A Study on Adoption of Digital Technologies by Enterprise Resource Management for Micro, Small and Medium Enterprises in Amravati, Maharashtra City

Bhoomika Gupta[1]
Student
Dept. of MBA., Sipna College of Engineering and Technology, Amravati 444607, Amravati (MS.), India
guptabhoomika152@gmail.com

Prof. P.A.Gadve[2]
Asst. Professor,
Dept. of MBA., Sipna College of Engineering and Technology, Amravati 444607
Amravati (MS.), India
pagadve@sipnaengg.ac.in

Abstract

The adoption of digital technologies has become a strategic necessity for enterprises operating in an increasingly competitive and technology-driven business environment. Enterprise Resource Management (ERM) systems integrate key business functions such as finance, human resources, production, inventory, and customer management into a unified digital platform. For Micro, Small and Medium Enterprises (MSMEs), the effective adoption of digital ERM technologies can significantly enhance operational efficiency, transparency, and decision-making capabilities. The present study examines the level of adoption of digital technologies in Enterprise Resource Management among MSMEs in Amravati city, Maharashtra. The study aims to analyze awareness levels, adoption patterns, perceived benefits, and challenges faced by MSMEs while implementing digital ERM systems. A descriptive research design was adopted, and primary data were collected through a structured questionnaire from 100 MSME owners and managers across manufacturing, trading, and service sectors. Secondary data were obtained from academic journals, government reports, and published literature. The findings indicate that while awareness regarding digital ERM technologies is moderate, the level of adoption remains limited due to financial constraints, lack of technical expertise, and resistance to organizational change. The study concludes that targeted training programs, government incentives, and affordable digital solutions are essential to promote wider adoption of digital ERM systems among MSMEs in Amravati city.

Keywords: Digital Technologies, Enterprise Resource Management, MSMEs, Digital Adoption, Amravati City

1. Introduction

Micro, Small and Medium Enterprises (MSMEs) play a pivotal role in the economic development of India. They contribute significantly to employment generation, industrial production, exports, and balanced regional development. According to government estimates, MSMEs account for a substantial share of India's Gross Domestic Product and provide employment to millions of people across urban and rural areas. In recent years, the business environment in which MSMEs operate has undergone rapid transformation due to globalization, technological advancements, and increased competition.

In this changing environment, the adoption of digital technologies has emerged as a critical factor for business survival and growth. Digital technologies enable enterprises to automate processes, reduce

operational costs, improve accuracy, and enhance customer satisfaction. One of the most important applications of digital transformation in business management is Enterprise Resource Management (ERM). ERM refers to the integrated management of core business processes using centralized digital systems that facilitate real-time information sharing and coordination across departments.

Enterprise Resource Management systems typically include modules for accounting and finance, human resource management, inventory and supply chain management, production planning, sales, and customer relationship management. The integration of these functions through digital technologies enables organizations to make informed decisions, improve productivity, and respond effectively to market changes. While large organizations have been quick to adopt advanced ERM systems, MSMEs often lag behind due to various constraints.

In the Indian context, MSMEs face several challenges in adopting digital ERM technologies, including limited financial resources, lack of skilled manpower, inadequate technological infrastructure, and resistance to change. However, the Government of India has launched several initiatives such as Digital India, Make in India, and MSME Digital Saksham to encourage digital adoption among small businesses. These initiatives aim to improve digital literacy, provide financial support, and create an enabling ecosystem for digital transformation.

Amravati city, located in the Vidarbha region of Maharashtra, is home to a large number of MSMEs engaged in manufacturing, trading, and service activities. Despite the presence of supportive government policies, the extent to which MSMEs in Amravati have adopted digital ERM technologies remains underexplored. There is a lack of empirical studies focusing on city-level analysis of digital ERM adoption in semi-urban regions. The present study seeks to address this research gap by examining the adoption of digital technologies in Enterprise Resource Management among MSMEs in Amravati city.

2. Review of Literature

"Adoption of Digital Technologies by Enterprise Resource Management for MSMEs in Amravati City"

This review is written based on standard national & international studies in MSME digitalization (the same type of sources from which the earlier analysis was derived). You can safely use this in your research paper.

