

**LEVERAGING TECHNOLOGY FOR ORGANIZATIONAL
PERFORMANCE: EVIDENCE FROM SMES IN EDO STATE, NIGERIA.**

By

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Abstract

This study examines the role of technology adoption in enhancing organizational performance among small and medium-sized enterprises (SMEs) in Edo State, Nigeria. SMEs are widely recognized as critical drivers of economic growth, employment, and innovation, yet many face persistent challenges in competitiveness and sustainability due to limited technological integration. Using a mixed-method approach, data were collected through structured questionnaires and interviews with SME operators, and analyzed using descriptive and inferential statistics. Findings reveal that SMEs leveraging digital tools—such as mobile money platforms, point-of-sale systems, social media marketing, and e-commerce—record significant improvements in efficiency, profitability, and customer satisfaction. Technology adoption was found to explain nearly half of the variance in organizational performance, underscoring its strategic importance for SME survival and growth. However, barriers including high ICT costs, poor infrastructure, low digital literacy, and cybersecurity risks continue to hinder optimal utilization. The study highlights that while basic technologies are increasingly embraced, advanced systems such as enterprise resource planning and automation remain underutilized. It concludes that technology adoption is not optional but a necessity for SMEs seeking competitiveness in dynamic markets. Practical recommendations include targeted training programs to build digital capacity, government subsidies and tax incentives to reduce costs, and public-private partnerships to strengthen infrastructure. By providing empirical evidence from Edo State, this research contributes to the broader discourse on SME development in emerging economies and emphasizes the need for systemic interventions to foster sustainable digital transformation.

Keywords: Technology adoption, Organizational performance, Small and Medium Enterprises (SMEs), Edo State, Nigeria, Digital transformation, E-business, ICT utilization, Customer satisfaction, Efficiency, Profitability, Infrastructure challenges.

INTRODUCTION

Background of the Study

In the 21st century, technology has become the cornerstone of innovation, efficiency, and competitive advantage in organizations worldwide. With the rapid advancement of digital tools, information systems, and communication technologies, organizations are now able to transcend geographical boundaries, increase operational efficiency, and respond swiftly to dynamic market demands. For businesses of all sizes, technology is no longer a luxury but a necessity for survival and growth. Scholars such as Brynjolfsson and McAfee (2014) argue that organizations that successfully integrate technology into their processes experience significant improvements.

Small and Medium Enterprises (SMEs) play an indispensable role in global economies, particularly in emerging markets. In Nigeria, SMEs are recognized as a key engine of economic growth, contributing significantly to employment generation, innovation, and income distribution (SMEDAN, 2021). According to SMEDAN and the National Bureau of Statistics (NBS, 2020), there are over 41 million SMEs in Nigeria, accounting for more than 96% of all businesses in the country and providing approximately 84% of jobs for the working population. Despite their dominance, many of these SMEs operate under severe constraints such as limited access to capital, weak managerial skills, poor infrastructure, and low levels of technology adoption (Adelekan, 2020).

In Edo State, SMEs are particularly concentrated in commerce, services, agriculture, hospitality, and small-scale manufacturing. The State government has made deliberate efforts to support SMEs through initiatives such as the Edo Innovates Hub, entrepreneurship training, and digital skills programs. These initiatives are designed to equip entrepreneurs with the capacity to adopt and deploy technology in their businesses (Edo State Government, 2021). For example, many SMEs in Benin City now use point-of-sale (POS) systems, mobile apps, and e-commerce platforms like Jumia and Konga to reach a broader market. Similarly, local artisans and fashion designers are leveraging social media platforms such as Facebook and Instagram to market their products to a global audience. Despite these developments, questions remain not answered regarding the actual impact of these technological adoptions on firm-level performance outcomes.

Globally, technology has been credited with transforming the fortunes of SMEs by opening up new markets and improving operational efficiency (Laudon & Laudon, 2022). In the Nigerian context, however, the diffusion of technology across SMEs is uneven. Some businesses embrace innovations rapidly, while others lag behind due to cost, skills, or infrastructure limitations. This uneven adoption pattern makes it imperative to study not just the presence of technology, but also its effectiveness in driving organizational performance within the unique socioeconomic context of Edo State.

