Digital Transformation and Innovation Management: A Study of How Firms Balance Exploration and Exploitation

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Abstract

The use of new technologies or procedures to meet consumer needs and maintain an organization's competitive edge is known as process innovation. Taking a process approach necessitates a dedication to improving processes. Process innovation occurs when a company finds a solution to an issue that already exists. An established business process is carried out by innovators in a completely new method that produces something very advantageous and profitable for those who carry it out, for those who depend on it, or for both. Process innovation might include, for instance, adding a whole new sequence to an assembly line, which speeds up production by 100% and saves the company money and time. As part of their ongoing efforts to innovate their processes, organisations nowadays frequently implement new information technology systems or discover innovative methods to utilise older ones. Therefore, process innovation entails making substantial adjustments to tools, techniques, methodology, equipment, and/or software in order to adopt a new or significantly enhanced mode of production or service delivery.

Keywords: Digital Transformation, Digital Risk, Business Management.

I. INTRODUCTION

An excellent example of how policy changes and economic liberalisation, along with an entrepreneurial ecosystem and skilled tech resources, can create an industry that adds more than 8% to the GDP of a rapidly developing nation like India is the growth and rise of the information technology and software sector in India. Thousands of Indian IT product and services companies have arisen and are maintaining strong economic growth in the wake of policy reforms and liberalisation. Together, they have brought in over US$177 billion in total revenue, including more than US$135 billion from exports (Gil-Gomez et al., 2020). During this time, the IT services and product sector in India has also generated about 4 million direct jobs and 12 million indirect jobs. One of the biggest Indian IT services businesses today has a market value of over $100 billion and brings in over $20 billion in revenue annually, which is evidence of this expansion. One significant trend that has been noted over time is the maturation and growth of the Indian software sector, which has enabled it to advance to the next level. These days, they assist multinational corporations not just with low-cost back office support but also with research and

development and innovation to fuel future growth. Business executives of Fortune 500 organisations have gradually come to understand the potential of Indian IT resources and the ecosystem that supports the Indian IT sector (Šimberová et al., 2022). A significant number of international businesses have established their own R&D and innovation centres in India to take advantage of the thriving Indian IT & software ecosystem by leveraging this complete ecosystem of intellectual capital, cost of operation, and locational advantages (Xu et al., 2023). Other industries have benefited from the Indian software industry's assistance in quickening the adoption of digital technology for innovation and expansion. More than a billion people in the nation now have digital IDs (AADHAR, Passport, and PAN) thanks to the IT sector's assistance to the Government of India (GOI). This helps ensure that government services and other services across industries like banking, healthcare, and education are provided effectively as well (Mohamed Hashim et al., 2022).

Many Indian IT businesses became multinationals with offices and centres around the world because to the experience they obtained from operating in India and working with massive, complex IT systems created for Indian customers. They also gained confidence from working with clients from other countries. These Indian IT companies provided a wide range of services, such as software development, large-scale, complex turn-key projects involving system integration, full end-to-end IT solutions, including infrastructure management and upkeep, service provision, IT strategy, and other related services. Indian technical labour has demonstrated its expertise and abilities through work with multinational corporations, propelling it to the top of international corporations (Xu et al., 2022). These multinationals now have more faith in India's innovation environment and talent pool. Almost every industry sector has attempted to take advantage of the fact that the majority of innovation in the modern world is IT-based and digitally driven, and that India offers a proven talent pool of IT professionals at reasonable rates. Thus, international corporations began to establish software development centres, knowledge processing management, business process management (BPM), innovation labs, and R&D centres in India as a means of expanding their direct presence in the country after realising and appreciating India's potential in the software services sector (Philbin et al., 2022). Almost all major industry sectors have seen the establishment of in-house centres by 1,250 global businesses thus far in India. The biggest sectors here include software/Internet, semiconductors, e-commerce, automotive, renewable energy, telecom, and semiconductors. R&D is a major focus. Businesses from a variety of sectors, including banking, retail, healthcare, manufacturing, and BFC, have begun to lead digital engineering projects from their India development centres (Feroz et al., 2021).

In this case, the introduction is examined in section 1 of the article. Section 2 describes the review of the work further Section 2 and 3 explains the goal of the work digital technologies, and Section 4 concludes the project.

II. DIGITAL INNOVATION

Since the introduction of the "Global Village" concept and increased ICT usage across industries, businesses and organisations have operated in a fiercely competitive, international marketplace. The pervasive integration of digital technology has expedited and enabled both