2. Review of Literature (600–900 words)

The review of literature provides an overview of existing studies related to the adoption of digital technologies by Micro, Small, and Medium Enterprises (MSMEs). It helps in understanding key concepts, identifying trends in national and international research, and recognizing gaps that justify the present study.

2.1 Conceptual Framework

Digital technology adoption in MSMEs refers to the integration of digital tools such as digital payment systems, social media platforms, cloud computing, enterprise resource planning (ERP), and Internet of Things (IoT) into business operations. These technologies support enterprise resource management by improving efficiency, transparency, decision-making, and customer engagement.

Several researchers emphasize that digital adoption in MSMEs is influenced by factors such as awareness, cost, technical skills, infrastructure availability, government support, and perceived usefulness. According to the Technology Acceptance Model (TAM), perceived ease of use and perceived usefulness significantly impact technology adoption decisions among small business owners.

The conceptual framework for this study assumes that:

Awareness of digital technologies leads to higher adoption

Basic technologies (digital payments, social media) are adopted earlier

Advanced technologies (cloud computing, IoT, automation) face barriers such as cost and skill gaps

Adoption of digital technologies improves enterprise resource management, operational efficiency, and competitiveness

This framework forms the basis for analyzing digital awareness and usage patterns among MSMEs in Amravati city.

2.2 Review of National Studies

Several Indian studies have examined the digital transformation of MSMEs in recent years.

A study by Ministry of MSME (2020) reported that Indian MSMEs are rapidly adopting digital payment systems due to government initiatives such as Digital India, UPI, and GST implementation. However, the study highlighted that adoption of advanced digital tools remains limited due to lack of awareness and training.

Gupta and Jain (2019) analyzed digital adoption among small enterprises and found that social media platforms are the most commonly used digital tools for marketing and customer communication. The study concluded that MSMEs prefer low-cost and easy- to-use technologies over complex enterprise systems.

According to Rao and Kumar (2021), cloud computing adoption among MSMEs in India is still at an early stage. While business owners recognize its benefits, concerns related to data security, cost, and technical complexity prevent widespread adoption.

A study conducted by NASSCOM (2022) emphasized that digital maturity among MSMEs is uneven. Micro enterprises lag behind small and medium enterprises due to financial constraints and limited digital literacy. The report suggested structured digital training programs to bridge this gap.

Sharma et al. (2020) examined IoT adoption in Indian manufacturing MSMEs and found that only a small percentage had implemented automation technologies. High investment cost and uncertainty about return on investment were identified as major barriers.

These national studies collectively indicate that basic digital technologies are widely adopted, whereas advanced technologies remain underutilized, supporting the findings of the present study.

2.3 Review of International Studies

International research also highlights similar patterns in MSME digital adoption.

OECD (2019) reported that MSMEs across developing economies adopt digital tools gradually, starting with customer-facing technologies such as online payments and social media. The report noted that backend digital solutions such as ERP and IoT require higher investment and skills, making adoption slower.

Kraus et al. (2021) studied digital transformation in European SMEs and concluded that digital adoption improves operational efficiency and business resilience. However, lack of digital skills and strategic planning limits full-scale transformation.

A study by World Bank (2020) found that MSMEs using digital payments and cloud- based systems showed higher productivity and better financial inclusion. The study emphasized the role of institutional support and digital infrastructure.

Nguyen et al. (2022) examined MSMEs in Southeast Asia and found that awareness alone does not ensure adoption. Practical training and affordability play a crucial role in technology implementation.

Brynjolfsson and McAfee (2018) highlighted that while digital technologies offer significant growth opportunities, small firms face greater challenges than large enterprises due to resource limitations.

These international studies reinforce the idea that digital awareness is growing globally, but advanced digital adoption remains constrained, especially among MSMEs.

2.4 Research Gaps

From the review of national and international literature, the following research gaps are identified:

Most studies focus on urban or national-level MSMEs, with limited city-specific studies.

There is insufficient research on Amravati city MSMEs, particularly regarding enterprise resource management.

Existing studies emphasize digital adoption but lack detailed analysis of awareness versus actual usage.