In today's dynamic business environment, we can see that technology has actually emerged as a crucial channel of growth, competitiveness, sustainability, particularly for Small and Medium Enterprises (SMEs). SMEs are stimulants for competition growth in today's world business, entrepreneurship offer wide benefits to the economy in the innovation and aggregation of productivity growths in the SMEs (Tarfasa and Behailu, 2016). The SMEs contributions to market output, employment in both developed and developing countries and the revitalization of the global economy of various nations (Paul, 2019). They are considered as one of the key economic players and major backbone towards the attainment of national development and business sustainability (Author's observation, 2021). The growth of SMEs in any developing nation stimulates industrializations and bring wealth and prosperity for them and for others as well.

SMEs as was pointed out, forms the backbone of Nigeria's economy by contributing significantly to job creation, innovation, and wealth generation. However, many SMEs continue to face challenges such as limited access to capital, poor infrastructure, and inefficient management practices, which often hinder their performance and growth. Leveraging technology provides an opportunity to overcome these challenges by enhancing productivity, streamlining operations, improving customer relations, and enabling access to wider markets.

In Edo State, Nigeria, SMEs are increasingly turning to digital tools such as information management systems, e-commerce platforms, social media, and financial technologies to strengthen organizational performance. Despite these opportunities, the extent to which technology adoption directly influences organizational performance remains underexplored within this context. This study therefore seeks to examine how leveraging

technology impacts the performance of SMEs in Edo State, with a view to generating evidence that can guide entrepreneurs, policymakers, and other stakeholders in fostering sustainable SME development.

Purpose of the Study

The general purpose of this study is to examine the influence of technology adoption on the organizational performance of SMEs in Edo State, Nigeria. Specifically, the study aims to:

- Assess the extent to which SMEs in Edo State have adopted technology in their operations.
- Examine the relationship between technology utilization and organizational performance indicators such as efficiency, profitability, and customer satisfaction.
- Identify the challenges faced by SMEs in Edo State in leveraging technology.
- Recommend strategies to enhance technology adoption and optimize organizational performance in SMEs.

To achieve this purpose, the study will be guided by four research questions and three hypotheses. The research questions will focus on the extent, challenges, and effectiveness of technology adoption among SMEs, while the hypotheses will test the significant relationships between technology utilization and organizational performance indicators.

Research Questions

The following research questions will help and guide the investigation:

1. To what extent have SMEs in Edo State adopted technology in their organizational operations?
2. What is the relationship between technology utilization and organizational performance among SMEs in Edo State?
3. What challenges do SMEs in Edo State encounter in leveraging technology for organizational performance?
4. What strategies can be recommended to improve technology adoption and enhance organizational performance in SMEs?

Research Hypotheses

The study will test the following hypotheses, stated in their null form:

- **H₀₁:** There is no significant relationship between technology adoption and organizational efficiency among SMEs in Edo State.
- **H₀₂:** There is no significant relationship between technology adoption and profitability among SMEs in Edo State.
- **H₀₃:** There is no significant relationship between technology adoption and customer satisfaction among SMEs in Edo State.

Review of Related Literature

The following empirical studies were reviewed to articulate the study “Leveraging technology for organizational performance: Evidence from SMEs in Edo State, Nigeria” Adeola (2020) conducted a study to examine the role of ICT adoption on the performance of SMEs in Southwest Nigeria. Using a survey design, the study involved 320 SME owners and managers drawn through stratified random sampling across Lagos and Ogun States. Data were collected through structured questionnaires and analyzed with descriptive statistics and regression. Guided by three research questions and two hypotheses, the study revealed that ICT adoption significantly enhanced SME productivity, customer satisfaction, and financial performance. Adeola recommended increased investment in ICT tools and emphasized the need for government support in infrastructure and training. This finding directly aligns with the current study as it highlights ICT as a crucial driver of organizational performance among SMEs.

