) category.

b. Determine how a customer's perception and habit will affect purchase decisions.

c. Measure the influence of substitutes on competitive strategy.

d. Evaluate operational limitations and constraints, with an emphasis on capacity utilization and shelf-life restrictions.

e. Provide strategic recommendations in relation to positioning, distribution/ channel development, and growth.

Key Issues

This case introduces multiple interconnected issues:

a. The most significant issue is the difference between the value of a product and the value the consumer places on that item. While the competitor Natural Beverages brings hygiene, consistency, and functional elements to the market, consumers prefer fresh coconut water due to trust and habit.

b. Another primary concern is substitutes, especially fresh coconut vendors, which offer strong competition; as well, this long standing consumer behaviour creates an additional problem for Natural Beverages.

c. Operational limitations such as low-capacity utilization (estimated to be 30%), high packaging costs, and a short shelf life all contribute to the lack of profitability and scalability for Natural Beverages.

d. Natural Beverages has very low levels of consumer awareness and difficulty with positioning, which creates significant limitations with demand generation.

4. Teaching Strategy

A successful way to provide this case in a classroom is to utilize a lecture-type format for approximately 60-90 minutes.

Start the discussion with a trigger question; for example:

Would you prefer drinking coconut water from a fresh coconut or in a carton, and why?

This question provides an opportunity to introduce the idea of consumer perception and habitual purchasing behavior. Once that has been established, divide the students into small groups with each group tackling a different area of focus including consumer behavior, marketing strategy, operations, and growth strategy. Each group will be responsible for reviewing the case, drawing their own conclusions, and presenting their recommendations. The instructor should facilitate the discussion to arrive at the conclusion that product superiority does not always equal success and that perception, positioning, and behavioral factors need to be considered. Wrap up the session by discussing potential ways Natural Beverages can reposition themselves to improve overall market performance.

5. Questions for Discussion

a. Why do consumers choose fresh coconut water over natural beverages, even though there are numerous benefits to both types of drinks?

In general, consumers prefer to consume fresh coconut water because of the perception of the drink and its availability. The experience of cutting open a coconut provides an opportunity to create a sense of trust and credibility with the product and provides an opportunity to build an association with a culture that has historically consumed coconuts and coconuts as part of their diet and food system. Packaged coconut water is typically perceived as less natural to the consumer, and priced similarly as fresh coconut water will often redirect a consumer toward a product that he/she already trusts.

b. **What is the most important challenge that natural beverages face?**

The natural beverages industry has a challenge in promoting the relative value of natural beverages versus how consumers perceive natural beverages. While natural beverages possess specific characteristics that should contribute to their value, such as cleanliness, safety from contamination, and consistency, consumers do not perceive these types of beverages as having any real value. As a result, there are low consumer demand and therefore a large amount of unused production capacity, which indicates that consumer perception is the primary problem with the natural beverage industry and not the natural beverage's manufacturing process.

c. **Should the company consider expanding into new markets or working to enhance its current market?**

The first thing the company should concentrate on is strengthening its current market. By building on the current market, the company will establish a better name and reputation, therefore building demand and optimizing the efficiency of the operation. Once the company achieves a certain level of performance in the market, it should then consider expanding into new markets.

d. **How could Natural Beverages enhance its distribution and the efficiency of the supply chain?**

By focusing on selling to institutions (hospitals or offices); by increasing the number of vending machines; and by utilizing a hub-and-spoke distribution system to provide an effective means of logistics. Subscription services and technology can be used to assist in the planning and forecasting of demand while reducing waste.

e. **What will the marketing strategies that can assist in changing consumer perceptions?** Answer: The company needs to focus on building consumers' trust in the product and educating them about its advantages through a variety of digital mediums, including the use of social influence and storytelling. The company should seek to take benefit from its consumables through experiential marketing/outdoor experiences and use a greater emphasis on providing consumers with exceptional packaging to showcase the products' freshness and quality.

f. **What will Natural Beverages need to do to reposition to effectively compete?** Answer: The company will need to provide consumers with an acceptable and appealing alternative to drinking coconut water, i.e., to offer consumers an alternative to using fresh coconut water by providing consumers access to a convenient, sanitary, and trustworthy option. The company may utilize the usage occasions of not having fresh coconut water available to help to define a unique market position.

