

Technological Innovation and Its Influence on Business Performance and Marketing Outcomes in the Mobile Phone Industry

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Article Info

Journal of Digital Business and International Marketing
<https://www.ansispublishations.com/journals/jdbim/jdbim.html>

© The Author(s), 2026.

<https://doi.org/10.64026/JDBIM/2026017>

Received 06 March 2026.

Revised from 26 April 2026.

Accepted 12 May 2026.

Available online 05 July 2026.

Published by Ansip Publications.

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Abstract – The mobile phone industry is one area where technology has become a significant factor of competitiveness, product development and success. We aim to investigate the impact of technological innovation on the organization goal, marketing outcome and company performance using cross sectional survey approach. The study was carried out for 3 months (May-July 2026) with the 390 respondents, who have been working or related with mobile phone industry. Descriptive statistics, chi-square test and binary logistic regression were used to analyze the data using IBM SPSS Statistics version 26. Data shows the significant contribution of technology innovation in product improvement, product positioning, customer engagement, revenues and marketing effectiveness. The study is confirming that Innovation Capability is an important strategic resource to Digital Markets.

Keywords – Technological Innovation, Mobile Phone Industry, Digital Transformation, Marketing Performance, Business Competitiveness, Product Innovation, Organizational Performance.

I. INTRODUCTION

As the Internet and electronic commerce have expanded rapidly in the past decade, enterprises have had to seek global competition and expand their global presence through new information systems and technology based on the Internet. Adoption of new IT/IS is a continuous process of adoption and a critical process for the transition of a business to an e-business which is the establishment of electronic connections with suppliers and customers, and the implementation of electronic transactions throughout the value-chain activities. Thus, the “business point of view” when it comes to innovative IT/IS has turned out to be an important factor in implementing e-business strategy. But e-business is not similar with the last traditional technology development [1]. E-business, on the other hand, is an innovative and creative way of linking core business processes/functions with Internet enabled IT/IS.

The entities make strategic decisions in the global competitive environment, and technological development and technological approaches play an important role in maintaining competitiveness. One of the critical decisions that the management has to make in the present global competitive scenario is technology. The more technologically advanced a company is, the faster it will acquire technology and the more it will be able to capitalize on other complementary assets that are essential to the large internal diversity required to drastically upset conventional business strategy. Due to the complexity of the current informed society, the organization must have special technical resources to handle it [2]. Technology, a tactical tool, for knowledge and information to flow quickly and easily across the business. Technology has the potential to enhance collaboration, communication and sharing of information and knowledge through the provision and effective use of technology.

Advanced technologies have always been the key to progressive transformation, competitiveness and advancement at micro and macro-economic levels. In the present times, technological progress and sustainability and competitiveness have gained more traction and are now indispensable to tackle the challenges of the world and to achieve sustainable development goals. Clean and renewable energy sector, telehealth and digital health technologies, fintech and blockchain innovations, e-commerce and social commerce, and other sectors with digital and ecological competences are all leading-edge technologies that are game changers on the global stage. This is due to their impacts on efficacy and competition.

Mobile phone is an extremely inventive part of the ICT industry. There are different types of mobile devices: the most common is the smart phone. It is a very active sector, in which there has been some technological evolution and the number of new products has exploded, but few enterprises share in the revenues. Junge [3] take a look at a typical design pattern that is becoming popular in the smartphone industry. They specifically take into account the development of hardware components and use a brand-new list of product characteristics for all the cell phones launched amongst 2004 and 2013. The data indicate that there is some convergence in the use of vertical innovations and that product differentiation is the main criterion of competitiveness among producers, to date there is no dominating design.

A shift towards value creation based on innovation is necessary at the customer level. With an increasing digitization of the world, it is more necessary than ever to be innovative and have the ability to rapidly adapt to new technologies to continue to prosper. The way of innovation has changed for businesses with the digital transformation. New avenues for innovation have been created thanks to digital technologies. These allow people to work collaboratively worldwide, share information and resources and give them tools to do research and experimentation. Organizations that can be able to successfully integrate such technologies into their systems of innovation will be able to stay competitive and revolutionize industries and create value in ways that was never thought of before [4].

In the digital age, the skill to quickly create and implement innovations is the skill to adapt and react to digitalization. Digital transformation in terms of innovation needs new technology and a culture in the organization. Successful companies establish a culture of continuous innovation, acceptance of failure and rapid learning, an attitude that is further enhanced by digital technologies.

This study is aimed at investigating the technological development and performance of mobile phone industry companies. The role of innovation is especially taken into account from the stakeholders related to the industry in the context of organization goals and marketing goals as well as product improvements, competitiveness and sales increase. In Section II, literature related to technology innovation, business performance and marketing practices is reviewed and study hypotheses are formulated. In Section III, the methodology of the study has been presented consisting of research design, population, instrument, data collection and statistical analysis. In Section IV, the findings from data gathered from the retailers have been presented and the hypothesis formulated has been tested. Lastly, the study is completed by a summary of key findings and implications in Section V.