incremental and disruptive innovation across various sectors. It is time for organisations to reconsider how work is done in light of recent digital developments. Process reengineering now has more reach and strength because to digital technologies (Martínez-Peláez et al., 2023). A few decades ago, process reengineering was frequently used interchangeably with innovation. Simplify, automate, get rid of process bottlenecks, and boost productivity were the previous methods. However, that was before many of the most recent technological advancements became available, which allow you to truly reimagine and rethink the processes in ways that were before impossible. There are several chances to reconsider how work is done, and digital intervention can lead to outstanding and revolutionary process design (Camodeca & Almici, 2021). With the advent of digital technology, reengineering's foundation and reasoning have evolved. It's no longer enough to just automate, simplify, and remove. It's simple—rethinking from scratch, outside the box; make it intelligent, share resources, automate when needed, and activate all those features instantly. Motivated by technological advancements that facilitate digital transformation, India's GDP is expanding due to unicorns in every field (Stroumpoulis & Kopanaki, 2022). India has outgrown China in terms of unicorn growth as of 2022. We've noticed that over 20 start-ups have achieved market capitalisation of $1 billion or more in the past few years. Walmart, the largest retail chain in the world, just acquired Flipkart, one of the most successful Indian start-ups and the country's largest e-commerce company, for a US$21 billion value. Another technologically advanced start-up, OYO Rooms, is a franchise model hotel chain that has revolutionised the Indian hotel business and surpassed both conventional Indian and international hotel chains in terms of room count (Diaz & Montalvo, 2022). Innovation is being driven by digitally native start-ups at a faster rate. Large ICT corporations are forming alliances with startups and actively seeking talent and intellectual capital acquisitions and mergers in order to sustain the rate of innovation (Ionaşcu et al., 2022).

III. RESEARCH FRAMEWORK

All organisations must adapt to the current dynamic environment by making both extreme and gradual changes. Without technical innovation, an organisation cannot attain both competitive advantage and sustainable development. The organisation must now alter the ways in which it does business and offers goods and services to ensure client pleasure. quick changes in the competitive dynamics of manufacturers and the quick advancement of product characteristics have propelled many manufacturing technology-based sectors forward. Among the most notable examples, the mobile phone industry comes in first (Li & Lin, 2024). Since the beginning, there have been numerous changes in the mobile phone sector on a global scale. Due to the quickly shifting market dynamics—such as rising market penetration, fierce cost rivalry, quickly reducing product life cycles, and increased product customization—this business has been revolutionary. After China, mobile phone firms now rank India as their second-largest market. It continues to expand as per capita income rises. For Indian consumers, mobile phones are become an essential component of daily life. Since it began offering only voice services, or pure telephonic capabilities, the mobile phone industry has come a long way in terms of function, extending its reach to encompass an ever-expanding range of functions and applications (Rosário & Dias, 2022). The rate of technological advancement in the mobile phone business is extremely unusual. Developing creative customer-focused strategies presents a significant challenge for

businesses. The product strategy of the mobile phone industry is greatly influenced by technological progress. This involves designing and targeting distribution channels, creating new products, pricing strategies to be implemented, and creating promotional campaigns. Mobile phone manufacturers have been facing difficulties due to shifting consumer demands and preferences in India as well as fierce competition from both established and up-and-coming firms in the sector (Nayal et al., 2022). This is a result of the product's increasing technological convergence and growing market demand. Targeting future customers and maintaining current ones are challenges faced by distribution channels such as manufacturer's own retail channels, network operator's retail channels, and other independent retail channels. In light of this, the research is significant since it highlights the influence of technical advancement on the decision-making process regarding the marketing mix offered by the mobile phone business. The study's findings would also help businesses, academics, and researchers conduct further research in the future (Li, 2022). Illustration of Framework shown in Figure 1.

