



EMERGING TRENDS IN INDIAN IT: DISRUPTIVE INNOVATIONS AND
PERFORMANCE METRICS

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Abstract

Purpose: Digital transformations play a pivotal role in facilitating economic advancement. This study is of great importance since its aim is to examine the effects of disruptive technologies on the growth of information technology (IT) companies in India. The objective of this study is to provide valuable insights into the overall performance of the Information Technology (IT) industry. This will be achieved by an assessment of key performance metrics, such as Productivity, customer satisfaction, Quality, and ease of use. The study will specifically focus on the impact of disruptive technologies on these performance measures.

Design / Methodology: The study employed is a descriptive research strategy, with data collection being conducted through a well-designed questionnaire. The Cochran formula was employed to estimate the sample size for an unknown population, resulting in a sample size of 190 IT employees in India. The questionnaire's validity and reliability were confirmed through scale analysis. The present study employed Confirmatory Factor Analysis (CFA) through the use of AMOS R software for statistical analysis.

Findings: Disruptive technologies have been observed to enhance productivity, improve quality, and facilitate simplicity of use within organizational contexts. This phenomenon can be ascribed to the tendency of disruptive technology to automate manual procedures, optimize operations, and eradicate inefficiencies. Furthermore, the utilization of these technologies might result in enhanced quality, which in turn may contribute to increased levels of consumer satisfaction and loyalty.

Originality: The study's originality is derived from its emphasis on disruptive innovations and important performance measures within the specific context of IT companies in India. This study seeks to examine the interconnection between disruptive innovations and performance indicators, with the objective of offering significant insights to IT firms in India. These insights are intended to assist these organizations in maintaining competitiveness within a market that is undergoing rapid change.

Implications: This research provides valuable insights for managers and decision-makers within these organizations, enabling them to pinpoint specific domains where disruptive innovations can exert a substantial influence on critical performance indicators, including revenue growth, market share, and customer satisfaction. The findings of this study have the potential to make a valuable contribution towards the establishment of a theoretical framework that can effectively utilize disruptive innovations to enhance corporate performance within the IT sector in India.

Keywords: Disruptive Innovations, Key performance metrics, Information technology, Employees, Digital transformation

INTRODUCTION

The significance of Industry 4.0 in the Indian economy should not be underestimated. India, as a nation experiencing rapid development, demonstrates a strong inclination towards adopting technology breakthroughs in order to enhance its economic growth and worldwide competitiveness **Javaid, M., et al (2020)**. The advent of Industry 4.0, characterized by its emphasis on automation, artificial intelligence, and data analytics, holds significant transformative potential for multiple sectors in India, including manufacturing, healthcare, agriculture, and logistics **Mubarak, M. F., & Petraite, M. (2020)**. Indian IT companies have the potential to significantly contribute to India's digital transformation and economic advancement by using disruptive ideas and implementing robust measurement systems to evaluate important performance metrics. Moreover, the implementation of Industry 4.0 technologies has the potential to enhance production and efficiency within these industries. In the context of manufacturing, automation has the potential to enhance production processes, minimize errors, and enhance overall quality control **Rajput, S., & Singh, S. P. (2019)**. Artificial intelligence (AI) has the potential to play a significant role in the healthcare sector by facilitating early disease detection and enabling individualized treatment approaches **Bai, C., et al . (2020)**. Furthermore, the utilization of data analytics has the potential to optimize agricultural operations, resulting in increased crop productivity and improved allocation of resources. In its entirety, the incorporation of Industry 4.0 has the potential to establish India as a prominent figure in global innovation and drive its economic advancement on the global platform. **Sony, M., & Naik, S. (2020)**.

Disruptive innovations pertain to the emergence of novel products or services that bring about a profound transformation within an industry or market. Frequently, these advancements provide formidable challenges to established enterprises and their operational frameworks, compelling them to adjust their strategies or face the possibility of obsolescence. Disruptive innovations have gained significant importance within the IT sector in India, given the industry's rapid evolution

sustainability perspective **Abdel-Basset, et al (2021)**. The evaluation of the effectiveness of disruptive technologies heavily relies on key performance criteria, including revenue growth, market share, and customer happiness. This study seeks to examine the influence of disruptive technologies on the overall performance and competitiveness of select IT companies in India through an analysis of relevant variables.

Digital Transformations have a crucial role in fostering economic progress. **Aslam, F., et al (2020)**. This study holds significance as its objective is to analyze the impact of disruptive technologies on the expansion of information technology (IT) firms in India. This study aims to offer significant insights into the overall performance of the IT sector by assessing key performance measures, including Productivity, customer satisfaction, Quality and ease of use, in relation to the impact of disruptive technologies. The results of this study have the potential to inform IT organizations in their efforts to devise efficacious methods for integrating disruptive innovations and maintaining competitiveness within the swiftly changing digital environment.

