International Journal of Advances in Business and Management Research (IJABMR)
https://ejournal.svgacademy.org/index.php/ijabmr/
https://doi.org/10.62674/ijabmr.2025.v3isupp2.0012
OPEN ACCESS

IMPACT OF DIGITAL FORMATION ON SMALL AND MEDIUM ENTERPRISES (SMES): CHALLENGES AND OPPORTUNITIES

T Ramesh

Original Article

Aristotle PG College, Moinabad, 501504 Telangana, India

*Corresponding Author's Email: rameshyadavthotakuri@gmail.com

Abstract

Digital transformation (DT) has become a serious factor for businesses worldwide, enabling them to enhance operational efficiency, improve customer engagement, and gain an inexpensive edge. However, for Small and Medium Enterprises (SMEs), the journey of adopting and integrating digital technologies often remains fraught with challenges. This research investigates the impact of digital transformation on SMEs by employing a mixed-methods approach. A combination of qualitative interviews with SME owners and managers and quantitative surveys across a larger sample of SMEs provides a complete understanding of the drivers, blocks, and outcomes of digital implementation. The study explores the inspirations behind digital transformation, the challenges faced during the implementation process, and the apparent benefits SMEs derive from implementing digital technologies. Results indicate that while SMEs face resource constraints and resistance to change, digital change leads to significant improvements in operational efficiency, market expansion, and customer satisfaction. The findings offer helpful details about the strategies SMEs can adopt to navigate the digital transformation process successfully. This research contributes to the growing body of information on digital transformation in SMEs and offers practical recommendations for businesses looking to enhance their digital capabilities.

Keywords: Business Performance; Digital Transformation; Mixed-Methods Research; Small and Medium Enterprises (SME's); Technological Adoption

Introduction

In the competitive and technology-driven business environment today, digital transformation (DT) has developed a critical influence for organizational success. The process involves integrating digital technologies into all aspects of business operations, fundamentally altering business models, value creation, and the way companies interact with customers.

The research questions guiding this study are:

1. What are the key drivers behind digital transformation in SMEs?
2. What barriers do SMEs face in adopting and implementing digital technologies?
3. What benefits have SMEs experienced from digital transformation, both in terms of business performance and growth?
4. How do industry sector, geographic location, and firm size influence the digital transformation journey of SMEs?

Received 29th July 2025; Revised 22nd August 2025; Accepted 14th September 2025

This study seeks to contribute to the growing body of literature on digital transformation by focusing specifically on the SME sector, and it aims to offer practical conclusions for SME leaders and policymakers aiming to support digital adoption in SMEs. Furthermore, the findings of this study will offer practical guidance on how SMEs can effectively navigate the challenges of digital transformation, maximise its benefits, and position themselves for long-term success.

Literature Review

Digital transformation (DT) has emerged as a critical strategy for organisations striving to remain competitive in the modern business landscape. While large firms have been the focal point of much of the research in this domain, the challenges and opportunities of digital transformation for SMEs have gained increasing attention. Small and medium-sized enterprises (SMEs) encounter considerable challenges and opportunities in the adoption and implementation of digital technologies, owing to their distinctive characteristics and limitations. The literature surrounding this subject examines the factors driving SMEs towards digital transformation, the barriers they face, the benefits they stand to gain, and the role of leadership and industry-specific considerations in the transformation process.

Ben Slimane et al. [1] presented a systematic literature review and consolidative framework on the digital transformation of SMEs. The review produces findings and recognises key managerial dimensions needed for a successful digital strategy, including rethinking digital infrastructure, new physical mechanisms, and strong senior organisational oversight [2, 3].

Philbin et al. [4] focused on how DT can enable SMEs to accomplish sustainable development. Their regular review, available in the Small Commercial International Review, analysed 64 articles to connect DT with sustainable outcomes across economic, environmental, and social dimensions [5, 6].

Rupeika-Apoga [7] examined the role of public support in the digital transformation of SMEs. Their study, available in the Journal of Risk and Financial Management, looked at public creativity intended for serving SMEs with DT [8].

Fauzi and Sheng [9] authored an investigation into exploratory SME digital making from an institutional theory perspective. Their work, available in the Periodical of Small Business Management, observed factors such as government initiatives and institutional pressures influencing the adoption of digital technologies [10].

Definition and Scope of Digital Transformation

Digital transformation is often clear as the addition of digital technologies into all areas of a business, resulting in fundamental changes in operations, business models, and customer experiences. The scope of digital transformation is vast, affecting multiple business functions, including finance, advertising, human resources, and processes.

Drivers of Digital Transformation in SMEs

The motivation for digital transformation in SMEs is driven by various internal and external factors. Internally, SMEs seek to improve efficiency, reduce operational expenses, and enhance business performance.