Similarly, Eze (2019) investigated how social media platforms influence marketing performance of SMEs in Nigeria. Adopting a descriptive survey design, the study drew a purposive sample of 210 SMEs registered with SMEDAN in Enugu State. Data were collected through questionnaires and interviews and analyzed using frequency counts, percentages, and thematic analysis. The study, which was guided by two research questions and no hypotheses, established that social media use enhanced customer engagement and brand visibility, although its impact was hindered by limited digital

literacy among SME operators. Eze recommended capacity-building programs to enhance SME operators' digital marketing skills. This is significant to the present research because it underscores the role of digital technologies, especially social media, in strengthening SMEs' market competitiveness.

In another study, Okafor (2021) assessed the impact of e-commerce adoption on SME growth in Nigeria. The study adopted a correlational survey design with a sample of 400 SME operators drawn through cluster sampling across Abuja and Edo State. Using a structured questionnaire, the study was guided by four research questions and three hypotheses, and analyzed the data using Pearson correlation and multiple regression. Results indicated that e-commerce adoption had a positive and significant influence on sales growth, customer base expansion, and operational efficiency of SMEs. Okafor recommended that SMEs should leverage e-commerce platforms while the government should reduce transaction costs to support small businesses. This study is particularly relevant because it demonstrates how technology-driven platforms like e-commerce can directly translate into enhanced organizational performance, which is central to the present study.

Adebayo (2018) evaluated the challenges of ICT utilization among SMEs in Ibadan metropolis. Employing a descriptive survey design, the study sampled 250 SMEs through convenience sampling. Guided by three research questions and no hypotheses, data were gathered using questionnaires and analyzed using descriptive statistics and chi-square tests. Findings revealed that the major challenges included inadequate ICT infrastructure, high cost of internet services, and low ICT literacy among operators. The study recommended subsidizing ICT infrastructure and providing digital literacy training for SMEs. Adebayo's findings provide a counterpoint to studies emphasizing benefits, by drawing attention to structural barriers SMEs face in adopting technology. These limitations are also relevant to SMEs in Edo State and may influence their ability to leverage technology for performance.

Omoruyi (2022) focused specifically on Edo State, seeking to determine the influence of digital financial services on SME performance in Benin City. Using an ex-post facto design, the study sampled 180 SME owners through random sampling. With three research

questions and two hypotheses, data were collected using questionnaires and analyzed with regression techniques. Findings showed that mobile money and POS adoption significantly boosted SMEs' sales turnover and improved customer retention. The study recommended expanding fintech services in rural areas and enhancing financial literacy programs for SME owners. This study provides local evidence that technology-driven financial services are instrumental in improving SME performance in Edo State, thereby strengthening the context of the present research.

Finally, Musa (2023) analyzed the effect of technology-driven innovations on the competitive advantage of SMEs in Nigeria. Employing a mixed-method design (surveys and interviews), the study sampled 250 SMEs across Kano and Edo States through multi-stage sampling. Data were collected using questionnaires and focus group discussions and analyzed with regression, ANOVA, and thematic techniques. Guided by four research questions and two hypotheses, Musa's findings showed that adopting technology-driven innovations, such as automation, digital marketing, and fintech, provided SMEs with significant competitive advantages and improved organizational performance. The study recommended encouraging SMEs to embrace innovation and providing tax incentives for technology investments. Musa's study further highlights how technology, beyond simple adoption, fosters innovation that drives sustained competitiveness, an idea that underpins the central argument of the current research.

In sum, these related studies consistently demonstrate that technology adoption, whether in ICT, e-commerce, social media, or fintech, significantly contributes to SME performance, while also pointing out challenges like digital literacy and infrastructure gaps. This literature provides a solid empirical foundation for investigation into how SMEs in Edo State can leverage technology to enhance organizational performance.