The first section of the study gives an overview of the research topic. The second section focusses on the review of literature. The research methods are specified in the third section and the fourth section presents the results of the study. The last section of this research concludes with limitations and scope for further research

REVIEW OF LITERATURE

This study employed a systematic literature review approach to analyze previous scholarly works that were pertinent to the research inquiries under investigation. The articles were sourced from reputed journals and were scrutinized to determine the level of quality exhibited by each study. Elsevier database, Routledge and CRC Press Taylor and Francis database. Emerald Group Publishing database, Springer Nature database and Sage database. Several supplementary articles were acquired from reputable academic databases such as Wiley, Academia, JSTOR, and Guildford Press

Literature review on Industry 4.0

- **Wankhede, V. A., & Vinodh, S. (2023)**. The goal of this study is to apply fuzzy logic and multi-grade fuzzy techniques to evaluate an organization's Industry 4.0 (I4.0) readiness index for producing automobile components. The term "I4.0" refers to the fourth industrial revolution, which presents significant new challenges. This article provides an analysis of the I4.0 Readiness Index from that vantage point. The examination contains two levels with relevant criteria and considerations. For this evaluation, we turn to the field of fuzzy logic. In addition, a multi-grade fuzzy approach has been used as a benchmark for the outcomes obtained using fuzzy logic. The proposed assessment methodology successfully employs a fuzzy logic approach to calculate an organization's I4.0 readiness index. The I4.0 readiness index was calculated to be 4.74, 6.26, and 7.80 using a fuzzy logic approach and then compared to other systems using a multi-grade fuzzy approach. The multi-grade fuzzy

technique yielded a valid Industry 4.0 readiness index of 6.258. In addition, 20 problem areas have been pinpointed, and recommendations for improvement are offered.

- **Leos Safar an et al, (2020)** Researchers concluded that commercial and medium-sized firms (SMEs) can gain strategic and financial advantages by adopting the practices, procedures, and technologies of Industry 4.0 (I4.0). Instead of focusing on businesses, as has been done in most prior studies, this one surveyed locals in the South Indian region via questionnaire to gauge their familiarity with I4.0 principles. The results indicated an insufficient understanding of the I4.0 idea and its components, which in turn adds to an absence of desirable behavior and objectives. In addition, individuals with prior experience with the I4.0 platform have more upbeat opinions and forecasts for the future. According to the experts, one of the significant impediments to a steady and sustainable future growth towards the 4th industrial revolution is a lack of awareness of the potential workforce about I4.0 principles, especially in an area with climbing population advancement.
- **Viraj Vijay and et al (2019)** The implementation of Industry 4.0 (I4.0) in India would be spearheaded by trade groups. In order for I4.0 to be used everywhere, businesses will need to collaborate. These groups need to devise a strategy for upskilling their workforce in light of emerging technologies, take stock of the impact on various sectors, and address the resulting technological and political gaps. In addition, businesses and the Indian government should work together to speed up the introduction of I4.0 across the country. If India fully embraces Industry 4.0, it may soon find itself at the forefront of engineering around the world. Increases in demand and production volume, spurred by India's rising consumption, are expected to create new jobs, somewhat offsetting the negative effects of Industry 4.0 on employment. Government efforts will center on making it simpler for companies to operate and luring foreign direct investment (FDI) in this sector. Cooperation between governments, businesses, and universities will speed up the rollout of I4.0.
- **Rawat, Pratish & Purohit, Jayant (2019)** The global industrial sector has changed dramatically over the past several years due to the proliferation of new technologies and the implementation of novel approaches by manufacturing companies around the world. To be competitive, even small and medium-sized enterprises need to adopt the cutting-edge production and management tools necessitated by the Industry 4.0 concept. Industry 4.0 is a recent technological advancement that bridges the gap between the digital and real worlds with the help of cyber physical networks and the Internet of Things in order to create revolutionary business models, enhanced manufacturing practices, and greater productivity. In this study, we perform a literature assessment of Industry 4.0 to investigate its technological aspects. This study aims to identify the challenges that India's manufacturing sector will encounter as it implements Industry 4.0.

Literature review on Disruptive innovations

- **Antonio, J. L., & Kanbach, D. K. (2023).** Disruptive innovation is a concept that has been debated passionately since its birth more than twenty years ago. There are still open doubts concerning its theoretical usefulness and practical significance, especially in light of the

growing weight of social forces and novel forms of competition and technology. Researchers have zeroed attention on the internal determinants of disruptive innovations at firms in an effort to settle debates over the theory's veracity. However, because to its scattered, fragmented nature across disciplines, the literature on disruptive innovation lacks an integrated knowledge of contextual elements including demand, market structure, culture, and regulation.