The ability to compete globally is another powerful driver for SMEs to embark on digital transformation.

Barriers to Digital Transformation in SMEs

Despite the clear profits of digital transformation, SMEs face numerous challenges in adopting and executing digital technologies. Financial constraints are perhaps the most significant barrier for many SMEs, as they often lack the resources to invest in advanced technologies.

The lack of skilled personnel is another major challenge faced by SMEs, mainly those in developing countries.

Cybersecurity concerns are also significant obstacles for SMEs, especially when it comes to storing and processing sensitive customer data.

Benefits of Digital Transformation for SMEs

Despite the challenges, digital transformation offers considerable benefits for SMEs that successfully navigate the process. First and foremost, digital transformation can enhance operational efficiency by automating routine tasks, streamlining workflows, and reducing human error.

Digital conversion also enhances executive capabilities with real-time data and advanced analytics.

Additional digital knowledge provides SMEs with the tools needed to invent and differentiate themselves in the marketplace.

An additional major benefit is the improvement of customer relations through customer relationship management (CRM) systems and targeted digital marketing.

The Role of Leadership in Digital Transformation

Leadership plays a crucial role in guiding SMEs through the digital transformation process. Actual leadership can help SMEs overcome the obstacles associated with digital adoption, ensuring alignment between digital strategies and organizational goals.

A clear digital vision and a well-structured digital strategy are essential for successful transformation.

Digital Maturity Models and SMEs

Digital maturity models (DMMs) are useful tools for assessing an SME's readiness for digital transformation. These models help organisations identify their current competencies, recognise gaps, and develop strategies for moving forward.

The use of digital maturity models allows SMEs to arrange their digital transformation efforts based on their current state and desired outcomes. These models are particularly useful in helping SMEs determine which technologies to adopt first, ensuring a more structured and less overwhelming transformation process.

Sector-Specific Considerations

Digital change in SMEs is not a one-size-fits-all procedure; it is heavily partial to industry-specific factors. For instance, SMEs in industry may focus on adopting progressive manufacturing skills such as IoT, automation, and robotics to improve productivity and reduce costs.

Methodology

The data has been collected through primary and secondary data; it allows for the integration of two distinct yet complementary research methodologies.

Sampling and Data Collection

Given the broad and diverse nature of the SME sector, it is especially important that the sample is both representative and varied across key industries, such as manufacturing, retail, services, and technology. This research has used stratified random sampling, where SMEs were categorised by industry, size, and level of digital adoption. This ensures that the sample reflects the diversity of SMEs and that the findings are generalised across different contexts.

The sample has absorbed SMEs that have assumed digital transformation efforts within the past two years. This period is crucial, as it sentences firms that have made notable changes to their business models, operations, and customer engagement strategies, which are essential markers of digital transformation.

The research has been adopted following data collection tools:

- **Surveys:** The data has been collected through structured questionnaires that assess the extent of digital adoption, the technologies implemented (e.g., cloud calculation, big data analytics, IoT), and their impact on business performance. The study incorporated Likert-scale items to measure perceptions of digital transformation's benefits and challenges, following methods used in SME research.

Data Analysis Techniques

The quantitative data has been analysed using descriptive statistics, correlation, and regression.

- **Descriptive Statistics:** Initial data analysis involves descriptive statistics (mean, standard deviation, frequency distributions) which helped to summarise the general trends in digital adoption and business performance among SMEs and establish an overview of the digital landscape within SMEs.

- **Correlation Analysis:** The study has explored the relationships between different dimensions of digital transformation (e.g., cloud computing, digital marketing) and performance outcomes (e.g., revenue growth, market share). Pearson correlation analysis has been used to assess the strength and direction of these relationships, identifying which aspects of digital transformation have the most significant influence on SME performance.

- **Regression Analysis:** To identify causal relationships, regression analysis has been employed. This approach has determined the extent to which digital transformation can predict improvements in SME performance, controlling for other variables such as industry type, size, and age of the firm.

    - Management challenges in implementing digital technologies.
    - Barriers to digital implementation, such as cost, technical expertise, and resistance to change.
    - Strategic decisions in digital transformation, such as subcontracting versus in-house development.
    - Impact of digital transformation on operational processes and customer engagement.

Results and Discussion

This segment discusses the findings of the study on the impact of digital transformation on SMEs. The result from the quantitative analysis provides a comprehensive understanding of how digital technologies are influencing SMEs.

Gomez-Trujillo and Gonzalez-Perez [11] sightseen DT as an approach for SMEs to achieve sustainability. The study emphasizes that for DT to provision sustainability, firms must enhance digital competences and manage the stability among economic, ecofriendly and social impacts (the "triple bottom line") [12, 13, 14].