II. RELATED WORK

The capability of the technological innovation has been well discussed in the past 25 years by a number of researchers such as Tello-Gamarra and Fitz-Oliveira [5]; and Akbari et al. [6]. Other scholars (such as Dasgupta, Gupta, and Sahay [7]) explore the technological innovation capability and other key aspects of the business including the organization structure, marketing, financial resources, resources allocation, strategic planning, and production. Kocoglu et al. [8] study technological adoption capabilities by categorizing into scopes such as study capability, research and development capability, marketing capability, productivity, organizational competence, strategic competence, and resource utilization capabilities.

In the literature, there is a wide array of innovation capability definitions. Fouad, Tourabi, and Lakhnati [9] define the ability to think creatively as one of the main factors in creating new outcomes and can be seen throughout the innovation process. The know-how and skills needed to turnover information and insights into novel processes, frameworks, and processes is a measure of the ability of an organization to innovate. Marketing competency is defined by Varadarajan [10] as the ability of a corporation to achieve competitive rivalry with a set of resources. The core actions towards meeting the market needs are marketing competence. Wilden and Gudergan [11] propose that marketing competence permits a firm to improve the value through altering its product and services to the market conditions, exploiting market opportunities and fending off threats of competition.

Over the past few years, there has been an increase in interest in research on marketing progress. Marketing innovation was added to technological innovation in the definition of innovation by the OECD (Organization for Economic Co-operation and Development). Marketing innovations involve transformation in the marketing mix (pricing, promotion, packaging, and product design) and do not involve major technology improvements. Although there has been a significant amount of research into technological advances, there has been comparatively little research on marketing innovation as an important factor for organizational efficiency [12]. But it is essential for the performance of a company as marketing is a precondition for value creation. Non-technological innovation can help to increase a company's competitive capacity and is essential to convert new products into income. Marketing innovation is shown to be effective in enhancing the corporate performance in the manufacturing industry. The good impact of creative marketing methods on the enduring advantages of organizations has been underlined by academics, especially for small and medium organizations.

Marketing innovation is recognized by some scholars as a means to achieve substantial improvements in product and sales, but how marketing innovation can lead to product and sales improvement is not well known, and many alleged effects are yet to be subjected to empirical test. They have found that various forms of marketing innovations can have varied impact on the firm's performance [13]. As mentioned by Cervera, Mollá, and Sánchez [14], there is a need to differentiate between various forms of marketing alignments and investigate their strengths and weaknesses. Garcia and Calantone [15] suggested that there is a need for further research in marketing innovations classification and its quantification as they believe that different types of marketing innovations could play an important role in explaining the innovative outcomes of the enterprises in the UK. Likewise, Karabulut [16] indicated that the type of innovation has an impact on the corporate success in Turkey. The majority of current research is descriptive. There is a need for more study on the dimensionality of marketing modernization and its consequences.

The current study extends earlier research and, using the fuzzy clustering technique, recognizes two different types of marketing innovations, namely market-driven marketing innovation, and market-driving marketing innovation. There are three dimensions in which the two kinds of marketing innovations are distinct: product concept, customer requirements and market segmentation (as displayed in **Table 1**).

Table 1. Market-Shaping and Market-Responsive Approaches to Marketing Innovations

	Market-responsive	Market-shaping
Product conceptualization	Current	Emerging
Consumer requirements	Articulate	Prospective
Market differentiation	Prevailing	Novel

Market oriented marketing innovation are majorly directed at prevailing products, current customer needs and markets. It is a relatively passive approach to marketing modernization. This is the method adopted by the companies, focusing on the features of the existing market and trying to offer better services to the existing ones, in order to meet the needs of the present customers. The market-driving innovation strategy, on the other hand, has a more aggressive character. When these are put into practice, they frequently lead to new information about clients and products for organizations. The companies strive to establish product ideas, discover potential requirements and enter new market segments. As seen from the marketing side, the market driver will force the company to actively improve the product value, anticipate the needs of consumers and create trends of consumers that can fill the future market [17].

The majority of research examining the relationship between innovation efficiency and firm size has mostly been concerned with understanding the results in terms of better market performance and exploiting new market opportunities [18]. This particular relationship also got affirmed for small and medium-sized enterprises (SMEs) and larger companies. SMEs are important to economic systems since they are numerous and provide a lot to the labour force. Therefore, there is great potential for improving the creative capabilities and skills of SMEs, because innovation is a key factor in the SMEs competitiveness and will provide extra benefits to private sector efficiency and growth.

With this background, the current study seeks to help add to the literature by helping to clarify the connections between different levels of modernization and market outcomes. The research builds on the study by Ray, Barney, and Muhanna [19] and analytically tests the RBV (resource-based view). This research presents a clearer view on the relationship between the factors of modernization that stimulate market efficiency, unlike many previous studies which imply that market performance is a measurement of a business' general performance.

