

Information Technology Integration and Its Influence on Organizational Performance in the Healthcare Sector

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ABSTRACT

Introduction: Information technology has significantly transformed the today's world of work. We empirically analyze to what extent the information technology integration influence on organizational performance of Micro and Small Enterprises (MSEs) in the health and hospitality sectors.

Objectives: The key objective is to examine how the information technology integration results in more efficient business operations and sustianable growth of Micro and Small Enterprises (MSEs) in the health and hospitality sectors

Methods: The mixed methodology applied to have the robust analysis. First, purposive sampling technique has been used to collect the primary data of 500 respondent firms in India. Using the exploratory factor analysis, we examine how use of information technology significantly improves the business operation, efficiency and sustainability of micro and small firms in the healthcare services and hospitality sectors.

Results: The result analysis highlights that core business activities, social networking, effective communication across supply chains, and data records maintaining etc. are the keys to stimulating enterprises' adoption of information technology.

Conclusions: We emphasize that more investment in skilling with integration of IT infrastructure significantly improves the organizational performance including business operation, efficiency and sustainability of micro and small firms in the healthcare services and hospitality sectors

Keywords: IT Integration, Healthcare, Organizational Performance, MSEs, India

INTRODUCTION

The 21st century has witnessed the rapid integration of Information technology and its significant influence in strategic business decisions and the rise of economies worldwide. Public and Corporate governance are also adopting IT infrastructures to provide better services to citizens and other stakeholders. Entrepreneurs now realize that information technology can speed up processes, eliminate or reduce paperwork, increase the quality of output and service delivery, decrease storage costs, and enhance information sharing and communication (Haftor et al., 2024). Information technology comprises ICT, PCs, networks, communication methods, automated software and other communication-networks machines used for processing, storing, training, analyzing and sharing information. There is a vital need for micro and small-scale firms in remote areas to employ information technology to take advantage of substantial economic benefits and networking, which transformed the whole world (Varajão et al., 2022). Over the last two decades, apart from increased productivity and efficiency, IT adoption has also reduced business operations

costs (Koellinge,2008; Chatterjee and Kar, 2020). These technologically innovative strategies include e-commerce, i.e., business-to-business (B2B), business-to-consumer (B2C) and consumer-to-consumer (C2C) (Khan, 2006).

MSEs benefitted substantially from appropriating strategies while knowing their rival firms' behaviour. In such emerging competitive scenario, adoption and awareness of information technology applications are key artifacts of modern organizations for their efficiency, competitiveness, and sustainability (Rao et al., 2023).

Conceptualization of MSME

The MSME sector is considered essential for emerging economies such as India due to its significant contributions to production, exports, and employment. According to the Micro, Small, and Medium Enterprises Act of 2006, MSMEs are typically divided into two main categories manufacturing² and services. Within these categories are distinctions made for micro, small, medium, and large enterprises.

Literature Review

Some scholars have studied various factors influencing SMEs' technological adoption in an emerging market. Information technology, block chain and other ICT tools have helped in efficiency, performance and value creation inter- intra firms (Rao, Balram., et al., 2023). They suggest that the Internet has become a significant tool for doing business around the globe and will become more attractive in the future in terms of appropriation of technology, expansion and growth (Kula and Tatoglu,2003). Tomasi *et al.* (2004) demonstrate that electronic records were more accurate than manual records, and Magnetic cards for user identification were more useful for appointments. The prescription for tests and medicine through technology was more convenient for the patients. Hikmet *et al.* (2008) examined the role of organizational factors in adopting IT in healthcare in Florida hospitals. They found that through hospital informational technology computerized physician order entries, electronic medical records, patient billing systems were much easier. Law *et al.* (2010) exposed that employees should use an online reservation system to update information about their hotels' services to avoid geographical constraints and enhance competitive strategic and operational management. Gallego *et al.* (2011) reflected that SMEs develop their competitive position while large firms acquire more human capital and develop innovative activities. Some Scholars examined the digital literacy of primary care practitioners and found that standardization through ICT applications ensures quality data and patient data privacy and checks malpractices to make firms more transparent and efficient in operational performance (Schoen et al., 2012; Moriones et al., 2013; Omiunu (2019).