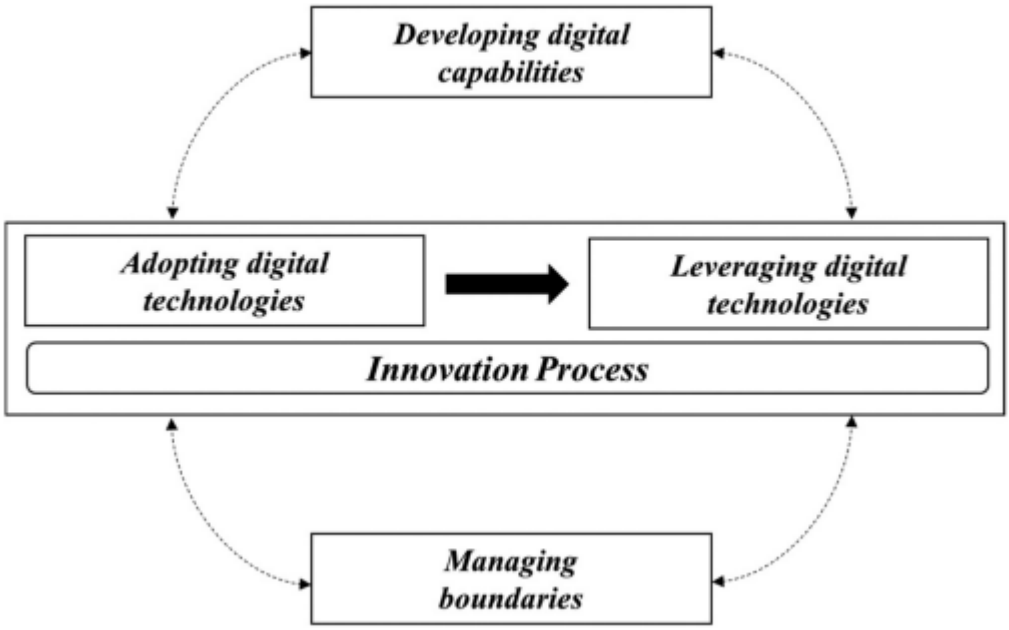

Figure 1: Illustration of Framework

Research design is essentially a framework, or an organisation of several procedures and research methodologies. A research design is simply a framework or plan that is developed before the full research process begins. Research design mostly addresses logistical challenges, not logical ones (Zheng & Zhang, 2023). A research design usually includes a clearly defined research problem or statement, a range of tools and techniques, the sample being studied, and the approaches to be used throughout the data analysis stage. The current investigation was based on both primary and secondary data. Secondary data came from official websites, yearly reports, publications, respected journals, a number of well-known data-providing portals, and the corpus of current research on digital innovation, including diverse subdivisions of the area including consumer behaviour and digital marketing. The primary data for the study were collected using a well-considered questionnaire (Ufua et al., 2021)

IV. EXPERIMENTAL ANALYSIS

This chapter's primary goal is to examine Indians' perceptions of digitalisation. The current goal was set out to ascertain public opinion on e-books. The specific research objectives are to ascertain the respondents' level of awareness and e-book adoption, to learn about their use of specialised reading devices, and to investigate their attitudes towards the adoption of e-books among Indian respondents (Ji et al., 2023). Utilising a survey, the study's raw data was acquired. A variety of statistical approaches were used to evaluate the data in order to filter it for purposes that made sense and to test the hypotheses. To reach relevant conclusions, an attempt has been made to connect the analyses' results to the research's defined hypotheses and findings. As a result, statistical procedures like multiple regression and the t-test were used to acquire the results. Respondent profile was presented using descriptive analysis. It comprises analyses of each variable's average, frequency, and percentage of data value. To find and comprehend the correlations between different independent and dependent variables, multiple regression analysis was employed. To examine respondents' opinions on e-books across demographic characteristics, an ANOVA was performed (Shen & Wang, 2023).

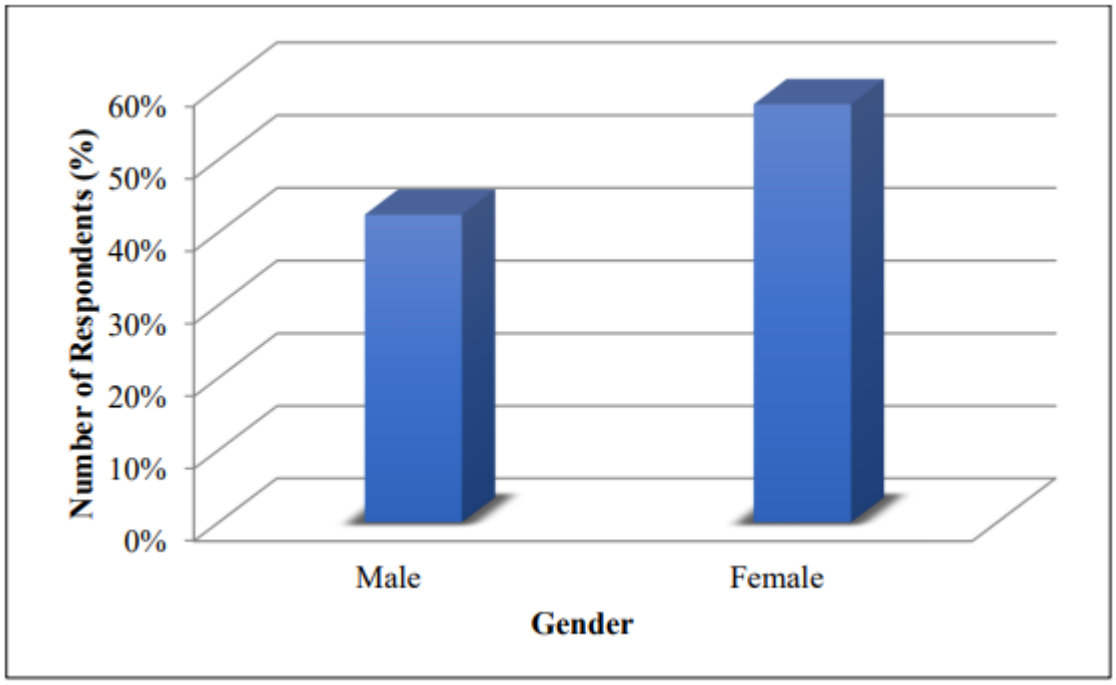

Figure 2: Classification of Respondents on the Basis of Gender

The respondents' gender profile is displayed in Figure 2. 42.4% of respondents were men and 57.6% of respondents were women.