III. RESEARCH METHODOLOGY

Research Design, Population and Instrument

A cross-sectional survey design was applied to analyze perceptions of technological innovation and how they link with market related outcome in the mobile phone sector. The resource-based view (RBV) technology innovation was viewed as a strategic capability that can impact product innovation, pricing and distribution plans and promotion plans and sales performance. This research used deductive approach in which constructs were defined as relates to respondents' perception about the impact of technological innovation on industry, organizational objective for technological innovation, effect of technological innovation on marketing objective and the effect of technological innovation on the key business function. The target population consisted of the Mobile phone Industry Professionals which included the employees from Mobile Phone Manufacturers, Distributors, Retailers and Mobile phone Service Providers, the professionals in the Mobile phone Marketing, Mobile phone Sales and Mobile phone Strategy function. A non-probability convenience and purposive sampling approach was adopted, to select the respondents with at least basic knowledge of mobile phone market and exposure of technology enabled business process. There was a total of 390 respondents in the final sample. The data was collected over a period of three months from May 2026 to July 2026 (as per the data in **Table 2**).

The data was collected using a structured self-administered questionnaire which was developed from the literature on marketing and technological innovations and firm efficiency. The questionnaire could be divided into two portions:

- Demographic and professional features (age, education, work experience, geographic site, monthly income of the family),

- Technological innovation perception-based item and impact of technological innovation on business and marketing outcomes. Key measures included:
 - Attitude towards effect of technological innovation in the mobile phone industry (favorable/unfavorable).
 - Technological innovation objectives such as product performance, competitiveness, customer acquisition, revenues or all of the above, and
 - The extent to which technology allows companies to achieve their marketing goals (agree/disagree).
 - The Product, Price, Distribution, Promotion & Sales are the areas where influence of technological innovation is perceived.

Content of the instrument was reviewed by three experts in Innovation Management and Telecom and minor changes were made in the words for clarity and relevance. A pilot test (n = 30) was used, and some minor modifications in wording of items and range of responses were made.

Table 2. Sample characteristics

Parameter	Value
Respondent number	390
acceptable replies	390
Response rate (%).	100
Survey time span	May–July 2026
Likert scale range	1–5
Mode of data collecting	Online survey
Sampling method	Convenience sampling

Data Collection and Statistical Analysis

The questionnaire was administered in English language and relying on online survey platform (Google Forms). Participants were recruited through professional networks, industry associations and the Internet and given a brief explanation of the purpose of the study, the voluntary nature of the study, and the approximate length of the study (10 minutes). Everyone who participated was anonymous and voluntarily agreed and no personally identifiable data was collected other than demographic and professional data for analysis. The respondents were informed that their responses would be used for research and by answering they were consenting to the use of their responses for research. Questionnaires were then checked for completeness and questionnaires with more than 10% of the items missing were not included for analysis.