- **Si, S., & Chen, H. (2020).** The notion and connotation of disruptive innovation, however, continue to be widely misunderstood and misapplied. Its usefulness and predictability are still open to question. In this research, researchers aim to better clarify the idea and underline its significant function in guidance in practices through examining relevant literatures published in SSCI journals. Reserachers also present a multilevel theoretical framework that brings together different studies' findings to investigate the aspects that contribute to disruptive innovation.
- **Palmié, M., et al (2020).** Disruptive innovations are changing the face of many established industries, and successful examples like Apple and Uber show that these innovations often begin at the ecosystem or system level rather than within individual companies. Unfortunately, the literature has ignored the importance of ecosystem evolution and development in relation to disruptive technologies. Our research helps fill this gap by providing a definition of disruptive innovation ecosystems and showing how the FinTech ecosystem has affected the financial services sector. As an example of a disruptive innovation, the FinTech industry is discussed, and an agenda for future study on disruptive innovations and ecosystems is presented. Our research confirms the importance of paying more attention to ecosystems for disruptive innovation.
- **Coccia, M. (2020).** The authors of this paper developed a theoretical and empirical analysis to examine the phenomenon of disruptive technologies and their effects on industries and businesses. To compare the rate of development of disruptive and traditional technologies, a straightforward model is given. The development of technologies in the United States' sound recording business is analyzed using this method. Three empirical findings point to general properties that can broaden the scope of disruptive innovation theory: (1) the market share of disruptive technologies grows at a faster rate than that of established ones; (2) the up wave phase of disruptive technologies' technological cycles lasts longer than the down wave phase (the cycles have an asymmetric shape); and (3) disruptive technologies undergo a sequence of technological innovations, both large and small, that pave the way for their eventual dominance.

Literature review on Impact of disruptive innovation on the performance of the Organizations

- **Wang, C., Guo, F., & Zhang, Q. (2023).** This study draws on the literature on disruptive innovation to investigate the direct and indirect effects of disruptive innovation on company performance as it relates to the uncertainty of market-supporting institutions. Explanatory variables and outcome variables were collected in two waves from a sample

of 207 Chinese high-tech businesses through questionnaires sent to top managers and R&D managers. The empirical findings show that disruptive innovation has a positive effect on company performance, and that the relationship between disruptive innovation and firm performance is mediated by the pace and quality of innovation. Meanwhile, market-supporting institutions favorably regulate the association between innovation speed and firm performance, but negatively moderate the relationship between innovation quality and firm performance. This research demonstrates the significance of disruptive innovation to business success, the roles played by innovation speed and quality as mediators, and the moderating effects of market-supporting institutions.

- **Cirillo, V., Fanti, L., Mina, A., & Ricci, A. (2023).** Businesses that implement cutting-edge digital innovations often see dramatic growth. In this paper, the authors examine how the rise of Industry 4.0 technology has altered labor productivity, pay growth, and business expansion. Microdata collected from a large, randomly selected sample of Italian businesses and analyzed by the Italian National Institute for the Analysis of Public Policies (INAPP). We combine INAPP data from 2010-2014 with Orbis data from 2014-2018. The impact of new technology on productivity and sales has been shown to be around twice as significant as the impact on average pay using a Diff-in-Diff approach. Even though the effects seem to be concentrated among more mature rather than younger organizations and are heterogeneous along the distributions, the favorable impact is larger for small and medium-size businesses. There is no discernible effect of endogeneity or heterogeneity on the findings.
- **Hoyer, W. D., et al (2020).** In this article, researchers give a systematic overview of the vast but varied and disjointed literature on digital transformation (DT), with the intention of clarifying boundary requirements for further research into the phenomena from the angle of organizational transformation. Digital transformation is integrated in and driven by digital business ecosystems, and as a result, companies are adopting more flexible organizational models that allow for continual adaptability. Researchers extrapolate four theories about DT from these two trends: technological influence, compartmentalized adaptation, systemic shift, and holistic co-evolution.
- **Chege, S. M., et al (2020).** Internet-based social networks that facilitate creative interaction between individuals are at the forefront of the ICT revolution that is fueling the modern job market. Entrepreneurial inventiveness is one moderating element that influences the extent to which technological innovation affects business performance. This research takes into account the influence of innovativeness on the connection between technological innovation and firm performance in Kenyan businesses. A sample of 240 firms and structural equation modeling were employed in the analysis. Positive correlations between technological innovation and company performance were found. The research suggests that business owners implement novel tactics to achieve optimal performance. The government's focus should be on strengthening the information and communications technology (ICT) backbone, elevating the technical externalities of small and medium-

sized businesses (SMEs) within the industry, and developing ICT resource centers to boost the effectiveness of SMEs. The results of this study add depth to previous theories and have implications for company management in both developed and developing nations.

Research Gap

There is a dearth of research on disruptive innovation and the performance of IT firms in India. This study aims to fill this gap by examining the relationship between disruptive innovation and key performance metrics in select IT companies in India. The findings of this research will provide valuable insights into the strategies and practices employed by these firms to drive innovation and improve their overall performance.

Objective of the study

- To understand the type of disruptive innovation adopted by IT firms in India.
- To analyze the impact of disruptive innovations on key performance metrics of IT firms in India

RESEARCH METHODS

According to **Haydam, N. E., and Steenkamp, P. (2021)**, the research process can be visualized as an onion with each layer representing a progressively more comprehensive step. According to the research onion model the current study is a positivism approach which is deduced from previous studies on impact of new technologies on the performance of IT projects. Owing to its nature the study is a mono method quantitative analysis which uses students as the participants of the study. Using the Kregcie morgan formula of Unknown population **Chaokromthong, K., and Sintao, N. (2021)** at 7.5% margin of error a sample of 170 IT employees across India was considered viable. The researcher distributed 210 questionnaires and 190 responses were considered for the study after removing the Outliers. The data collection instrument was self-prepared by the researcher in absence of standard scale to measure the impact of disruptive innovations. The questionnaire was first validated by 5 experts in the academic field followed by launching a pilot study. The pilot study results revealed that the instrument was reliable and consistent with a Cronbach alpha of 0.856 for 4 constructs measuring key performance metrics and 0.8641 for Disruptive innovations.