6. Data Analysis

The case contains important operational and financial information which can be used in-class to conduct analysis. Natural Beverages has a production capacity of about 10,000 bottles (per day) yet operates at only about 30% of its full capacity. Students will be able to determine revenue at various levels of use (e.g. 50%, 75%, and full capacity) and analyze how increased sales will affect profitability. This example illustrates that Natural Beverages primary constraints are less related to production capability and more related to demand and market acceptance issues. Students will also be able to discuss how packaging costs and shelf-life limitations will constrain pricing and margin and dictate distribution strategies.

7. Background Reading

For additional background information, students can look up literature on the following:

1. Trends in functional beverage industry
2. Consumer behaviour in FMCG markets
3. Brand positioning and perception
4. Competitive strategies and substitutes
5. Startup and growth and scaling strategies

These topics will provide students with additional context for evaluating the challenges faced by Natural Beverages.

8. Experience of using the case

This case was used in the class of PGDM students enrolled in marketing and strategy courses; there was also a discussion around elements of consumer perception, the means in which to position a brand, and the inherent challenges associated with developing product-market fit. Students worked with behavioural biases impacting purchase decisions as well as insights regarding the way startups can reposition their products to establish distinct market categories. Other topics were also discussed, including startup growth, operational scaling and finding a balance between social impact and financial sustainability.

The case allowed students to connect various frameworks (e.g., SWOT analysis, brand equity, competitive strategy) to live business scenarios they encountered during the case analysis. The students analysed their own entrepreneurial journey through group discussion and presentation as they identified key challenges, then proposed practical solutions to the identified challenges. In conclusion, the use of this case enhanced students' skills associated with critical thinking; collaboration; and strategic decision making.

Book Review 01

Sales and Distribution Management

(Author: Avinash Mulky. First Edition, Delhi: Cengage Learning India Pvt Ltd., Year of Publication:2026, 416 pages. ISBN: 978-93-6660-830-3. Price: Rs 595).

*Vinod Dumblekar**

The book's preface begins as a concise introduction to each of the 20 chapters and the two themes, Channel Management and Sales Management. The book features include concepts, research findings, theories and practices with emphasis on the relative processes, roles of salespersons and contemporary topics like applications of technology and reverse logistics. For better understanding, I have presented this review under five themes covered by their respective chapters, as shown below.

I: Nature and types of distribution channels

Chapter 1 begins with the definition, description and functions of distribution channels, and their utilitarian value in the supply chain from manufacturer to consumer. The channel is a system of merchants, distributors and other intermediaries that facilitates the movement of products in exchange for cash from customers. Its functions include product information, movement, stocking and display. Its performance may be measured in terms of market share, relative shelf space for the brand and numeric distribution.

Chapter 2 describes the nature of the channel design and discusses the business need to establish the distribution of products. On the basis of five other channel design models, the author offers a 5-step model with extensive details and emphasis on customer needs, product variety and implementation. Some model considerations include product customisation and transport, extent of customer use and purchase effort, touchpoints, customer behaviour, perspectives and choices, activities and their respective costs, and exclusivity of distribution.

Chapter 3 deals with wholesalers who hold and distribute goods to merchants and retailers, and explains their functions and significance for manufacturers and customers. The functions include product availability and stocking, market coverage

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and development, and order processing. Effective wholesalers must understand the local market, have product knowledge, be able to finance the business, and be committed to sales targets. The author offers checklists to select and motivate the wholesalers, and understand and attend to their problems.

Chapter 4 describes and classifies retailers in terms of many characteristics with everyday examples such as the department store, *kirana* and online retail to complement understanding. It describes how their actions benefit their suppliers and customers, attesting to the amazing breadth of the retailer's role in the distribution channel. It shows how the retailing format in India and elsewhere evolved almost similarly although their respective journeys, although sometimes contrasted due to the nature of market opportunity and technology.

Chapter 5 covers ecommerce as internet trades and omni-channel management as trades over multiple customer checkpoints. Ecommerce includes the familiar B2B, B2C and B2G models, content and social networking platforms. It is attractive because it enhances the manufacturers' reach and the customers' purchase convenience. However, buyers cannot touch and feel products, and need access to the internet or mobile for ecommerce transactions. Sellers may incur huge investments in technology and high costs for quick delivery to customers.

Chapter 6 explains mass distribution in terms of its impact on market share. Distribution is represented by a variety of retail store types ranging from paan shops to hypermarkets and duty-free shops at airports. This variety is supported by other channels such as movie theatres and non-store channels like street vendors and melas. Distribution coverage is measured by metrics represented by the number of sales outlets and gross revenues. The complexity of distribution may be affected by the urban, rural or wholesale context of operations.