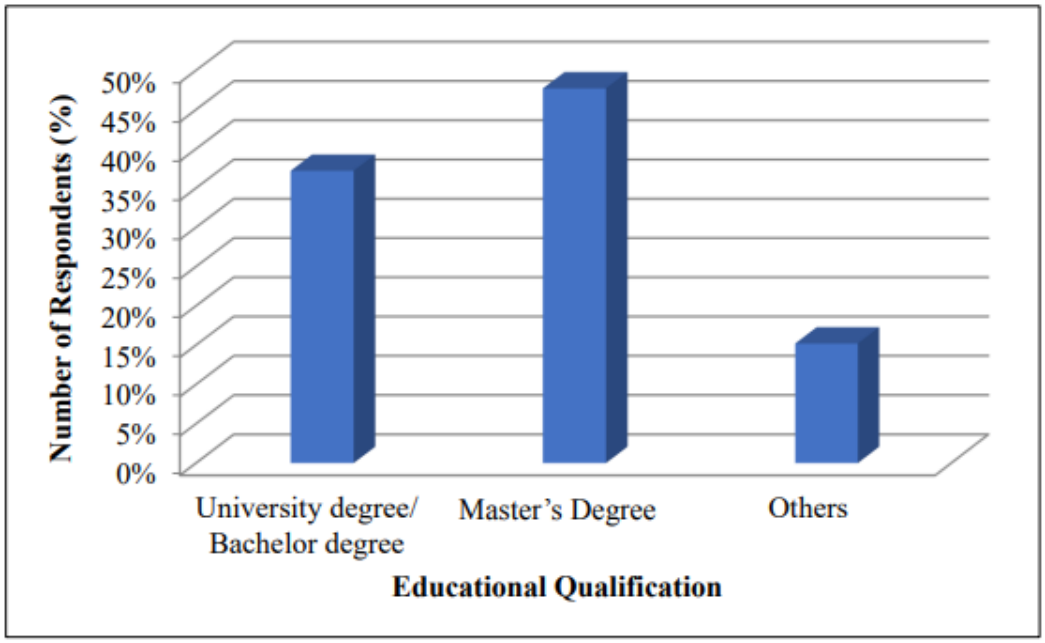

Figure 3: Classification of Respondents on the Basis of Educational Qualification

Figure 3 displays the respondents' educational profile, which was divided into three categories based on their level of qualification. 47.7% of responders, or most of them, have a master's degree. Of the participants, 37.2% possess a Bachelor's degree, while the remaining 15.2% have qualifications other than Master's and Bachelor's degrees.

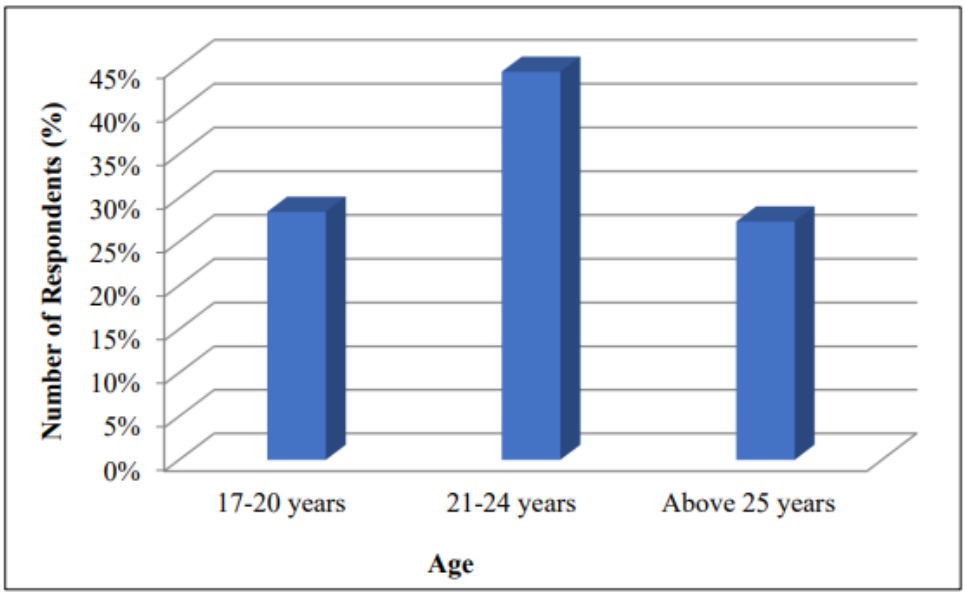

Figure 4: Classification of Respondents on the Basis of Age

The respondents' age distribution is displayed in Figure 4. The age group of 21–24 years old comprises the majority of responders (44.4%), followed by the age group of 17–20 years old (28.4%). The least amount of responders (27.3%) are older than 25.