Table 1 –Reliability and validity statistics – Impact of Stress on student performance during interviews

	CR	AVE	MSV	MaxR(H)	CS	QUAL	EOU	PROD
CS	0.930	0.769	0.903	0.937	0.877			
QUAL	0.820	0.503	0.082	0.887	0.149	0.634		
EOU	0.955	0.632	0.958	0.940	0.887	0.432	0.764	
PROD	0.974	0.740	0.958	0.935	0.896	0.214	0.979	0.455

The validity of the questionnaire was measured using the CR- Composite reliability > than 0.70; AVE – Average Variance explained > than 0.50; MSV – Maximum shared square variance > than AVE and MaxR(H) – Maximum reliability > than MSV. The second criterion to measure validity,

the discriminate validity involves evaluating discriminant validity through the utilization of the Fornell-Lacker criterion **Afthanorhan, A., et al.(2021)**. The table 1 shows the statistics for convergent and discriminates validity. The current study uses the SPSS version 28 and AMOS software for analysis of the data.

RESULTS AND DISCUSSION

Demographic Profile of the Participants

58.9% respondents are male, and 35.7% respondents are female. A small percentage of 5.4% employees preferred not to reveal their gender. 60.8%) employees are aged between 26-35 years, 16.3% employees belong to age group of 36-45 years. 15% employees are above 45 years of age. A very small 7.9% employee is below 25 years of age. 50%) employees under study are experienced between 1-5 years, 23.6% employees have 6-10 years of experience in the current field. 17.7% employees had above 15 years of experience and 8.6% employees are in the experience brackets of 11-15 years. 50% employees under study have total industry experience of 1-7 years, 30.5% employees are working in the industry for 8-14 years. Cumulative 19.5% employees have experience of more than 15 years in IT Projects. 62.1%) employees work in the position of a technical lead, 15.8% are solution Architects. All other designations gave very small proportions.

Industry Profile

70% employees worked for IT industry and 30% employees are a part of ITes Industry. This is in line with the data sources, which show that 70% of the IT industry in India is occupied by Core IT Industries and 30% by ITes.

19.7% provided Communication, Media and Information Science services and 18.2% of employees worked for the BFSI Sector. 16% and 10.8% of employees provided Hitech and Manufacturing Industries services. Less than 5% of employees expressed that their companies provide Retail, CPG, Energy and Utilities. A larger proportion of 25.9% of employees expressed that their company provides all the mentioned industry vertical services.

Use of disruptive innovations in the organizations

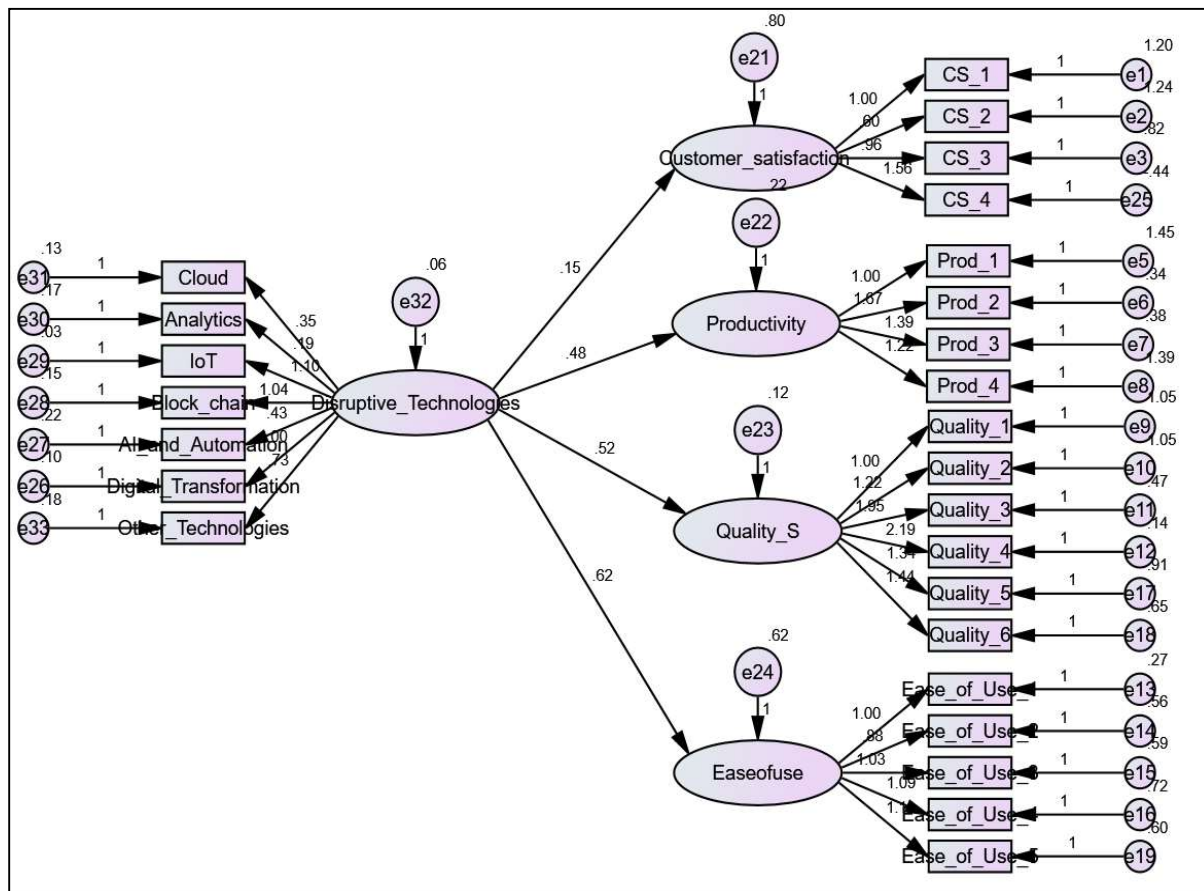
A total of 83.5% of employees indicated that their firm had embraced Cloud computing, while 78.1% of employees expressed agreement with the inclusion of analytics in their working environment. A majority of employees, namely 68%, expressed agreement with the implementation of blockchain technology within their respective firms. A total of 88.9% of employees indicated that the Internet of Things (IoT) is integrated into their respective organizations. A majority of respondents, specifically 62.8%, indicated that their respective organizations have successfully adopted artificial intelligence (AI) and automation technologies. A significant majority of employees, specifically 79.8%, indicated that their respective organizations possess the necessary resources and capabilities to undertake digital transformation initiatives.