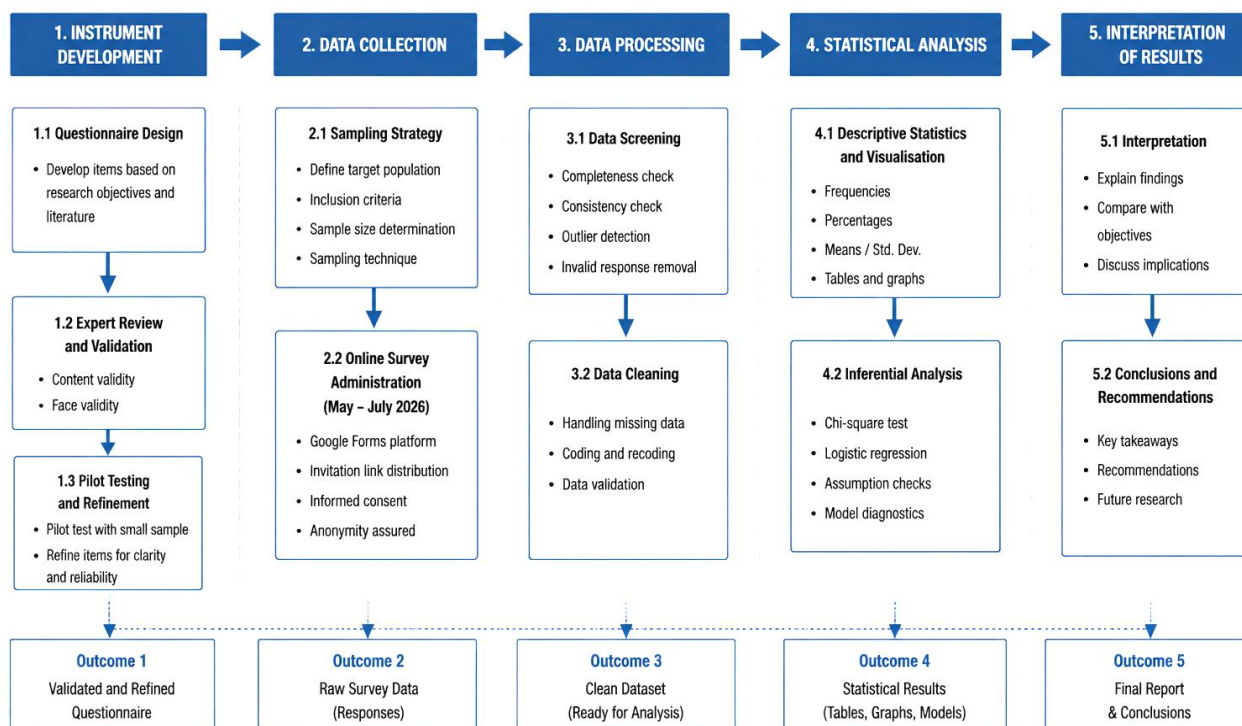


Fig 1. Data Collection Technique and Data Analysis Technique.

Differences in data were analyzed using IBM SPSS Statistics 26. Descriptive statistics (frequencies, percentages, means, standard deviations, minimum and maximum) were computed for all the variables so as to give an overview of the sample characteristics and respondents' perception of technological innovation. The significant distributions were represented

graphically in the form of bar charts and pie charts. Second, we performed inferential studies to find out the relationships between perceived technical innovation and marketing objective fulfillment, product innovation and sales performance. Chi-square tests were used to explore associations between categorical factors and binary logistic regression was used to model the probability of positive opinion of innovation as a function of the demographic and professional characteristics. A 0.05 level of statistical significance was used (see **Fig. 1**).

IV. RESULTS

The results are presented systematically in this section. Firstly, a profile of the participants is given in terms of age, education, work experience, region and monthly household income. Secondly, the participants' viewpoints about the changes in technology in the mobile phone industry are described. Thirdly, it analyses the organizational objectives related to the implementation of technological innovation. Fourth, the connection between the development of technology and the attainment of marketing goals is taken into account. Lastly, it takes into account the perceived impact of technical innovations on product, price, distribution, advertising and sales.

Respondent's Profile

The age distribution of the respondents is given in **Fig. 2**. The age group 18-25 years had 21% of the responses and age group 26-35 years had 62.1% of the total responses, age group 36-50 years had 11.3% and age group above 50 years had 5.6% of the total responses. The results indicate that majority of the sample group is young and middle aged as more than 83.1% of the respondents are in the age group of 18-35. Only 16.9% of those surveyed were over 36 years old. Evaluating findings is important in this context because of this demographic of children. Tendency to share more exposure to digital technologies, smartphones and social media and internet services in daily life is generally stronger among the younger generations [20]. They are more likely to be in roles that involve frequent use of technology-driven processes, platforms and instruments.

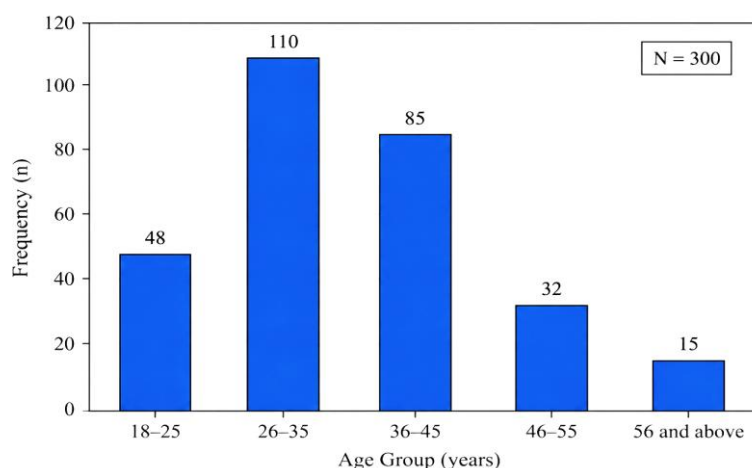


Fig 2. Age Distribution of the Respondents.

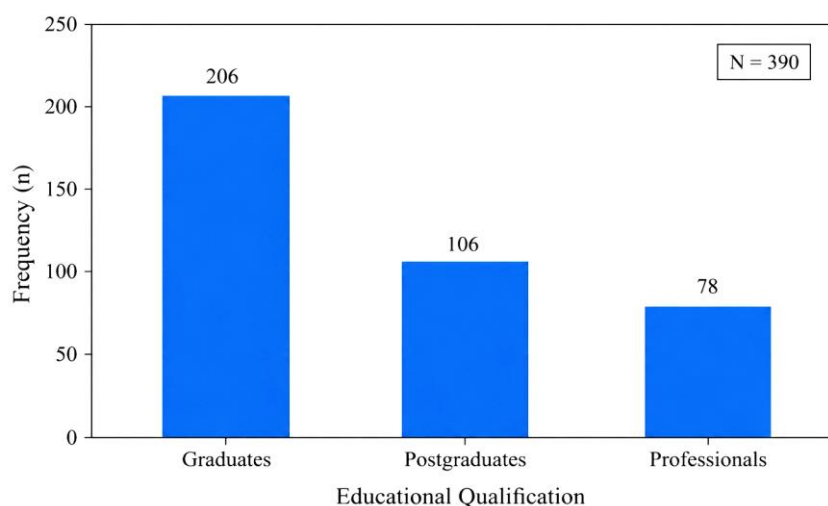


Fig 3. Respondents Classified According to Their Educational Qualification.