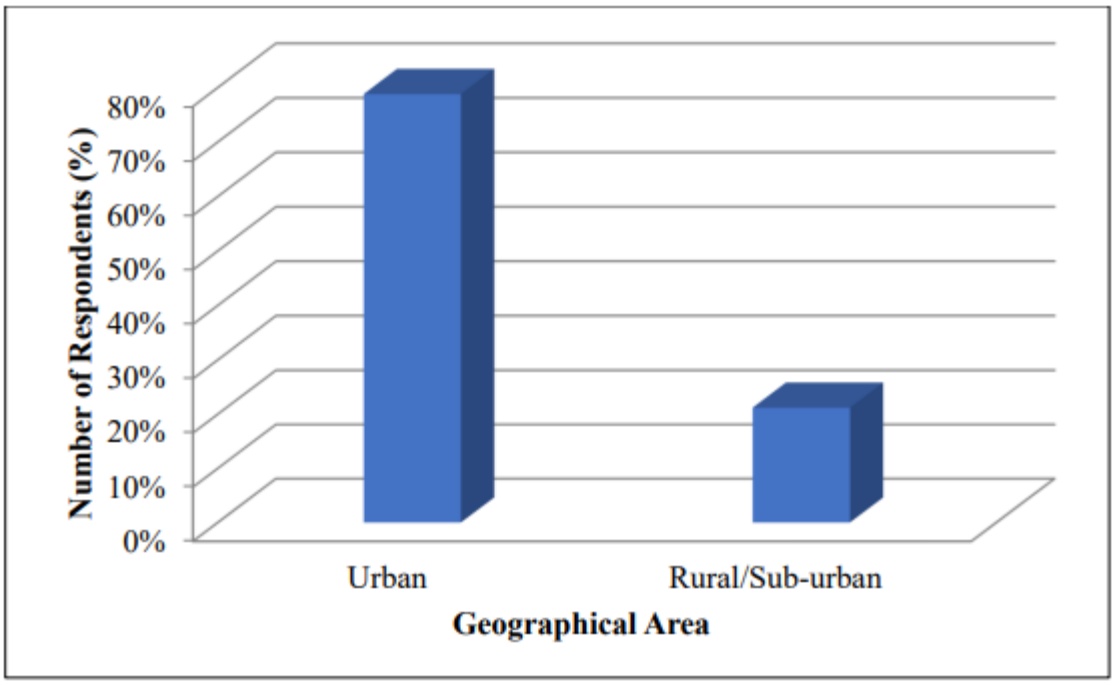

Figure 5: Classification of Respondents on the Basis of Geographic Location

The location of the respondents' residences is shown by their geographical profile. Table indicates that 78.8% of the respondents reside in urban regions, while the remaining 21.2% do so in rural or sub-urban areas Figure 5.

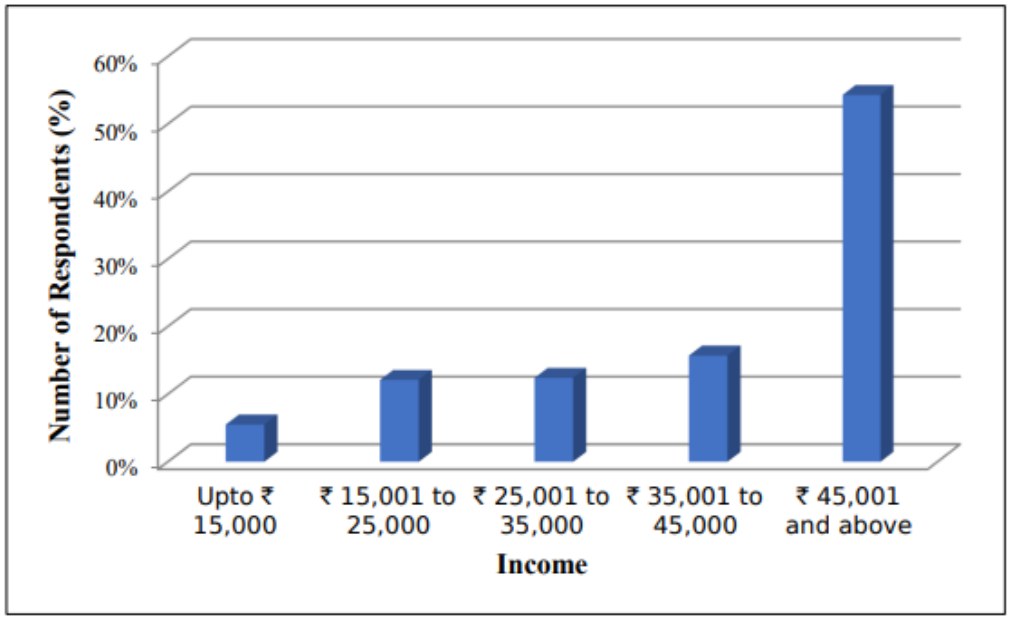

Figure 6: Classification of Respondents on the Basis of Income

Figure 6 illustrates the five groups into which the respondents' household monthly income was divided. Out of all the respondents, just 5.5% have a monthly family income up to ₹15,000. The remaining 54.3% have a monthly family income exceeding ₹45,000.