Testing of Hypothesis

There is a significant impact of disruptive innovation on the key performance matrices of IT companies.

Independent variable	Dependent Variable	Test	Reason for using the test
Disruptive Innovations	Key performance Metrics	SEM	Disruptive Innovations effect on key performance metrics can be measured with multiple regression analysis – SEM is ideal

Figure - Pictorial Representation of unstandardized estimates for **impact of disruptive innovation on the key performance matrices of IT companies**



Disruptive innovations in the realm of IT corporations encompass a range of technologies, including but not limited to Digital Transformation, Artificial Intelligence and Automation, Blockchain, Internet of Things (IoT), Analytics, and Cloud computing. These advancements have been recognized for their transformative potential within the industry. The aforementioned advances have brought about a paradigm shift in the operational practices of firms and have exerted a substantial influence on crucial indicators of performance. The application of artificial intelligence (AI) and automation has yielded enhanced efficiency and productivity, resulting in

cost reduction and expedited decision-making processes. Furthermore, the implementation of cloud technology has facilitated the expansion of organizations' operations in a smooth manner and improved their ability to be accessed, leading to a rise in customer satisfaction and loyalty. In the broader context, it can be argued that the advent of disruptive innovations has exerted a significant influence on the trajectory of success for information technology (IT) enterprises in India.

Table - Structural Relationship unstandardized estimates for impact of disruptive innovation on the key performance matrices of IT companies

			Estimate	S.E.	C.R.	P
CSAT	<---	Dis_Inno	.151	.161	.940	.347
Productivity	<---	Dis_Inno	.482	.144	3.343	***
Quality	<---	Dis_Inno	.519	.122	4.266	***
Easeofuse	<---	Dis_Inno	.623	.199	3.131	.002
CS_1	<---	CSAT	1.000			
CS_2	<---	CSAT	.599	.060	9.963	***
CS_3	<---	CSAT	.958	.067	14.251	***
Prod_1	<---	Productivity	1.000			
Prod_2	<---	Productivity	1.668	.259	6.443	***
Prod_3	<---	Productivity	1.387	.213	6.519	***
Prod_4	<---	Productivity	1.217	.220	5.542	***
Quality_1	<---	Quality	1.000			
Quality_2	<---	Quality	1.222	.238	5.132	***
Quality_3	<---	Quality	1.948	.311	6.263	***
Quality_4	<---	Quality	2.186	.343	6.375	***
Ease_of_Use_1	<---	Easeofuse	1.000			
Ease_of_Use_2	<---	Easeofuse	.876	.061	14.355	***
Ease_of_Use_3	<---	Easeofuse	1.028	.066	15.603	***
Ease_of_Use_4	<---	Easeofuse	1.095	.072	15.227	***
Quality_5	<---	Quality	1.335	.245	5.445	***
Quality_6	<---	Quality	1.439	.247	5.819	***
Ease_of_Use_5	<---	Easeofuse	1.107	.069	16.117	***
CS_4	<---	CSAT	1.557	.108	14.419	***
Digital_Transformation	<---	Dis_Inno	1.000			
AI_and_Automation	<---	Dis_Inno	.435	.112	3.871	***
Block_chain	<---	Dis_Inno	1.044	.120	8.684	***
IoT	<---	Dis_Inno	1.100	.110	10.013	***
Analytics	<---	Dis_Inno	.191	.095	2.019	.043
Cloud	<---	Dis_Inno	.348	.085	4.102	***
Other_Technologies	<---	Dis_Inno	.727	.112	6.477	***