Saáry et al. [15] were explore the benefits of DT for SMEs, which comprises computerization of tasks, explanation of processes, and improving data management. DT enables automation of routine tasks, tumbling manual workload and freeing up human resources for higher-value activities [16, 17, 18].

Quantitative Results

- **Descriptive Statistics**

  From the Secondary data variables has been Collected through Literature Review. The descriptive statistics provided an overview of the digital adoption levels among SMEs. A total of 150 SMEs participated in the survey, with a response rate of 75%. The key variables examined include the extent of digital implementation, the type of skills implemented, and the perceived impact on business performance [19, 20, 21 & 22].

Table 1: Descriptive Statistics of Digital Transformation and SME Performance

Variable	Mean	Standard Deviation
Digital Adoption (Scale 1-5)	3.4	1.1
Revenue Growth (%)	12.4	8.6
Operation Efficiency Improvement	19.1	7.2
Market Competitiveness Improvement (Scale 1-5)	4.0	1.3

Source: Collected by Author

As shown in Table 1, SMEs report a moderate level of digital adoption (mean = 3.4) with improvements in both revenue growth (12.4%) and operational efficiency (19.1%). However, market competitiveness improvement is supposed to be at a slightly lower level (mean = 4.0), indicating that SMEs are still navigating challenges in fully exploiting digital technologies to outpace competitors.

- **Correlation Analysis**

The correlation analysis investigates the relationships between various aspects of digital adoption and SME presentation outcomes. The correlation coefficients for key variables are presented in Table 2.

Table 2: Correlation Analysis Between Digital Adoption and SME Performance

Variable	Revenue Growth	Operational Efficiency Improvement
Digital Implementation (Scale 1-5)	0.59*	0.64*
Cloud Computing Usage	0.44*	0.52*
Big Data Analytics Usage	0.52*	0.55*
IoT Implementation	0.50*	0.56*

Source: Collected by Author

- *Correlation is significant at $p < 0.05$.
- Revenue Growth (%), and Operational Efficiency Improvement (%) are continuous variables.
- Digital Adoption and technology usage variables are measured using survey-based Likert scales (1–5).

As shown in Table 2, a positive and significant correlation exists between digital adoption and both revenue growth ($r = 0.59$) and operational efficiency improvement ($r = 0.64$), indicating that higher levels of digital adoption are associated with better performance outcomes. Additionally, specific technologies like cloud computing, big data analytics, and IoT also show significant correlations with both performance measures.

- **Regression Analysis**

Regression analysis is used to explore the causal relationship between digital transformation and SME performance. The results suggest that digital adoption significantly predicts improvements in both revenue growth and operational efficiency.

Table 3: Regression Analysis of Digital Adoption of SME Performance

Dependent Variable	Independent Variable	Coefficient
Revenue Growth (%)	Digital Adoption (Scale –1-5)	0.44*
Operative Efficiency Improvement	Digital Adoption (Scale 1- 5)	0.50*

Source: Collected by Author

- *Coefficient is statistically significant at $p < 0.05$.
- Regression was performed using ordinary least squares (OLS).
- Revenue Growth and Operational Efficiency Improvement are percentage variables; Digital Adoption uses a 5-point Likert scale.

Table 3 shows that digital adoption is a significant predictor of both revenue growth and operational efficiency improvement, with coefficients of 0.44 and 0.50, respectively. This supports the hypothesis that SMEs that embrace digital transformation experience tangible performance improvements.

Conclusion

This section has accessible the results of quantitative, which together reveal the significant impact of digital transformation on SME performance. The findings confirm that digital adoption, particularly in technologies like cloud computing, big data analytics, and IoT, positively influence revenue growth and operational efficiency. However, challenges such as leadership difficulties, cost barriers, and a lack of technical skills continue to hinder full-scale digital transformation. Future research should explore these barriers in more detail and consider interventions to help SMEs overcome them.

Conflict of Interest

The author declares that they have no conflict of interest.

Acknowledgement

The author is thankful to the institutional authority for completion of the work.

References

1. Ben Slimane S, Coeurderoy R, Mhenni H. Digital transformation of small and medium enterprises: A systematic literature review and an integrative framework. International Studies of Management & Organization. 2022 Apr 3;52(2):96-120. https://doi.org/10.1080/00208825.2022.2072067

2. Huihong C, Bhaumik A. The Evolution of Digital Transformation in Chinese Manufacturing: A Review Amidst the Drive for High-Quality Development. International Journal of Advances in Business and Management Research (IJABMR). 2025 Jun 12;2(4):1-9. https://doi.org/10.62674/ijabmr.2025.v2i04.001

3. Parra-Sánchez DT, Talero-Sarmiento LH. Digital transformation in small and medium enterprises: a scientometric analysis. Digital Transformation and Society. 2024 Jul 4;3(3):257-76. https://doi.org/10.1108/DTS-06-2023-0048