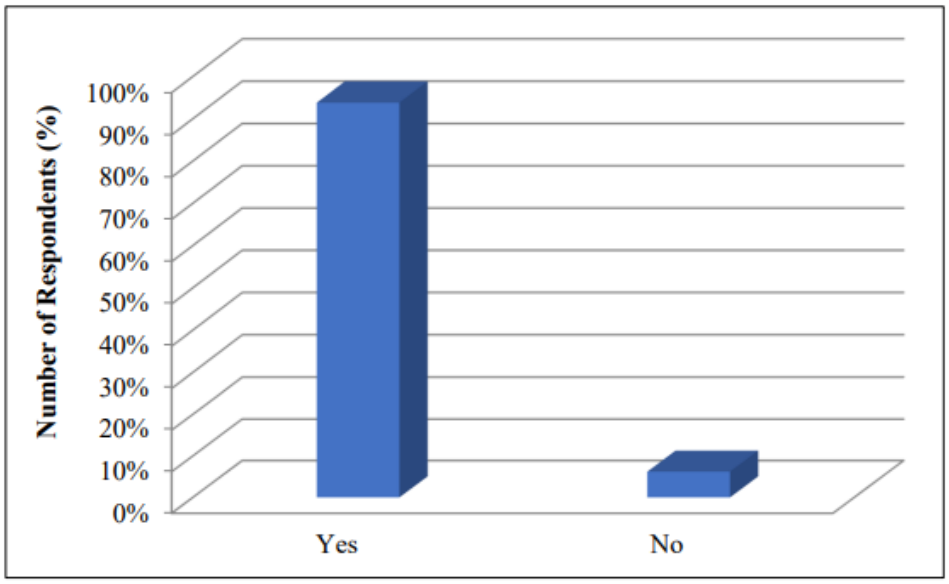

Figure 7: Respondents Awareness of Innovation

Many businesses are creating, developing, and putting into practice innovative digital business models in response to the opportunities and challenges presented by digital transformation. The possibility of (digital) business model innovations is really impacted by the unstable and unpredictable "digital" backdrop, especially if businesses view disruption and digital transformation as dangers rather than possibilities. State that there are three key ways in which a digital business model differs from a physical brick-and-mortar business model: internal power, or who "owns" the customer experience; cross-organizational business processes; and data that becomes an asset for the entire company. Empirical findings from a survey on digital application usage and awareness are displayed in 8. Respondents Awareness of Innovation shown in Figure 7.

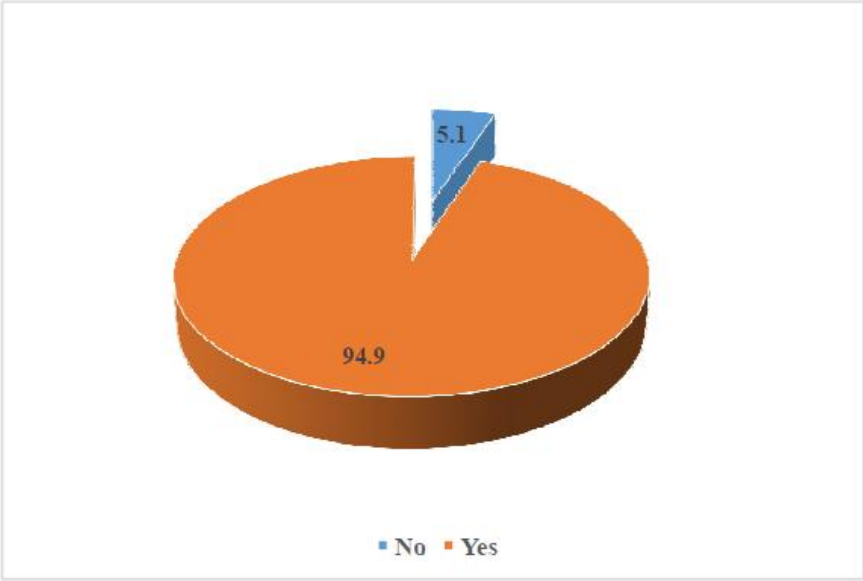

Figure 8: Impact of Technological Innovation on Mobile Phone Industry

It has been noted that 94.9% of respondents had favourable opinions regarding how technology innovation affected business, while just 5.1% had unfavourable opinions regarding how technological innovation affected the mobile phone industry. It indicates that the majority of respondents believe technology advancement is transforming the sector. Impact of Technological Innovation on Mobile Phone Industry shown in Figure 8.