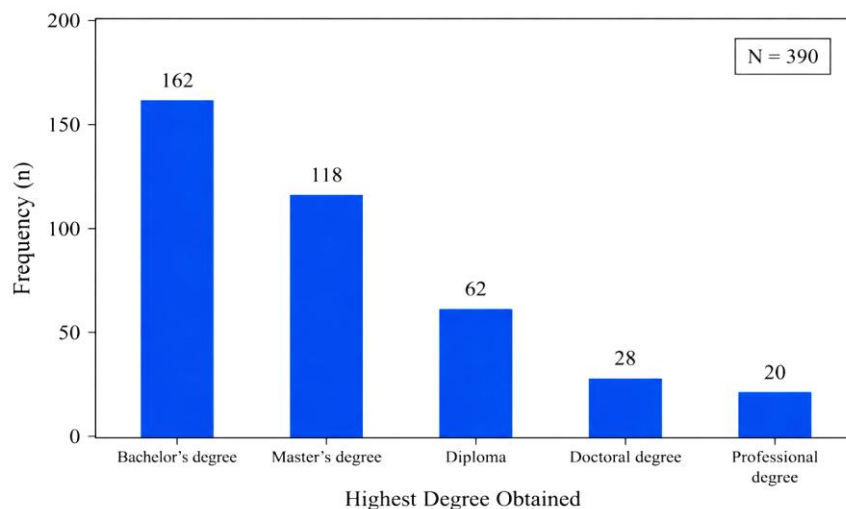


Fig 4. Study Participants by Highest Level of Education Attained.

As such, they might develop preconceived notions about technology innovation from first-hand use of new technologies, applications (apps) and digital business models. However, not all of the sample were early in their careers (there was a percentage of individuals aged 36-50 years and over 50 years) though the numbers are small. In these older age groups, a longer time perspective of technology change is available as the members of these age groups have experience with a multitude of mobile telephone generations, network technologies and competitive dynamics. Their presence so adds to the overall pattern of responses. **Fig. 3** shows the education level of the respondents. 52.8% of the respondents were graduates, 27.2% postgraduates and 20% were professionals. **Fig. 4** depicts the educational level of the respondents which are divided according to their education. Most of the responders (47.7%) had a Master's Degree. Approximately 37% of the participants have a bachelor's degree and 15% have other degrees.

These answers taken together indicate that the sample has a high level of education (75% have PhD or higher). This is significant as it can give confidence as to the respondents' understanding of the items in the questionnaire which covers the concepts of technical innovation, business strategy, marketing goals and industry performance. It implies that the comments made are not the superficial perceptions but may be more thought-out assessments. This might stem from the more advanced levels of education they have had, and their involvement in professional and educational discussions regarding innovation, digital transformation and competitiveness [21]. If they have pursued a postgraduate course, they may have read literature and/or seen case studies or university courses on the effect of the technology on the business community. This can assist them to get a better knowledge about the study of effect of innovation on products, markets and effectiveness of organizations.

Table 3. Categorization of Participants According to Professional Experience

Work Experience (Years)	Frequency (n)	Percentage (%)
Less than 2 years	84	21.5
2–5 years	101	25.9
6–10 years	95	24.4
11–15 years	63	16.2
More than 15 years	47	12.0
Total	390	100.0

The respondents' job experience is shown in **Table 3**. Among the participants, 29.7% had worked in a firm for up to 5 years, 25.1% for 6/10 years, 40.01% for 11-20 years, and 5.1% for more than two decades. So, 70.26% of the participants went over 5 years of expert experience and 45.13% of the respondents had professional practice for more than 10 years. One-third (29.74%) of the respondents had less than five years employment experiences. These results indicate that many of the respondents are likely to be experienced professionals who have experienced multiple episodes of technological change in the mobile phone industry.

After 10, 15 or 20 years, the same people would have witnessed the shift from feature phones to smartphones, from mobile networks to mobile networks and from apps to a mobile ecosystem, and mobile devices to be a part of a greater digital experience [22]. So, they have faced fluctuations of competition, and the markets and the products and have a sense of the importance of technological innovations. The fact that the majority (over 10 years' experience) also indicates that the results are not necessarily skewed by the opinions of early career employees. Rather, the findings are the result of a mixture of the views of people in various stages of their careers. The variety of experiences provides more validity to the findings of impact of technological innovation on business performance and marketing outcomes.