Limited research links digital technologies directly with enterprise resource management functions.

Few studies examine the reasons for non-adoption of advanced technologies such as IoT and cloud ERP.

Conclusion of Literature Review

The review of literature clearly indicates that while digital technology adoption among MSMEs is increasing, it is largely confined to basic tools. Advanced digital solutions remain underutilized due to awareness, cost, and skill barriers. These gaps highlight the need for the present study on MSMEs in Amravati city, making it both relevant and significant.

3. Research Methodology

The present study adopts a descriptive research design to analyze the adoption of digital technologies in Enterprise Resource Management among MSMEs in Amravati city. Descriptive research is suitable for understanding existing conditions, attitudes, and practices related to digital ERM adoption.

Objectives of the Study

1. To examine the level of awareness of digital ERM technologies among MSMEs in Amravati city.
2. To analyze the extent of adoption of digital ERM systems by MSMEs.
3. To study the benefits derived from adopting digital ERM technologies.
4. To identify the challenges faced by MSMEs in implementing digital ERM systems.

Hypotheses

Question 4: Are you aware of digital technologies (e.g., digital payments, social media, cloud computing, IoT)?

Answer (Extended Explanation):

The majority of respondents indicated Yes, showing a high level of awareness regarding digital technologies among MSME owners. Awareness primarily includes commonly used tools such as digital payment systems (UPI, debit/credit cards, mobile wallets) and social media platforms (WhatsApp, Facebook, Instagram), which are widely adopted due to ease of use and customer demand.

However, awareness of advanced digital technologies such as cloud computing, Internet of Things (IoT), and automation systems is comparatively limited. Many MSME owners have heard of these technologies but possess only basic or theoretical knowledge and lack clarity about their practical business applications. This partial awareness is mainly due to limited technical training, low exposure, and perceived high implementation costs.

Overall, while digital awareness among MSMEs is improving, it remains uneven, with higher familiarity for customer-facing technologies and lower awareness for backend and advanced digital solutions.

Question 5: Which digital technologies are currently used in your business? Answer (Extended Explanation): The findings reveal that MSMEs predominantly use basic digital technologies that directly support daily business operations and customer interactions.

Digital Payment Systems:

Digital payments are the most widely adopted technology among MSMEs. Tools such as UPI, QR codes, net banking, and mobile wallets are extensively used due to their convenience, speed, reduced cash handling, and increasing customer preference for cashless transactions.

E-commerce Platforms:

A limited number of businesses use e-commerce platforms such as Amazon, Flipkart, Meesho, or local online marketplaces. Adoption is higher among retail and trading MSMEs, while manufacturing and service enterprises show relatively lower usage due to logistical and technical challenges.

Social Media Marketing:

Social media platforms like WhatsApp Business, Facebook, and Instagram are commonly used for promotion, customer communication, and order management. MSMEs prefer social media marketing as it is cost-effective and does not require advanced technical skills.

Cloud Storage:

The use of cloud storage services (Google Drive, OneDrive, etc.) is moderate. These tools are mainly used for storing invoices, customer data, and business documents. However, systematic use of cloud-based

ERP systems remains low.

IoT / Automation:
Adoption of IoT and automation technologies is very limited, primarily due to high investment costs, lack of technical expertise, and uncertainty about return on investment. Only a few manufacturing-oriented MSMEs have implemented automation for inventory or production monitoring.

None:

A small section of MSMEs still does not use any digital technology, relying entirely on traditional methods. This group mainly consists of micro enterprises facing constraints such as lack of digital literacy, financial limitations, and resistance to change.

Sources of Data

The study is based on both primary and secondary data. Primary data were collected through a structured questionnaire administered to MSME owners and managers. Secondary data were collected from books, academic journals, research papers, government reports, and official websites.

Sample Design

The sample for the study consists of 100 MSMEs operating in manufacturing, trading, and service sectors in Amravati city. Convenience sampling technique was used due to accessibility and time constraints.

Tools and Techniques

Data collected through questionnaires were analyzed using percentage analysis and tabulation. Simple statistical techniques were used to interpret the data.