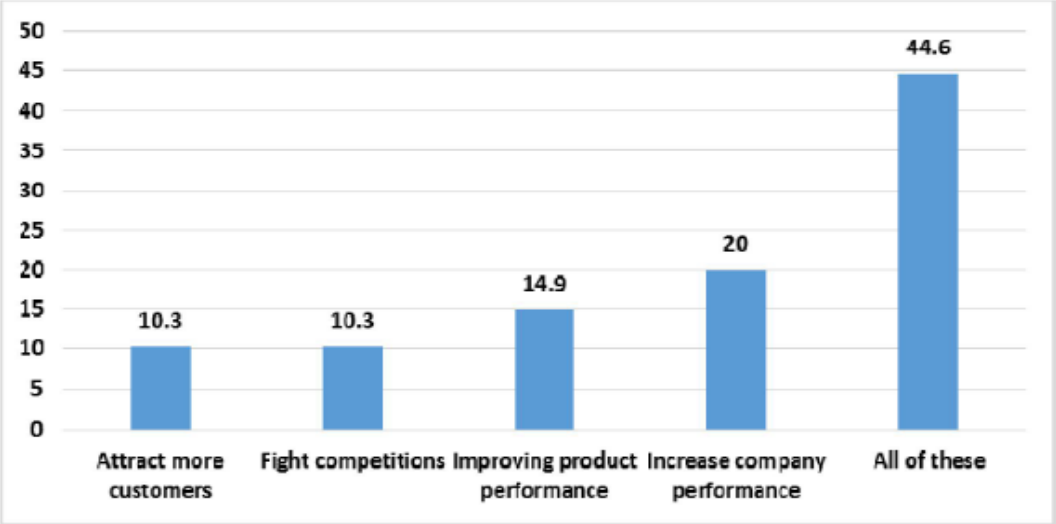

Figure 9: Company Objective to Engage in Technological Innovation

According to respondents' perceptions of how companies use technological innovation, 14.9% think it helps them perform better on their products, 10.3% think it helps them compete, 10.3% think it helps them draw in more customers, 20% think it helps them make more money, and the majority 44.6% of respondents believe that their organisation uses technological innovation to accomplish all of the goals that were outlined. Company Objective to Engage in Technological Innovation shown in Figure 9.

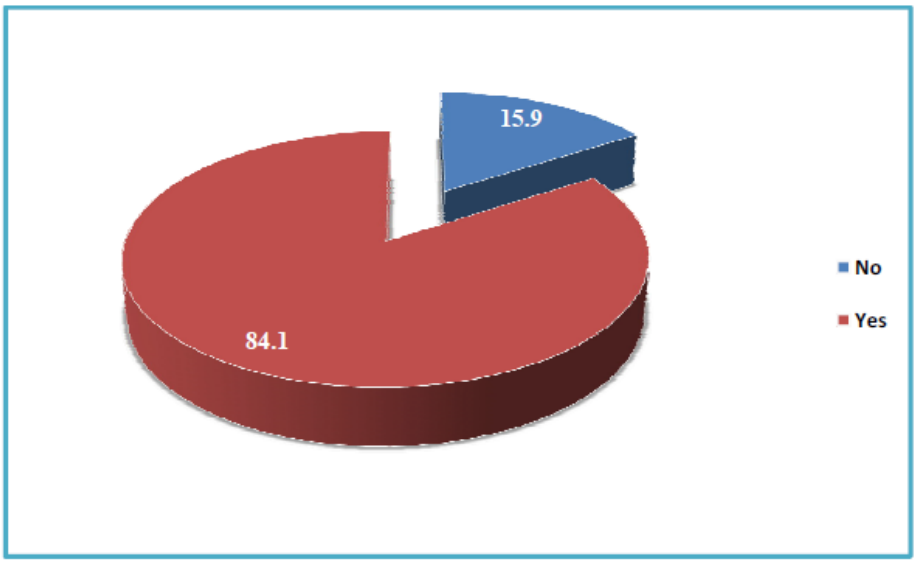

Figure 10: Achievement of Marketing Goals through Technological Innovation

It was found that while 15.9% of respondents disagreed, 84.1% of respondents thought technological innovation helped marketers accomplish their objectives. It implies that innovation helps businesses achieve their marketing goals and satisfies the needs of organisations for growth and development. Using the information gathered from the businesses and retailers for whom the researcher had formulated merely hypotheses, the researcher performed statistical analyses. The interpretation's findings show that, in the mobile phone sector, technical innovation directly and significantly influences product innovation, price and distribution strategies, product promotion, and sales. Since the study questions were primarily meant to elicit open-ended responses in order to learn about the participants' opinions, the researcher has also included a summary of the results gathered from the customer survey in this chapter. in order to avoid testing their answers. Their answers served solely to corroborate the findings of surveys conducted by companies and retailers. Achievement of Marketing Goals through Technological Innovation shown in Figure 10.

V. CONCLUSION

The goal of the current study is to define the features of the mobile phone industry. Examining how technology advancement affects marketing mix components in Rajasthan's mobile phone business was the primary goal of the study. The study was further broken down into numerous sections depending on research topics in order to accomplish this goal. The responses gathered from the mobile phone companies are first analysed by the research. To comprehend the industry's perspective on the effects of technological advancement, the responses were scrutinised. Next, information on the merchants' real perceptions of the influence of technological innovation was gathered from their responses. It is imperative for corporations to develop multiple product advancements in order to stimulate demand for replacement purchases. Over time, the scope of products has been continuously reformed due to the rapid pace of revolutionary product breakthroughs. It has been noted that the advent of multiple ground-breaking product technologies is responsible for the creation of smartphones. Innovation in technology has pushed original equipment manufacturers to create sophisticated products with cutting-edge operating systems so that consumers may use their mobile phones much like personal computers.