II: Implementation and effective management of distribution channels

Chapter 8 presents logistics as the process of moving the product from the manufacturer through the intermediaries to customers. Some of its key activities are transportation, materials handling, packaging and warehousing. A supply chain strategy maps the product movement process, seeks to understand customers, categorises relationships, builds collaborations, and relies on technology, data and measures. Logistics service providers must be selected for their warehousing and other resources and capabilities in customer and other services.

Chapter 9 covers the evaluation of distribution channels and the design of offers to motivate channel members in sales performance. Criteria such as trust, display and costs, and indices based on product and brand sales measure and compare performance. Evaluation data relates to stocks, purchases, consumer attitudes and the use of media by households and consumers. Channel members may get a package of base margins and other fixed elements, volume-based incentives like discounts and rewards, and training and other offers.

Chapter 10 describes channel management from designing channel strategy and motivating the members to managing conflict. It recommends steps, guidelines and actions for managing distribution that include flexibility and communications. Relationships also rely on power as the ability to influence actions through reward, reputational and other means. Conflicts may arise from domain disputes, role clarity and other reasons, and could be resolved by adopting consistent policies, enforcing contractual terms, performance-based payment and other means.

III: Core aspects of selling and Sales management

Chapter 11 introduces selling as the process of connecting the products with the prospects. It classifies salespersons based on the customer niches such as B2B and roles such as persuader and provider. It shows sales skills to have communication, negotiation and time management, and that salesperson traits include persuasiveness and tact. It describes sales as an intricately built process whose effectiveness may be affected by influence and trust, and sales performance to be affected by organisational, human and situational and other factors.

Chapter 12 explains selling techniques such as the buying centre concept, and the phases of adaptive and solution selling. The phases dwell extensively on roles such as influencer and gatekeeper, activities focused on analysis and procedures, and traits such as openness and motivation. Selling services needs a focus on networking and value, but attracts uncertainties such as in customisation and deployment. Three key selling methods describe elements such as the situation and the problem, user buying influences and emotional impact.

Chapter 13 describes sales managers' decisions and tasks as elements of sales management. A comparison of two sales roles shows how they differ by responsibilities and experience. The managers' roles are based on their line and staff functions and position in the organogram. Their role may face challenges such as in buyer behaviour, productivity and technology, but are resolved by motivation, communication and leadership skills. Clarity of roles, skills, compensation and direction ensure the effectiveness of the sales force.

Chapter 14 describes the planning process as a component of the overall business plan containing goals, strategy and tactics. The demand forecast uses qualitative and quantitative methods like Delphi and time series analysis including production, market changes, expansions and other inputs. The sales organisation structure blends the line, staff and other functions with responsibilities for products, brands or territories. The size of the sales force is determined by workload and other methods, while the territory is a function of geography and channels.

Chapter 20 describes the sales transformation process which seeks better performance from a redesign of sales operations including channel design and changes in technology and sales practices. The transformation is due to reasons such as price and product competition, falling revenues or salesperson turnover. It must ensure that salespersons enhance their interpersonal skills and deliver value to customers. Digital transformation includes digitisation of analog data, process automation, system integration and sometimes, even artificial intelligence (AI).

IV: Implementation and effective management of sales process and sales organisation

Chapter 15 shows how the hiring and training of salespersons is so important to the business and revenue growth and customer acquisition. Hiring, onboarding and developing salespersons are key lifecycle processes, which are shaped by roles and tasks in the organisation and their skills and personality traits. Onboarding ensures that the new hires become aware of the products, sales process, customers and territories, while training and coaching additionally serve to develop their communication, presentation and other skills, morale and team spirit.

Chapter 16 describes the salesperson evaluation as the quantitative and qualitative assessment of performance against declared targets. This is followed by an analysis of the factors for their achievements in terms of environment and other variables, and thereafter, feedback given to them, including corrective actions. Evaluation is influenced by control systems that oversee the execution of rules and procedures, salespersons' results and other behaviours, and values and culture, and affects customer orientation, intrinsic motivation and adaptive selling.

Chapter 17 explains sales force compensation as the salary and other financial remuneration received by the salesperson from the employer. The compensation plan is fair and attractive enough to encourage his performance in a challenging and competitive environment. The plan is a blend of fixed and variable components such as commission, bonus and sales contests to retain top talent and builds loyalty. Non-financial approaches to motivation include job autonomy, supervisor support, recognition for sales performance and product reliability.