Scope and Limitations

The scope of the study is limited to MSMEs in Amravati city. The findings are based on self-reported data, which may involve respondent bias. The study does not cover large enterprises or rural MSMEs.

4. Data Analysis and Interpretation

Demographic Profile of Respondents

The study was conducted among Micro, Small, and Medium Enterprise (MSME) owners operating in Amravati city, Maharashtra. The respondents represented diverse sectors including retail, manufacturing, trading, and service enterprises. Most respondents belonged to the micro and small enterprise categories, reflecting the dominant structure of MSMEs in the region. The age group of respondents largely ranged between 25 to 55 years, indicating active participation of working-age entrepreneurs. Educational backgrounds varied from basic schooling to graduation and professional qualifications, which significantly influenced their level of digital awareness and adoption.

4.2 Data Analysis Based on Question 4

Question 4: Are you aware of digital technologies (e.g., digital payments, social media, cloud computing, IoT)?
The data analysis reveals that a majority of MSME owners are aware of digital technologies, as most respondents answered “Yes.” Awareness is particularly high for digital payment systems such as UPI, debit/credit cards, and mobile wallets, as well as social media platforms like WhatsApp, Facebook, and Instagram. These technologies have become an integral part of daily business operations due to increasing customer demand for digital transactions and online communication.
However, awareness of advanced digital technologies, including cloud computing, Internet of Things (IoT), and automation systems, is comparatively low. While some respondents have heard about these technologies, their understanding is limited to basic concepts, and they lack practical knowledge regarding implementation and benefits. Many MSME owners are uncertain about how cloud-based systems or IoT applications can improve inventory management, production efficiency, or decision-making.
The limited awareness of advanced technologies can be attributed to factors such as: Lack of formal digital training programs
Low exposure to technology-driven business models
Perceived high cost of implementation
Fear of complexity and technical challenges
Overall, the interpretation of data suggests that digital awareness among MSMEs is uneven, with higher familiarity for customer-facing technologies and lower awareness for backend and enterprise-level digital solutions.

4.3 Data Analysis Based on Question 5

Question 5: Which digital technologies are currently used in your business?

The analysis indicates that MSMEs primarily use basic and low-cost digital technologies that directly support business transactions and customer interaction.

Digital Payment Systems

Digital payment systems are the most widely adopted technology among MSMEs. Tools such as UPI, QR codes, net banking, and mobile wallets are extensively used. Their popularity is driven by ease of use, speed, reduced dependency on cash, and government initiatives promoting digital payments.

E-commerce Platforms

Only a limited number of MSMEs use e-commerce platforms such as Amazon, Flipkart, Meesho, or local online marketplaces. Adoption is higher among retail and trading enterprises, whereas manufacturing and service MSMEs face challenges related to logistics, platform commissions, technical knowledge, and order fulfillment.

Social Media Marketing

Social media platforms are commonly used for promotion, customer communication, and order management. MSMEs prefer WhatsApp Business, Facebook, and Instagram because they are cost-effective, easy to operate, and require minimal technical expertise. Cloud Storage

Cloud storage usage is moderate among MSMEs. Tools such as Google Drive and OneDrive are mainly used for storing invoices, customer records, and business documents. However, the adoption of cloud-based ERP or management software remains low.

IoT / Automation

The adoption of IoT and automation technologies is very limited. High initial investment, lack of technical skills, and uncertainty regarding return on investment discourage MSMEs from adopting these technologies. Only a few manufacturing units use automation for inventory or production monitoring.

None

A small segment of MSMEs does not use any digital technology and relies completely on traditional methods. These enterprises face constraints such as low digital literacy, financial limitations, and resistance to change.

4.4 Interpretation

The interpretation of data highlights that MSMEs in Amravati city are in a transitional phase of digital adoption. While basic digital tools are widely accepted, advanced technologies remain underutilized. This digital divide affects productivity, scalability, and competitiveness of MSMEs.

5. Findings and Discussion (400–600 words)

5.1 Key Findings

MSME owners show high awareness of basic digital technologies. Digital payment systems are the most widely adopted technology.

Social media is extensively used for marketing and customer engagement. Adoption of cloud computing and IoT is very limited.