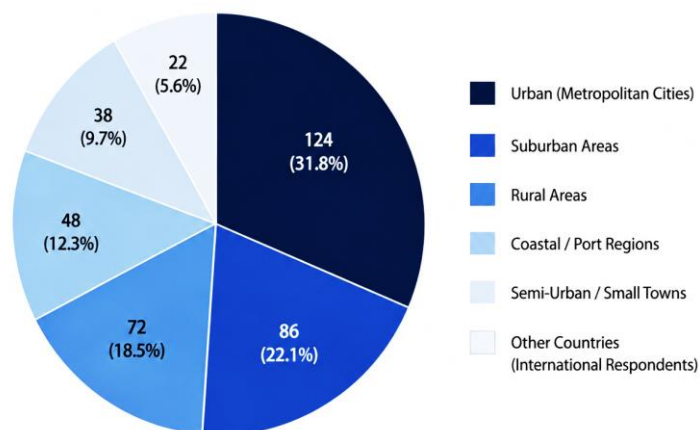


Fig 5. Classification of the Responders by Geographical Area.

Perceptions of Technology Innovation

The location of respondents based on a particular classification is displayed in **Fig. 5**. These respondents might experience different exposure to the different market structures, regulatory frameworks, technological systems and competitive dynamics in mobile phone market based on their geographic settings [23]. For instance, people in cities with a higher level of digital infrastructure may enjoy higher speed networks, a wider range of devices, and higher access to and usage of technology-enabled services. But, other countries around the world may have different adoption policies and pricing or other product availability. Knowledge of the geography of the sample is thus helpful in the interpretation of the generalizability of the results. The sample respondents may be clustered in one area, which could mean that the results are mostly representative of that area's conditions and perceptions. The results can represent a wider spectrum of experiences across markets if the sample is geographically more diverse.

The result shows that 94.9% of the respondents had positive attitude towards the impact of technological innovation in business while only 5.1% of the respondents had negative attitude towards the impact of technological innovation in the mobile phone industry. This suggests that respondents see a significant proportion of the development of technology as it actually helps the industry. Few people had a negative attitude towards innovation in this sector (see **Fig. 6**). This response is remarkable in that it reflects a level of consensus [24] that technological innovation is not only an operational support tool, but a factor which impacts competitiveness, product development and market dynamics in the mobile phone sector. The degree of favorable impression is strengthened by the mobile phone industry being one of the most innovative sectors within information and communications technology (ICT) where continuous product launches and technical innovations play a large part in competition.

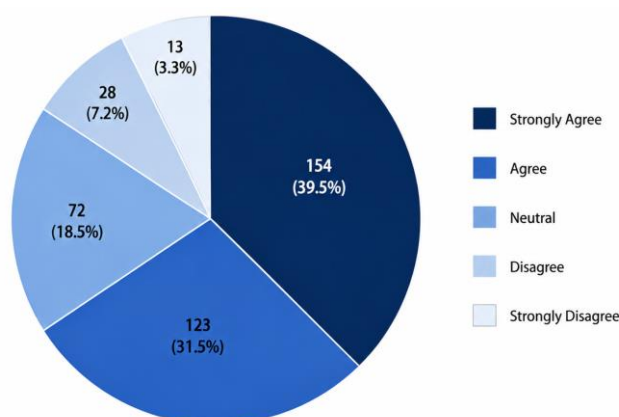


Fig 6. Mobile Phone Business and Technological Innovation Effect.

The monthly income of the respondents was grouped into five, as shown in **Fig. 7**. The family income of only 5.5% of all the respondents is up to ₹15000 per month. The rest, 54.3%, have family incomes above ₹45,000. This income distribution may be a consequence of higher means to access digital gadgets, smartphones and technology supported services as more than half of the respondents are from middle- and high-income households.

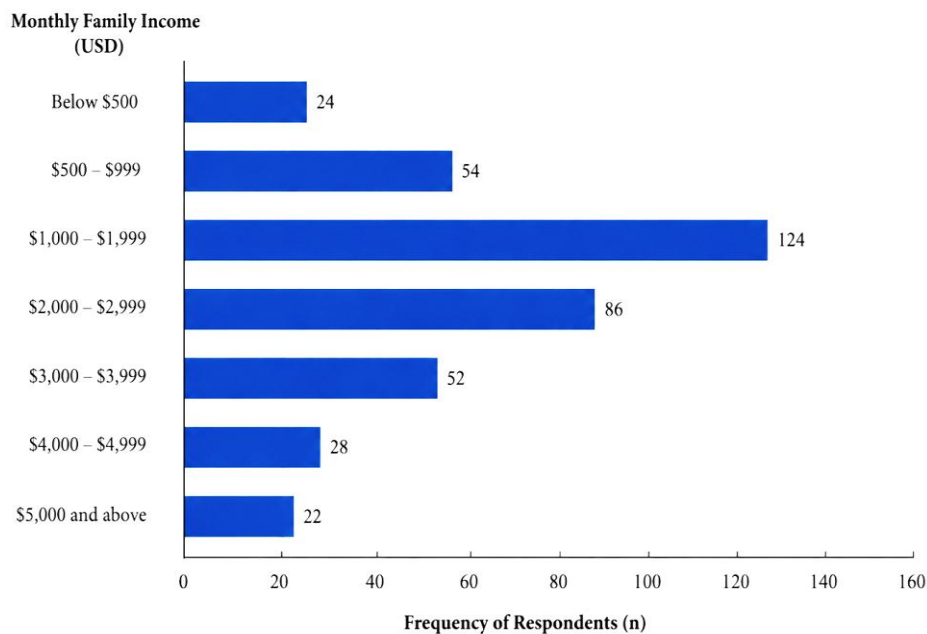


Fig 7. Respondents' Monthly Family Income.