The relationship between disruptive innovation and customer satisfaction is statistically insignificant ($p > 0.05$). This suggests that the introduction of disruptive innovations does not necessarily have a significant impact on customer satisfaction levels in the IT companies studied in India. However, it is important to note that disruptive innovations can still bring about other positive outcomes such as increased efficiency or cost savings, which may indirectly influence customer satisfaction. Furthermore, it is possible that the impact of disruptive innovations on customer satisfaction may vary across different industries or regions, and further research is needed to explore these factors. **Hoyer, W. D., et al (2020), Buhalis, D., et al (2019).**

The relationship between disruptive innovation and productivity is statistically significant ($\beta = 0.482, p = 0.000, p < 0.05$). Implementation of disruptive innovation increases productivity by 48%, and the result is highly reliable as the significance value is smaller than the significance value of 0.05. It's crucial to keep in mind that other elements like organizational culture, management techniques, and technological infrastructure may also have an impact on how disruptive innovation affects productivity. Further research is required to understand how these variables interact and influence the relationship between disruptive innovation and productivity. Additionally, it would be beneficial to investigate whether there are any industry-specific or regional variations in the impact of disruptive innovation on productivity. **Fragapane, G., et al (2022), Rosin, F., et al (2021).**

The relationship between disruptive innovation and quality is statistically significant ($\beta = 0.519, p = 0.000, p < 0.05$). Implementation of disruptive innovation increases quality by 51%, and the result is highly reliable as the significance value is smaller than the significance value of 0.05. This suggests that companies that embrace disruptive innovation are likely to see a significant improvement in the quality of their products or services. However, further research is needed to determine the specific industry or regional variations in this relationship. Understanding these variations can help businesses tailor their innovation strategies to maximize productivity and quality gains in specific contexts. **Lee, J., et al (2019), Frizzo-Barker, J., et al (2020).**

The relationship between disruptive innovation and ease of use is statistically significant ($\beta = 0.623, p = 0.002, p < 0.05$). This discovery implies that organizations that prioritize disruptive innovations are more inclined to prioritize the user-friendliness of their products and services. The observed positive connection between these two variables suggests that a rise in disruptive innovation is associated with a corresponding increase in the prioritization of user-friendly solutions. This emphasizes the significance of using ease of use as a fundamental performance criterion when assessing the effectiveness of disruptive developments in the information technology sector in India. **Beltagui, A., et al (2020).**

Since, 3 Operational Performance constructs are statistically significant it can be concluded that, there is a significant impact of implementing Disruptive Innovation on Key performance metrics of the Organization. This suggests that adopting disruptive innovations in IT companies in India can lead to improvements in operational performance. These findings highlight the importance of embracing new technologies and strategies to stay competitive in the rapidly changing business environment. By measuring key performance metrics, organizations can track the effectiveness of their disruptive innovation initiatives and make informed decisions to drive growth and success.

Alternate Hypothesis – Accepted

Outcome – Disruptive technologies increase productivity, quality and Ease of use in the organization. This can be attributed to the fact that disruptive technologies often automate manual processes, streamline operations, and eliminate inefficiencies. Additionally, the improved quality resulting from these technologies can lead to higher customer satisfaction and loyalty. Moreover, the ease of use of these technologies can enhance employee productivity and job satisfaction, ultimately contributing to overall operational performance.

CONCLUSION

Disruptive innovations refer to transformative changes in the cost, accessibility, or fundamental processes involved in the production, distribution, or communication of goods and services. The proliferation of these advancements can be largely attributed to significant enhancements in computational capabilities and internet connectivity, resulting in an exponential increase in their prevalence. The pervasive and escalating accessibility of disruptive technologies to individuals, customers, and organizations has emerged as a prominent feature in recent years. This phenomenon has witnessed the rapid evolution and expansion of novel services and products across various communities and industries. While the phenomenon of technical disruption has been observed in the context of economic growth in the past, the current wave of disruption is occurring at an accelerated pace, leading to significant transformations in market models. This rapid disruption is also causing a substantial shift in customer preferences and influencing government policy. The convergence of technical advancements and improved communication has led to the generation of data and collaboration among individuals, companies, and policymakers. This collaboration aims to create possibilities, facilitate economic flows, coordinate activities, and deliver services.

Disruptive advancements are fundamentally reshaping the global economy and the strategies employed by enterprises to get a competitive advantage, not only as a catalyst for innovation and prospects. The e-commerce website would function as a versatile entity, encompassing many sectors such as merchant services, logistics operations, media services, healthcare provisions, and data infrastructure management simultaneously. Several additional platforms have emerged that operate as a FinTech company, a multi-sector retailer, a logistics company, and a marketplace. In contrast to past multinational corporations, their primary areas of expertise are centered less on

optimizing resource allocation and utilization, and more on cultivating a group of international executives. However, the primary source of competitive advantage for businesses is in their capacity to effectively capture and leverage data for the purpose of establishing connections between customers and vendors, identifying and pursuing novel prospects, and creating innovative business models.