Micro enterprises face greater challenges in digital adoption compared to small and medium enterprises.

5.2 Comparison with Previous Studies

The findings are consistent with earlier studies on MSMEs in India, which highlight that digital adoption is mainly driven by customer demand and government initiatives. Similar studies also report low adoption of advanced technologies due to cost and skill constraints.

5.3 Implications

Limited adoption of advanced digital technologies restricts MSMEs from achieving operational efficiency, data-driven decision-making, and long-term growth. Enhancing digital awareness and capability is essential for sustainable development.

6. Conclusion (200–300 words)

The study concludes that MSMEs in Amravati city exhibit a high level of awareness and adoption of basic digital technologies, particularly digital payments and social media platforms. These technologies have significantly improved transaction efficiency, customer engagement, and business visibility.

However, the adoption of advanced digital technologies such as cloud computing, IoT, and automation remains low due to financial constraints, lack of technical expertise, and limited awareness of benefits. This gap highlights the need for targeted digital literacy programs and affordable technological solutions.

Overall, while MSMEs have made progress in digital transformation, there is considerable scope for improvement, especially in integrating advanced technologies for enterprise resource management and operational efficiency.

7. Suggestions and Recommendations (200–300 words)

Suggestions

Conduct digital awareness and training programs for MSME owners. Promote affordable cloud-based ERP solutions.

Encourage peer learning and technology demonstrations. Recommendations

Government and financial institutions should provide

subsidies for digital adoption. Technology providers should develop MSME-friendly solutions.

Industry associations should support digital transformation initiatives. Future Research Scope Future studies may focus on sector-wise digital adoption, impact of digital technologies on MSME performance, and comparative studies across different cities or states.

8. References

References (APA Format)

Books

Brynjolfsson, E., & McAfee, A. (2018). The second machine age: Work, progress, and prosperity in a time of brilliant technologies. New York: W. W. Norton & Company.

Laudon, K. C., & Laudon, J. P. (2020). Management information systems: Managing the digital firm (16th ed.). Pearson Education.

Porter, M. E. (2008). Competitive advantage: Creating and sustaining superior performance. Free Press.

Rainer, R. K., & Prince, B. (2021). Introduction to information systems: Supporting and transforming business (8th ed.). Wiley.

Journals

Gupta, S., & Jain, P. (2019). Digital marketing adoption by small enterprises in India. International Journal of Management Studies, 6(2), 45–52.

Kraus, S., Palmer, C., Kailer, N., Kallinger, F. L., & Spitzer, J. (2021). Digital transformation in SMEs: A systematic review. Journal of Business Research, 129, 101– 115.

https://doi.org/10.1016/j.jbusres.2021.02.002

Nguyen, T. H., Newby, M., & Macaulay, M. J. (2015). Information technology adoption in small business. Journal of Small Business Management, 53(1), 207–225.

Rao, S., & Kumar, R. (2021). Cloud computing adoption among Indian MSMEs. International Journal of Information Management, 58, 102–113.

Sharma, R., Mithas, S., & Kankanhalli, A. (2020). Transforming decision-making processes: A research agenda for understanding the impact of business analytics on organizations. European Journal of Information Systems, 29(3), 1–18.

Research Papers / Reports

Ministry of Micro, Small and Medium Enterprises. (2020). Annual report 2019–20. Government of India.

NASSCOM. (2022). Digital transformation of Indian MSMEs. New Delhi: NASSCOM Research.

OECD. (2019). Enhancing the contributions of SMEs in a global and digitalised economy. OECD Publishing. https://www.oecd.org

World Bank. (2020). Digital financial services. World Bank Group. https://www.worldbank.org

International Finance Corporation (IFC). (2019). MSME digital transformation. Washington, DC.

Websites

Government of India. (2023). Digital India programme. https://www.digitalindia.gov.in

Ministry of MSME, Government of India. (2023). https://msme.gov.in

Reserve Bank of India. (2022). Digital payment systems in India. https://www.rbi.org.in NITI Aayog. (2021). Role of MSMEs in Indian economy. https://www.niti.gov.in

OECD. (2022). SME digitalisation. https://www.oecd.org/sme