If families have more money to spend, they can purchase the newest smartphones, and also access data-rich services and find out about data-powered applications and platforms. This means that the perceptions of technological advancement could be influenced by the more regular upgrading cycle, the general adoption of mobile technology and the extent to which mobile technology is integrated into their everyday lives. A few respondents in the lowest income classification also makes it non-homogeneous of high-income respondents. This leads to a more diverse economic background of the respondents and may lead to more diverse answers to the questions about the access to technology, the affordability and perceived value of the innovation by income groups.

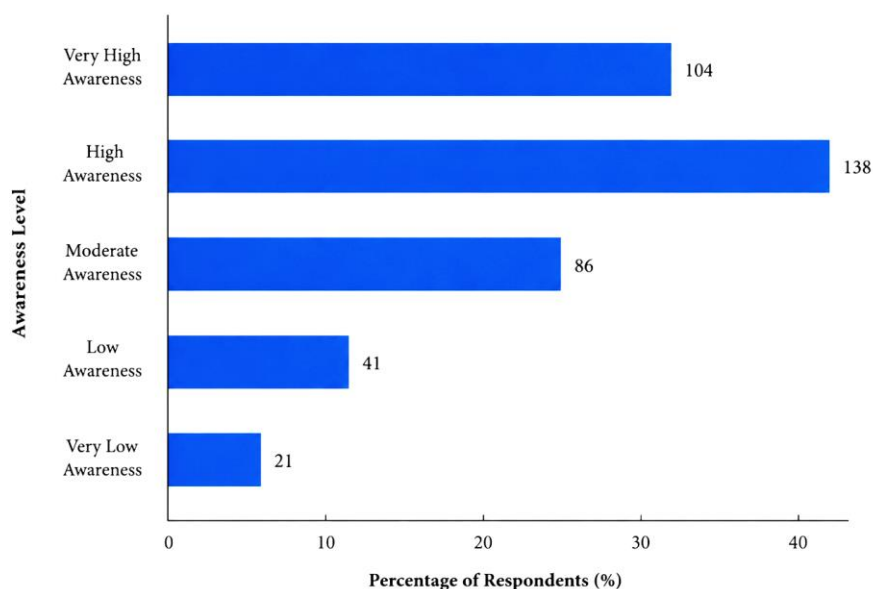


Fig 8. Awareness of Innovation by the Respondents.

The perception of innovation, by the respondents, is given in the **Fig. 8**. The majority of the respondents had high level of awareness towards innovation related concepts followed by moderate and low level of awareness. This is important to understand that, innovation aware participants are likely to have a better understanding of the nature of technological innovation and its potential impact on products, processes, business model and markets. Hence their answers to questions regarding how innovation influences business performance, marketing goals and sales, could be more well-informed. On the other hand, if the proportion of respondents was moderate or low, it would indicate that some respondents were possibly responding based on general perceptions instead of specific knowledge of innovation practices. If this were the case, the positive perceptions that were expressed in other parts of the survey would be even more remarkable in that the respondents,

even those with a limited amount of formal knowledge on innovation, already have positive perceptions about the importance of innovation in the mobile phone sector.

Business and Marketing Results

In the question asked about the perception of the companies regarding the uses of technological innovation, 14.9% believed that it allows them to perform better on their products, 10.31% believed that technology helps them to rival, 10.29% believed that technology helps them to attract more clients and a majority of the participants believed that their organization uses technology to achieve all the objectives mentioned above (44.6%).

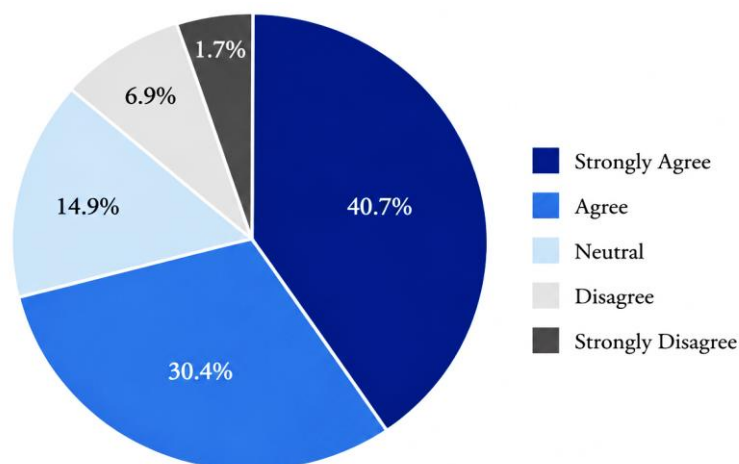


Fig 9. Firm's Aims to Participate in Technological Innovations.