REFERENCES

[1] Gil-Gomez, H., Guerola-Navarro, V., Oltra-Badenes, R., & Lozano-Quilis, J. A. (2020). Customer relationship management: digital transformation and sustainable business model innovation. *Economic research-Ekonomska istraživanja*, *33*(1), 2733-2750.

[2] Šimberová, I., Korauš, A., Schüller, D., Širáňová, L., Straková, J., & Váchal, J. (2022). Threats and opportunities in digital transformation in smes from the perspective of sustainability: A case study in the Czech Republic. *Sustainability*, *14*(6), 3628. https://doi.org/10.3390/su14063628

[3] Xu, J., Yu, Y., Zhang, M., & Zhang, J. Z. (2023). Impacts of digital transformation on eco-innovation and sustainable performance: Evidence from Chinese manufacturing companies. *Journal of Cleaner Production*, *393*, 136278. https://doi.org/10.1016/j.jclepro.2023.136278.

[4] Mohamed Hashim, M. A., Tlemsani, I., & Duncan Matthews, R. (2022). A sustainable university: Digital transformation and beyond. *Education and Information Technologies*, *27*(7), 8961-8996.

[5] Xu, P., Chen, L., & Dai, H. (2022). Pathways to sustainable development: Corporate digital transformation and environmental performance in China. *Sustainability*, *15*(1), 256. https://doi.org/10.3390/su15010256

[6] Philbin, S., Viswanathan, R., & Telukdarie, A. (2022). Understanding how digital transformation can enable SMEs to achieve sustainable development: A systematic literature review. https://doi.org/10.26784/sbir.v6i1.473

[7] Feroz, A. K., Zo, H., & Chiravuri, A. (2021). Digital transformation and environmental sustainability: A review and research agenda. *Sustainability*, *13*(3), 1530. https://doi.org/10.3390/su13031530.

[8] Martínez-Peláez, R., Ochoa-Brust, A., Rivera, S., Félix, V. G., Ostos, R., Brito, H., & Mena, L. J. (2023). Role of digital transformation for achieving sustainability: mediated role of stakeholders, key capabilities, and technology. *Sustainability*, *15*(14), 11221. https://doi.org/10.3390/su151411221.

[9] Camodeca, R., & Almici, A. (2021). Digital transformation and convergence toward the 2030 agenda's sustainability development goals: evidence from Italian listed firms. *Sustainability*, *13*(21), 11831. https://doi.org/10.3390/su132111831.

[10] Stroumpoulis, A., & Kopanaki, E. (2022). Theoretical perspectives on sustainable supply chain management and digital transformation: A literature review and a conceptual framework. *Sustainability*, *14*(8), 4862. https://doi.org/10.3390/su14084862.

[11] Diaz, R., & Montalvo, R. (2022). Digital transformation as an enabler to become more efficient in sustainability: evidence from five leading companies in the Mexican market. *Sustainability*, *14*(22), 15436. https://doi.org/10.3390/su142215436.

[12] Ionaşcu, I., Ionaşcu, M., Nechita, E., Săcărin, M., & Minu, M. (2022). Digital transformation, financial performance and sustainability: Evidence for European Union listed companies. *Amfiteatru Economic*, *24*(59), 94-109.

[13] Li, L., & Lin, J. (2024). Digital transformation for the sustainable development of firms: The role of green capability and green culture. *Sustainable Development*, *32*(3), 1861-1875.

[14] Rosário, A. T., & Dias, J. C. (2022). Sustainability and the digital transition: A literature review. *Sustainability*, *14*(7), 4072. https://doi.org/10.3390/su14074072.

[15] Nayal, K., Raut, R. D., Yadav, V. S., Priyadarshinee, P., & Narkhede, B. E. (2022). The impact of sustainable development strategy on sustainable supply chain firm performance in the digital transformation era. *Business Strategy and the Environment*, *31*(3), 845-859.

[16] Li, L. (2022). Digital transformation and sustainable performance: The moderating role of market turbulence. *Industrial Marketing Management*, *104*, 28-37.

[17] Zheng, Y., & Zhang, Q. (2023). Digital transformation, corporate social responsibility and green technology innovation-based on empirical evidence of listed companies in China. *Journal of Cleaner Production*, *424*, 138805. https://doi.org/10.1016/j.jclepro.2023.138805

[18] Ufua, D. E., Emielu, E. T., Olujobi, O. J., Lakhani, F., Borishade, T. T., Ibidunni, A. S., &

Osabuohien, E. S. (2021). Digital transformation: a conceptual framing for attaining Sustainable Development Goals 4 and 9 in Nigeria. *Journal of Management & Organization*, *27*(5), 836-849.

[19] Ji, Z., Zhou, T., & Zhang, Q. (2023). The impact of digital transformation on corporate sustainability: Evidence from listed companies in China. *Sustainability*, *15*(3), 2117. https://doi.org/10.3390/su15032117.

[20] Shen, A., & Wang, R. (2023). Digital transformation and green development research: microscopic evidence from China's listed construction companies. *Sustainability*, *15*(16), 12481. https://doi.org/10.3390/su151612481.