Disruptive innovations possess the potential to be swiftly embraced in developing economies, thereby expediting the adoption of technology and enhancing societal welfare. One of the primary challenges faced by low-income countries is to enhancing their competitiveness, a matter that has been consistently impeded by inadequate dissemination of technology. Historically, the capacity of these nations to adopt and integrate technologies was impeded by an unfavorable climatic environment. On the contrary, disruptive innovations possess numerous qualities that can facilitate the overcoming of persistent restraints and instigate change within growing markets. Both businesses and customers express apprehension regarding the widespread adoption of novel innovations and enhancements to established business models. Ride-hailing organizations, such as those in the transportation industry, operate without possessing any physical vehicles. Similarly, internet-based retail establishments function without maintaining any tangible inventory. Online lodging services facilitate accommodations without owning any physical properties, while social media enterprises exercise content moderation measures. While the impacts of transformational technology have been extensively examined in developing economies, where new technologies typically originate, emerging markets encounter heightened levels of unpredictability. Although the second option holds greater potential, technology still possesses the capacity to surpass existing institutions and generate solutions that are more revolutionary than those seen in developed countries. This is evident from the example of cell phones and electronic payments, which demonstrated this capability over a decade ago.

In order to uphold a substantial level of customer loyalty, it is imperative for the IT industry to consistently engage in quality assurance, actively pose inquiries, and foster a strong sense of collaboration with clients. In this particular context, it is imperative for the organization to ensure a shared understanding and alignment between themselves and their clients regarding their objectives and requirements.

IT managers often resort to layering additional technologies to address various difficulties. However, it is crucial to recognize that customer satisfaction cannot be achieved solely via the accumulation of technology. Instead, it is imperative to align the technology in use with the underlying needs and preferences of individuals. Furthermore, the organization proactively seeks out the necessary facts without relying on the consumer to initiate contact. However, it is imperative for IT businesses to prioritize their attention towards digital technologies and work processes that actively identify and address gaps in customer experience. The capacity to identify and address these vulnerabilities before they manifest as issues is of utmost importance for the consumer's experience and, ultimately, the level of assistance (and contentment) offered by the IT sector.

SCOPE FOR FURTHER RESEARCH

The present study is grounded in the examination of Disruptive Innovations and Key Performance Metrics within the IT industry. Future researchers may consider undertaking a comparable investigation in alternative industries to assess and contrast the influence of disruptive innovations on key performance metrics. Furthermore, it is suggested that future studies should investigate the correlation between disruptive innovations and customer satisfaction, along with the influence of organizational culture on the promotion of disruptive innovation. Moreover, it would be of scholarly interest to examine the tactics and methodologies employed by prosperous information technology enterprises in India for the purpose of efficiently handling disruptive innovations and attaining enduring growth.

The present investigation adopts a quantitative research methodology, nevertheless, future researchers may consider employing qualitative research techniques to get a more comprehensive comprehension of the experiences and viewpoints of clients and employees concerning disruptive technologies. Furthermore, it is possible to carry out longitudinal research in order to evaluate the enduring effects of disruptive innovations on both consumer satisfaction and organizational performance. Furthermore, it is possible to perform comparative studies in order to analyze the variations in methods and techniques employed by information technology (IT) organizations across different nations, with the aim of effectively managing disruptive developments and attaining long-term viability.

REFERENCES

1. Afthanorhan, A., Ghazali, P. L., & Rashid, N. (2021, May). Discriminant validity: A comparison of CBSEM and consistent PLS using Fornell & Larcker and HTMT approaches. In *Journal of Physics: Conference Series* (Vol. 1874, No. 1, p. 012085). IOP Publishing. DOI 10.1088/1742-6596/1874/1/012085
2. Chaokromthong, K., & Sintao, N. (2021). Sample size estimation using Yamane and Cochran and Krejcie and Morgan and green formulas and Cohen statistical power analysis by G* Power and comparisons. *Apheit International Journal*, 10(2), 76-86. Available at <https://so04.tci-thaijo.org/index.php/ATI/article/view/254253>
3. Haydam, N. E., & Steenkamp, P. (2021). The Social Sciences Research Methodology Framework and its Application during COVID-19. *Reshaping Sustainable Development Goals Implementation in the World; Twum-Darko, M., Ed*, 59-72. DOI: 10.9734/bpi/mono/978-93-5547-236-6/CH5
4. Wankhede, V. A., & Vinodh, S. (2023). Benchmarking Industry 4.0 readiness evaluation using fuzzy approaches. *Benchmarking: An International Journal*, 30(1), 281-306.
5. Leos Safar an et al, (2020), Industry 4.0—Awareness in South India, MDPI sustainability 2020, 12, 3207; doi:10.3390/su12083207
6. Viraj Vijay and et al , (2019) "The Fourth Industrial Revolution (I4.0) in India: Challenges & Opportunities" Published in *International Journal of Trend in Scientific Research and Development (ijtsrd)*, ISSN: 2456-6470, Special Issue | Fostering Innovation, Integration

and Inclusion Through Interdisciplinary Practices in Management, March 2019, pp.105-109