The results presented in **Fig. 9** indicate that the feeling about technological innovation is not that it is adopted for purely technical reasons. It is rather regarded as a strategic asset playing a role in Product Enhancement, competitiveness, customers and revenues simultaneously. The combined-objectives response is prevalent (44.6%) which suggests that the benefits of technological innovation are not mutually exclusive. Helping a company, for example, with a product performance improvement can improve its competitive position, thereby increasing customer numbers and ultimately revenues.

One-fifth of respondents pointed to increased revenue as their top goal, emphasizing the financial results as key for organizations' innovation approaches. Conversely, the high values of product performance (14.9 %), competitiveness (10.3 %) and customer acquisition (10.3 %) are an indicator that companies do not just have financial goals, but also have non-financial ones which are closely related to long-term positioning and sustainability. This is in line with resource-oriented perspective of the company that argues that technological capabilities can be rare, valuable, and hard to replicate resources that can underpin a variety of aspects of performance.

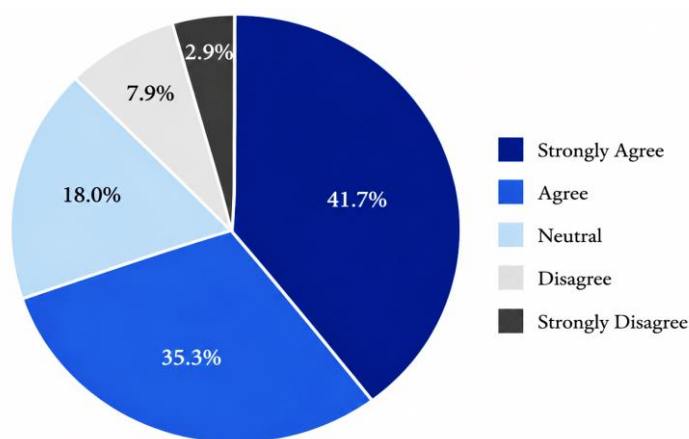


Fig 10. Use of Technology to Achieve Marketing Goals.

Finally, the small portion that selected one of the goals, but not all of the goals may also be a result of the integrated nature of innovation in the mobile phone industry. When product life cycles are short, competition is high and customers' expectations are high, the companies are forced to strive for more than one goal at a time. **Fig. 10** shows a correlation between performance in marketing and technology innovation. It was discovered that 15.89% of the respondents do not agree and

84.19 of the respondents indicate that technological innovations helped marketers do their jobs. Innovation is connected to the companies' marketing objectives and the growth and development needs of the organizations.

The result suggests that there is a multitude of ways how technology development can be beneficial to marketing. Firstly, it's aiding in the development of more unique products that offer certain client industries attributes of interest and that presents a much more effective positioning and targeting. Secondly, other communication channels, such as the digital ones, data-driven personalization, and social media can also be boosted, giving the client the ability to send out more relevant messages and engage consumers more. Thirdly, it can enhance customer targeting and segmentation with more in-depth data on consumer behavior, consumer preferences and consumer purchasing habits.

Technological innovation can also assist speed up the gathering of feedback and enable real-time marketing changes. For instance, with the help of analytics software, companies can track the effectiveness of promotional efforts, try out various messaging and adjust their strategies according to the reactions received. This is especially important for mobile phones and their industry, where there are always new phones and promotions by competitors that need to be adjusted to quickly. Marketing and technology were also cited as working hand in hand with 84.1% of the respondents agreeing. In this technology-enabled world, marketing now depends on technology platforms and data infrastructures and analyses. This indicates that technological innovation is a competence of product development and directly related to marketing; and can be significant in attaining organizational success.

V. CONCLUSION

We used the data obtained from retailers, which we had formulated hypotheses for to carry out statistical analyses. Analyzing our findings, we can conclude that the technology innovation is directly influencing the sales, product promotion, distribution and price and product innovation in mobile phone industry. The answers to the questions verified the results of surveys done by the companies and retailers. This positive relationship between technological innovation and sales can be interpreted as the companies that invest in technological innovation are perceived to have better market results. It is worth noting however that the present findings are based on perceptions and description of the respondents. Future investigations should include correlation coefficients, regression, and hypothesis-testing statistics to more thoroughly investigate the size, statistical significance, and direction of these relationships.

CRedit Author Statement

The author reviewed the results and approved the final version of the manuscript.

Data Availability

No data was used to support this study.

Conflicts of Interests

The authors declare no conflict of interest.

Funding

No funding agency is associated with this research.

Competing Interests

There are no competing interests.

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ISSN: 3104-4115