Chapter 19 explains the alignment of the marketing and sales functions as a collaborative effort to find, serve and retain customers, and therefore, share information, tools and problems. Alignment ensures a shorter sales cycle, lower selling costs, and better market information, and depends on the efforts of senior management, open communication during conflict, and the rapport between managers. It can therefore be measured in terms of the firm's communication, collaborative actions, shared targets, and culture of customer orientation.

V: Using Technology, data and AI in Distribution and Sales management

Chapter 7 covers technology in distribution which is a bewildering array of choices that address consumers and intermediaries such as retailers and wholesalers in the supply chain. Ecommerce options include websites, m-commerce, apps and chatbots. An AI-driven management control centre could oversee sales, product, field force, media and intermediaries in terms of performance and effectiveness and therefore, generate analytics covering customer value, journey and loyalty, inventory stocking and pricing and channel members' performance.

Chapter 18 shows technology in sales management addresses the firm's interface with customers and salesforce using software, social media and AI. Customer Relationship Management (CRM) system is a software solution that captures and uses customer data for improved targeting, pricing and revenue. Sales Force Automation automates workflow, enhances sales efficiency and facilitates analytics. AI may be used to understand themes, sentiments and patterns from data, and thus, drive faster and deeper customer engagement.

Every chapter in the book begins with a highly readable anecdote rooted in the Indian markets acting as the context for the contents to follow. It ends with a summary, a list of key terms and conceptual questions to test the reader's understanding, assignment questions for the teacher, and a list of references as research support to the chapter contents. The chapter looks elegant, with the body in Times New Roman, a font so familiar to academia, while the rest of the summary and other sections is in contrasting Sans Serif font.

This textbook is written in a simple style that easily attracts the self-driven learner. It is not difficult to find information in the book due to the structured presentation within the chapters. The summary is an awesome support for readers who can test and augment their understanding. To further strengthen their curiosity and interests, readers may visit markets, observe the stocking, display and movement of product, make notes and draw insights from their experiences. As the most contemporary book in its category, the book will be a valuable complement to the others on the topic. It is appropriate for MBA students and corporate executives in sales and distribution.

Book Review 02

Lord Sri Krishna -The Leader of All Time: Evidenced by Sri Bhagavad Gita

(Author: Dinabandhu Mukhopadhyay[aka Prof. D, Mukherjee], Noida: Edsol Informatics Private Ltd., ISBN: 978-81-999316-6-4. Hardbound | Pages: 674 + xxix | MRP: INR 2,175/-)

*Ram Kumar Mishra**

There are books one reads once, and there are books one returns to repeatedly for guidance, introspection, and intellectual companionship. *Lord Sri Krishna - The Leader of All Time: Evidenced by Sri Bhagavad Gita* by Prof. (Dr.) Dinabandhu Mukhopadhyay unmistakably belongs to the latter category. Majestic in conception, formidable in scholarship, and contemplative in spirit, this inaugural volume is far more than another interpretative commentary on the Bhagavad Gita. It stands as an ambitious and profoundly relevant treatise on leadership, ethics, governance, and civilisational wisdom, appearing at a moment when humanity finds itself increasingly unsettled by technological acceleration, geopolitical volatility, and moral uncertainty.

Prof. Mukhopadhyay, a globally respected educationist, management scientist, and dedicated researcher, undertakes the formidable task of uniting the spiritual profundity of the Bhagavad Gita with the practical imperatives of contemporary leadership. In doing so, he portrays Lord Sri Krishna not merely as Arjuna's Divine Charioteer but as the timeless archetype of visionary, ethical, transformational, and servant leadership. The intellectual architecture of this book deserves particular commendation. Structured into twelve thematic chapters, clustered within four interwoven parts, the work distills the essence of all eighteen chapters and seven hundred verses of the *Sri Bhagavad Gita* into a coherent and accessible framework. The author's central proposition is both simple and profound: the dialogue between Lord Sri Krishna and Arjuna on the battlefield of Kurukshetra remains one of the most sophisticated leadership discourses ever articulated in human civilisation.

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What makes this volume especially compelling is the author's refusal to confine the Gita within a purely theological or metaphysical enclosure. Instead, he situates Sri Krishna's teachings within the practical realities of modern institutional life, corporate governance, policymaking, strategic leadership, bureaucratic ethics, conflict resolution, and global conflict management. Throughout the text, one discerns the mind of a seasoned management professor striving to bridge classical Indian philosophy with contemporary organisational dilemmas. In this endeavour, he succeeds admirably.