7. Rawat, Pratish & Purohit, Jayant. (2019). A Review of Challenges in Implementation of Industry 4.0 in Indian Manufacturing Industry. Vol 3, Page 43
8. Antonio, J. L., & Kanbach, D. K. (2023). Contextual factors of disruptive innovation: A systematic review and framework. *Technological Forecasting and Social Change*, 188, 122274.
9. Si, S., & Chen, H. (2020). A literature review of disruptive innovation: What it is, how it works and where it goes. *Journal of Engineering and Technology Management*, 56, 101568.
10. Palmié, M., Wincent, J., Parida, V., & Caglar, U. (2020). The evolution of the financial technology ecosystem: An introduction and agenda for future research on disruptive innovations in ecosystems. *Technological forecasting and social change*, 151, 119779.
11. Coccia, M. (2020). Asymmetry of the technological cycle of disruptive innovations. *Technology Analysis & Strategic Management*, 32(12), 1462-1477
12. Wang, C., Guo, F., & Zhang, Q. (2023). How does disruptive innovation influence firm performance? A moderated mediation model. *European Journal of Innovation Management*, 26(3), 798-820.
13. Cirillo, V., Fanti, L., Mina, A., & Ricci, A. (2023). New digital technologies and firm performance in the Italian economy. *Industry and Innovation*, 30(1), 159-188.
14. Hoyer, W. D., Kroschke, M., Schmitt, B., Kraume, K., & Shankar, V. (2020). Transforming the customer experience through new technologies. *Journal of interactive marketing*, 51(1), 57-71.
15. Chege, S. M., Wang, D., & Suntur, S. L. (2020). Impact of information technology innovation on firm performance in Kenya. *Information Technology for Development*, 26(2), 316-345.
16. Hoyer, W. D., Kroschke, M., Schmitt, B., Kraume, K., & Shankar, V. (2020). Transforming the customer experience through new technologies. *Journal of interactive marketing*, 51(1), 57-71.
17. Buhalis, D., Harwood, T., Bogicevic, V., Viglia, G., Beldona, S., & Hofacker, C. (2019). Technological disruptions in services: lessons from tourism and hospitality. *Journal of Service Management*, 30(4), 484-506.
18. Fragapane, G., Ivanov, D., Peron, M., Sgarbossa, F., & Strandhagen, J. O. (2022). Increasing flexibility and productivity in Industry 4.0 production networks with autonomous mobile robots and smart intralogistics. *Annals of operations research*, 308(1-2), 125-143.
19. Rosin, F., Forget, P., Lamouri, S., & Pellerin, R. (2021). Impact of Industry 4.0 on decision-making in an operational context. *Advances in Production Engineering & Management journal*, 16(4), 500-514.

20. Lee, J., Suh, T., Roy, D., & Baucus, M. (2019). Emerging technology and business model innovation: the case of artificial intelligence. *Journal of Open Innovation: Technology, Market, and Complexity*, 5(3), 44.
21. Frizzo-Barker, J., Chow-White, P. A., Adams, P. R., Mentanko, J., Ha, D., & Green, S. (2020). Blockchain as a disruptive technology for business: A systematic review. *International Journal of Information Management*, 51, 102029.
22. Beltagui, A., Rosli, A., & Candi, M. (2020). Exaptation in a digital innovation ecosystem: The disruptive impacts of 3D printing. *Research policy*, 49(1), 103833.
23. Javaid, M., Haleem, A., Vaishya, R., Bahl, S., Suman, R., & Vaish, A. (2020). Industry 4.0 technologies and their applications in fighting COVID-19 pandemic. *Diabetes & Metabolic Syndrome: Clinical Research & Reviews*, 14(4), 419-422.
24. Mubarak, M. F., & Petraite, M. (2020). Industry 4.0 technologies, digital trust and technological orientation: What matters in open innovation?. *Technological Forecasting and Social Change*, 161, 120332.
25. Rajput, S., & Singh, S. P. (2019). Connecting circular economy and industry 4.0. *International Journal of Information Management*, 49, 98-113.
26. Sony, M., & Naik, S. (2020). Key ingredients for evaluating Industry 4.0 readiness for organizations: a literature review. *Benchmarking: An International Journal*, 27(7), 2213-2232.
27. Bai, C., Dallasega, P., Orzes, G., & Sarkis, J. (2020). Industry 4.0 technologies assessment: A sustainability perspective. *International journal of production economics*, 229, 107776.
28. Abdel-Basset, M., Chang, V., & Nabeeh, N. A. (2021). An intelligent framework using disruptive technologies for COVID-19 analysis. *Technological Forecasting and Social Change*, 163, 120431.
29. Aslam, F., Aimin, W., Li, M., & Ur Rehman, K. (2020). Innovation in the era of IoT and industry 5.0: Absolute innovation management (AIM) framework. *Information*, 11(2), 124.