Lecerf and Omrani (2020) examined the effects of IT adoption on the innovation and internationalization of small and medium-sized enterprises. Several scholars emphasize that the government and NGOs should provide necessary grants and sponsorships to enhance the growth of women-owned IT adopted SMEs. Further, the COVID-19 pandemic seems to have expedited the adoption of information technology due to its associated benefits (Wicaksono and Simangunsong, 2022; Lund *et al.*, 2023). Most earlier researchers describe the adoption of information technology and its impact on medium and large multinational firms in the manufacturing sector. However, there is a scarcity of studies highlighting the challenges of micro and small-scale enterprises in adopting information technology in the service sector.

OBJECTIVES

The key objective of this research is to analyze how appropriation and use of information technology help in more efficient business operations and sustainable growth of Micro and Small Enterprises (MSEs) in the health and hospitality sectors

METHODS

In this research, a non-probability convenience sampling approach was employed to access the intended demographic and the stakeholders. The representative sample of 500 micro and small firms has been collected through questionnaires and interview methods from managers and employees of healthcare and hospitality MSE

²

As per the MSMEs Act concerning the service enterprises category, a micro enterprise is defined by an investment in equipment that does not surpass Rs.10 lakh. A small enterprise is characterized by an investment in equipment exceeding Rs.10 lakh but not surpassing Rs.2 crore. Meanwhile, a medium enterprise is identified by an investment in equipment exceeding Rs.2 crore but not surpassing Rs.5 crore. Conversely, for enterprises involved in the manufacture, production, processing, or preservation of goods, a micro enterprise is distinguished by an investment in plant and machinery not exceeding Rs.25 lakh. A small enterprise surpasses this threshold, with an investment in plant and machinery exceeding Rs.25 lakh but not exceeding Rs.5 crore. Lastly, a medium enterprise exceeds Rs.5 crore in investment in plant and machinery but does not surpass Rs.10 crore enterprise

firms in India's northern states of Haryana, Punjab and Himachal Pradesh. For our robust analysis while testing the hypothesis, we assume that MSEs are aware of the significance of appropriation and use of information technology in their business operation.

RESULTS

Data Analysis

To examine and understand the key factors and their significance, an exploratory factor analysis applied as mentioned below to determine micro and small firms' appropriation and use patterns of information technology in business operations.

Table 1: KMO And Bartlett's Test : To Check the Appropriation And Adoption Pattern	
Kaiser-Meyer-Olkin Measure of Sampling Adequacy	0.903
Bartlett's Test of Sphericity.	5630.841
Chi-Square	499
Degree of freedom	
Significance	0.000

As Table 1 depicts that all the variables taken in the study are statistically significant. In the context of the total sample, Kaiser-Meyer-Olkin (KMO) is an indicator used to assess the suitability of a factor analysis. It should be more than 0.5. In this context, the value of 0.903 is greater than 0.5, suggesting that the data is suitable for factor analysis. Bartlett's Test of Sphericity evaluates whether the correlations among variables collectively form an identity matrix. All the variables correlate perfectly with themselves if $r = 1$, and there is no correlation if $r = 0$. The value of chi-square 5630.841 is significant at a 1% level and indicates that all the variables are perfectly correlated with themselves (Table1).

Communality refers to the extent to which an item is correlated with all other items. Higher communalities indicate better associations

Table 2: Communalities To Check the Awareness and Adoption Pattern		
Variables	Initial	Extraction
E mails to operate business	1.000	0.522
Online resources of general information	1.000	0.616
Online ordering from supplier(s)	1.000	0.784
Online payments to supplier(s)	1.000	0.783
Online sales to customers	1.000	0.713
Online payment receipts from customers	1.000	0.842
Online resources for govt, information	1.000	0.805
Online resources for Customers feedback	1.000	0.841
Online resources to download software(s)	1.000	0.714
E-banking services	1.000	0.795
IT for social networking	1.000	0.768
IT for intra-company communication	1.000	0.691
IT for video conferencing	1.000	0.773
IT for placing job recruitment advertisem.	1.000	0.504
IT for finding competitive information	1.000	0.623
IT to maintain electronic records	1.000	0.639
Source: Extraction through PCA via SPSS@1 level Significance		