The book repeatedly reminds readers that leadership, in the tradition of Lord Sri Krishna, is neither domination nor charisma alone. It is clarity amidst confusion, restraint amidst power, and duty amidst despair. The movement from Arjuna's moral paralysis to enlightened action, as interpreted by the author, serves as a timeless template for navigating modern crises. Whether confronting geopolitical conflicts, institutional breakdowns, or ethical erosion in public life, the author persuasively argues that the Gita offers enduring principles capable of restoring equilibrium and wisdom.

One of the most admirable aspects of this monumental work is its linguistic discipline. Prof. Mukhopadhyay's mastery of Sanskrit is evident on almost every page, yet he never allows philological sophistication to overwhelm readability. His translations of Sanskrit verses into English are lucid, elegant, and remarkably faithful to the spirit of the original text. This balance between textual authenticity and reader-friendly interpretation is no small achievement. The carefully crafted footnotes further enhance the volume's scholarly utility, enabling both serious researchers and general readers to navigate complex philosophical ideas with ease.

The preliminary sections of the book are equally noteworthy. The deeply evocative dedication, "To the eternal spirit of Dharma, To Lord Sri Krishna, the Divine Strategist and Compassionate Guide, and to seekers of truth who aspire to lead with wisdom, courage and grace", sets the spiritual and intellectual tone of the work. The distinguished foreword by Dr. Sreedhar Saraswathy, MS, PhD, Edinburgh, U.K., neuroscientist and Chairman of the International Institute of Medical Science and Technology Council (IIMSTC), Bangalore, lends additional gravitas to the publication. The inclusion of a prologue, preface, acknowledgements, glossary, appendices, epilogue, and index reflects meticulous editorial planning and underscores the book's comprehensive vision.

The physical production of this volume also merits commendation. Edsol Informatics Private Ltd., Noida, has upheld a befitting standard in publishing this substantial hardbound work. The jacket design embodies a distinctly *Satvik* aesthetic, resonating appropriately with the contemplative spirit of the subject matter. While some diagrams and flowcharts appear only in black and white, occasionally affecting readability, colored representations might have further enriched the visual experience. Yet this remains a minor limitation in an otherwise impressive production. No scholarly work of such scale is entirely free from imperfections. A few typographical errors have escaped editorial scrutiny. However, given the vastness and complexity of the undertaking, such minor blemishes are understandable and hardly diminish the overall value of the text. Indeed, the intellectual sincerity and depth of engagement evident throughout the volume far outweigh these occasional editorial lapses.

Particularly striking are the contemporary global case studies interwoven into the analysis. These examples prevent the book from becoming abstract or overly doctrinal. Instead, they illuminate the practical applicability of Sri Krishna's teachings to present-day leadership and governance. In many ways, these case studies function like jewels embedded within the larger philosophical crown of the work. What ultimately distinguishes this volume is its moral seriousness. At a historical moment when leadership is often reduced to optics, power management, and algorithmic efficiency, Prof. Mukhopadhyay calls readers back to a civilisation-rooted understanding of responsibility, self-mastery, and ethical action. His reading of Lord Sri Krishna's message is neither sectarian nor exclusionary; rather, it emerges as profoundly universal. Under his interpretation, the *Bhagavad Gita* becomes not a text of war but a philosophy of inner balance, righteous conduct, and peaceful conflict resolution.

This book deserves a wide readership. Corporate leaders, lawmakers, bureaucrats, policymakers, governance experts, technocrats, academicians, philosophers, management practitioners, and university students alike will find in it a treasury of intellectual and spiritual insight. Young professionals preparing to become future change-makers may especially benefit from its synthesis of ethical clarity and strategic wisdom. In an age increasingly fractured by ideological extremism, technological disruption, and moral fatigue, *Lord Sri Krishna – The Leader of All Time* arrives not merely as a book but as a thoughtful intervention. It reminds us that enduring leadership cannot be built solely upon efficiency, profit, or political manoeuvring. It must rest upon *Dharma*, the deeper order of wisdom, duty, compassion, and self-realisation.

Prof. Dinabandhu Mukhopadhyay has produced a work of rare gravity and enduring relevance. One closes the volume not only intellectually enriched but also inwardly reflective. That, perhaps, is the highest tribute any reviewer can bestow.

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