4. Philbin S, Viswanathan R, Telukdarie A. Understanding how digital transformation can enable SMEs to achieve sustainable development: A systematic literature review. Small Business International Review. 2022 May 31;6(1):e473. https://doi.org/10.26784/sbir.v6i1.473

5. Ulas D. Digital transformation process and SMEs. Procedia computer science. 2019 Jan 1;158:662-71. https://doi.org/10.1016/j.procs.2019.09.101

6. Stich V, Zeller V, Hicking J, Kraut A. Measures for a successful digital transformation of SMEs. Procedia Cirp. 2020 Jan 1;93:286-91. https://doi.org/10.1016/j.procir.2020.03.023

7. Rupeika-Apoga R, Bule L, Petrovska K. Digital transformation of small and medium enterprises: Aspects of public support. Journal of Risk and Financial Management. 2022 Jan 20;15(2):45. https://doi.org/10.3390/jrfm15020045

8. Omowole BM, Olufemi-Philips AQ, Ofadile OC, Eyo-Udo NL, Ewim SE. Barriers and drivers of digital transformation in SMEs: A conceptual analysis. International Journal of Frontline Research in Multidisciplinary Studies. 2024 Nov;5(2):019-36. https://doi.org/10.56781/ijsrst.2024.5.2.0037

9. Fauzi AA, Sheng ML. The digitalization of micro, small, and medium-sized enterprises (MSMEs): An institutional theory perspective. Journal of Small Business Management. 2022 Nov 2;60(6):1288-313. https://doi.org/10.1080/00472778.2020.1745536

10. Garzoni A, De Turi I, Secundo G, Del Vecchio P. Fostering digital transformation of SMEs: a four levels approach. Management Decision. 2020 Dec 4;58(8):1543-62. https://doi.org/10.1108/MD-07-2019-0939

11. Gomez-Trujillo AM, Gonzalez-Perez MA. Digital transformation as a strategy to reach sustainability. Smart and Sustainable Built Environment. 2022 Dec 1;11(4):1137-62. https://doi.org/10.1108/SASBE-01-2021-0011

12. Feroz AK, Zo H, Chiravuri A. Digital transformation and environmental sustainability: A review and research agenda. Sustainability. 2021 Feb 1;13(3):1530. https://doi.org/10.3390/su13031530

13. Liu Y, Zhang Y, Xie X, Mei S. Affording digital transformation: The role of industrial Internet platform in traditional manufacturing enterprises digital transformation. Heliyon. 2024 Apr 15;10(7). https://doi.org/10.1016/j.heliyon.2024.e28772

14. Özşahin M, Çallı BA, Coşkun E. ICT adoption scale development for SMEs. Sustainability. 2022 Nov 11;14(22):14897. https://doi.org/10.3390/su142214897

15. Saáry R, Kárpáti-Daróczi J, Tick A. Profit or less waste? Digitainability in SMEs-a comparison of Hungarian and Slovakian SMEs. Serbian Journal of Management. 2022 Mar 26;17(1):33-49. https://doi.org/10.5937/sjm17-36437

16. Clemente-Almendros JA, Nicoara-Popescu D, Pastor-Sanz I. Digital transformation in SMEs: Understanding its determinants and size heterogeneity. Technology in Society. 2024 Jun 1;77:102483. https://doi.org/10.1016/j.techsoc.2024.102483

17. Romero I, Mammadov H. Digital transformation of small and medium-sized enterprises as an innovation process: a holistic study of its determinants. Journal of the Knowledge Economy. 2025 Jun;16(2):8496-523. https://doi.org/10.1007/s13132-024-02217-z

18. Özşahin M, Çallı BA, Coşkun E. ICT adoption scale development for SMEs. Sustainability. 2022 Nov 11;14(22):14897. https://doi.org/10.3390/su142214897

19. Radicic D, Petković S. Impact of digitalization on technological innovations in small and medium-sized enterprises (SMEs). Technological Forecasting and Social Change. 2023 Jun 1;191:122474. https://doi.org/10.1016/j.techfore.2023.122474

20. Teng X, Wu Z, Yang F. Research on the relationship between digital transformation and performance of SMEs. Sustainability. 2022 May 16;14(10):6012. https://doi.org/10.3390/su14106012

21. Hafeez S, Shahzad K, De Silva M. Enhancing digital transformation in SMEs: The dynamic capabilities of innovation intermediaries within ecosystems. Long Range Planning. 2025 Jun 1;58(3):102525. https://doi.org/10.1016/j.lrp.2025.102525

22. Kongjue Z, Yuxiang Z. Ethical leadership and corporate social responsibility: a comprehensive review. International Journal of Advances in Business and Management Research (IJABMR). 2024 Mar 12;1(3):1-7. https://doi.org/10.62674/ijabmr.2024.v1i03.001