Table 2, in the context of the total sample, shows that loading ranges from 0.504 to 0.842. Communalities within the range of 0.0 to 0.4 for a specific variable suggest that the variable may face challenges in loading significantly on any factor. All the factors having loading more than 0.4 have been considered good. Therefore, all variables are significantly loaded on factors. Further, the four key factors show more than one eigenvalue. These four factors account for 71.341 per cent variance, more than 60 per cent. In unrotated loading, online resources to obtain government information, receive customer feedback, download software, use IT to place job recruitment advertisements, and find competitor information show a 47.040 per cent variance. Emails used for business operations, online ordering from suppliers, online payments to suppliers, online sales to customers, online receipts of payment from customers, and e-banking services combined contribute to 9.420% of the explained variance. In the third factor, IT for intra-company communication, video conferencing, and online general information resources contribute to an 8.060% variance. The other variables, IT for social networking and IT to maintain electronic records, explain a 6.822 % variance.

The varimax method is employed to redistribute variance, ensuring that the factor loading pattern and the percentage of variance for each factor retain distinct characteristics. However, the factors remain the same as discussed above. So, rotated loading is different from unrotated components. In rotated loading, the first factor contributes 20.795 per cent variance; the second factor shows 20.062 per cent variance; the third factor accounts for 17.205 per cent, and the fourth factor explains 13.278 per cent variance.

Labelling of Factors

Four factors have been extracted among nineteen variables, which account for 71.341 per cent variance and more than one eigenvalue. The extracted factors are labelled as helping to connect with related parties, core business activities, effective communication, record maintaining, and social networking.

Variable	Factors			
	1	2	3	4
Online resources to have Govt Information	0.833			
Online resources to receive Customer's feedback	0.863			
Online resources to download software	0.661			
IT for Job recruitment Advertisement	0.585			
IT for finding competitor information	0.693			
E-mail to operate business		0.412		
Online ordering from suppliers		0.531		
Online Payments to suppliers		0.847		
Online sales to Customers		0.675		
Online Receipt Payment from Customers		0.527		
E-Banking Services		0.877		
IT for Intra-firm Communication			0.818	
IT for Video Conferencing			0.807	
Online Resources for General Information			0.554	
IT for Social Networking				0.859
IT to maintain electronic records.				0.664
Source: calculated with SPSS (Rotation Method: Varimax with Kaiser Normalization)				

As depicted in Table 3, the first factor is loaded with five variables, the second factor with six variables, and the third and fourth factors are loaded with three and two variables, respectively.

FACTOR 1: Stakeholders' Interconnectedness

The first factor loaded five variables, as discussed above, that explained how information technology adoption can make the connection with key stakeholders like government, competitors, customers and suppliers. It also helps firms

to recruit efficient employees. The latest software adds new dimensions to the operations efficiently. All these variables have shown a high degree of association with the principal factor. Thus, it is very helpful in connecting with competitors as well as hiring more efficient human resources or employees.

FACTOR 2: Core Business Activities

This factor is labelled as a core business activity because information technology is used in every activity of the firm, such as e-mail, online ordering, supply, payments, and receipts, and it helps in many e-banking services. The study has shown a positive relationship between the usage of internet-based technologies, different types of innovation, and the performance of firms. It reveals that firms using internet-enabled innovations were more cost effective than firms not using internet-enabled innovations.

FACTOR 3: Effective Communication.

With the adoption of IT Information technology expedites communication in inter-intra firms. So, the variables are connected with the principal factor, effective communication Intra-firm communication and video conferencing improves decision performance, productivity and service quality across value chain.

FACTOR 4: Record Maintaining and Social Networking.

With the help of social sites, connections can be established with the masses. Information technology reduces the risk of errors and duplicity through electronic health records, patient records, and professional clinical networks especially in remote areas.

Conclusion(s)

The result of this study describes that the integration of information technology plays a vital role in both the efficiency and competitiveness of MSEs in the healthcare and hospitality sectors. Thus, the study emphasizes the spillover value creative role of investment in information technology infrastructure for the organizational performance and sustainable growth of firms.

DISCUSSION(S)

The analysis shows the importance of IT investment and skill in improving the efficiency of business operation and its competitive sustainability in health and hospitality sectors. However, more studies are required to examine appropriation of information technology in other sectors for more comprehensive understanding and policy formulation. This includes examining the impact of emerging technologies like Artificial Intelligence, machine learning and quantum computing across different industries. A deeper understanding of technological integration is essential for fostering innovation, efficiency and sustainability.

REFERENCES

1. Haftor, D., Ricardo Costa-Climent, M., Samuel Ribeiro-Navarrete (2024). Firms' use of predictive artificial intelligence for economic value creation and appropriation. *International Journal of Information Management* 79 (2024) 102836
2. Rao, Balram., et al. (2023). Impact of Technological Changes on Health Insurance Adoption in Rural Area. *Asia-Pacific Journal of Management Research and Innovation*, 19(4), 231-242.
3. Chatterjee, S., & Kar, A.K. (2020). Why do small and medium enterprises use social media marketing and what is the impact: Empirical insights from India. *International Journal of Information Management*. 5(3), 95-102.
4. Gallego, J.M., Gutiérrez, L.H. and Lee, S.H. (2011). A firm-level analysis of ICT adoption in an emerging economy: evidence from the Colombian manufacturing industries. Oxford University Press, 24(1),191-221.
5. Hikmet, N., Bhattacharjee, A. and Pangil, F. (2008). Reconceptualizing organizational support and its effect on information technology usage: Evidence from the health care sector. *Journal of Computer Information Systems*, 48(4), 69-76.
6. Khan, J. H. (2006). Factor analysis in counseling psychology research, training, and practice: Principles, advances, and applications. *The Counseling Psychologist*, 34(6), 684-718.
7. Koellinger, P. (2008). The relationship between technology, innovation, and firm performance—Empirical evidence from E-business in Europe. *Research Policy*, 37(5), 1317-1328.

8. Kula, V. and Tatoglu , E. (2003). An exploratory study of Internet adoption by SMEs in an emerging market economy. *European Business Review*, 15 (5), 324-333.
9. Law, R. et al (2010). Progress and development of information and communication technologies in hospitality. *International Journal of Contemporary Hospitality Management*, 23(4), 533-551.
10. Lecerf, M. and Omrani, N. (2020). SME Internationalization: the Impact of Information Technology and Innovation. *Journal of the Knowledge Economy*, 11(2), 805-824.
11. Lund, B., Agbaji, and Daniel. (2023). Information Literacy, Data Literacy, Privacy Literacy, and Chat GPT: Technology Literacies Align with Perspectives on Emerging Technology Adoption. (<http://dx.doi.org/10.2139/ssrn.4324580>)
12. Omiunu, E. (2019). Impact of Information and Communication Technology in Selected Small and Medium Enterprises in Osogbo Metropolis, Nigeria. *Journal of School of Communication and Information Technology*, 3,(1), 24–35.
13. Schoen, C., Osborn, R., Squires, D. and Doty, M. (2012). A Survey Of Primary Care Doctors In Ten Countries Shows Progress in Use of Health Information Technology, Less In Other Areas. *International journal of Health Affair*, 15(4), 1-10.
14. Tomasi, Elaine., Luiz, A. F., Maria., and Santos (2004). Health information technology in primary health care in developing countries: a literature review. *Bull World Health Organ*, 82(11), 11-20.
15. Varajão, J.; Carvalho, J.Á.; Silva, T.and Pereira, J. (2022). Lack of Awareness of IT Adoption and Use Theories by IT/IS Project Managers: Poor Relevance, Unfocused Research or Deficient Education? *Information*, 13(4), 48-50.
16. Wicaksono, T.Y., and Simangunsong, A. (2022). Digital technology adoption and Indonesia's MSMEs during the COVID-19 pandemic. *International journal of financial management*, 15(2), 1-33.