METHODOLOGY

Research Design:

This study adopted a descriptive survey research design. The design was chosen because it allows the collection of data from a large population at a particular time to describe

existing conditions and relationships. It is particularly suitable for assessing the extent of technology adoption among SMEs and analyzing its influence on organizational performance in Edo State. The design also facilitates the use of quantitative techniques, such as descriptive statistics and regression analysis, to test hypotheses on the relationship between technology utilization and organizational performance.

Area of Study

The study was carried out in Edo State, Nigeria, with particular emphasis on SMEs located in urban and semi-urban areas such as Benin City, Auchi, Ekpoma, and Uromi. Edo State is strategically significant due to its growing population of SMEs in commerce, agriculture, hospitality, services, and small-scale manufacturing. The state has also introduced initiatives such as the Edo Innovates Hub and digital entrepreneurship programs, making it an appropriate location to investigate the role of technology in SME performance.

Population of Study

The population of the study comprised all registered SMEs in Edo State. According to the Small and Medium Enterprises Development Agency of Nigeria (SMEDAN) and National Bureau of Statistics (2020), there are approximately 1.5 million SMEs in Edo State across diverse sectors. This population includes micro, small, and medium-sized businesses in urban and rural areas.

Sample and Sampling Techniques

Given the large population, the study employed the Taro Yamane (1967) formula to determine a manageable sample size at a 95% confidence level and a margin of error of 5%.

$$n = \frac{N}{1+N(e)^2}$$

Where:

n = sample size

N = population size (1,500,000 SMEs)

e = level of precision (0.05)

Hence,

$$n = \frac{1,500,000}{1 + 1,500,000(0.05)^2} = 400$$

Thus, a sample of 400 SMEs was selected.

A multi-stage sampling technique was employed:

1. Stratified sampling to categorize SMEs into sectors (commerce, agriculture, services, manufacturing, and hospitality).
2. Proportionate sampling to allocate the sample according to sector size.
3. Simple random sampling to select SME operators from each stratum.

Instrument for Data Collection

The main instrument for data collection was a structured questionnaire designed by the researcher. The questionnaire contained both closed-ended and Likert-scale questions covering the following sections:

Section A: Demographic information of SME operators.

Section B: Extent of technology adoption.

Section C: Organizational performance indicators (profitability, efficiency, innovation, customer satisfaction).

Section D: Challenges in leveraging technology.

Procedure for Data Collection

Data were collected over a six-week period. Four trained research assistants assisted the researcher in administering the questionnaire. Questionnaires were distributed both in physical form (to SMEs in Benin City, Auchi, and Ekpoma) and via Google Forms for SMEs with digital presence. Follow-ups were conducted through phone calls and emails to maximize response rates. Ethical considerations, such as informed consent, confidentiality, and voluntary participation, were strictly observed.

Method of Data Analysis

The collected data were coded and analyzed using the Statistical Package for Social Sciences (SPSS) version 25. The following methods were employed:

- Descriptive statistics (frequency counts, percentages, means, and standard deviations) to answer research questions on the extent of technology adoption and challenges.
- Inferential statistics (Pearson's correlation and multiple regression) to test hypotheses

on the relationship between technology adoption and organizational performance.

- Results were presented in tables for clarity.

Table 1: Distribution of sampled SMEs by sector

Sector	Population Estimate	Sample Size (Proportionate)	Percentage (%)
Commerce	600,000	160	40
Services	400,000	106	26.5
Agriculture	200,000	53	13.3
Manufacturing	150,000	40	10
Hospitality	150,000	11	10.2
Total	1,500,000	400	100%

RESULTS OF FINDINGS

Research Question 1:

To what extent have SMEs in Edo State adopted technology in their organizational operations?

Descriptive analysis revealed a moderate-to-high level of technology adoption among SMEs. Most businesses reported active use of mobile money platforms (85%), social media marketing (78%), and point-of-sale (POS) systems (72%). Adoption of advanced systems such as enterprise resource planning (ERP) and automated inventory management remained relatively low (28%).

Table 1: Extent of Technology Adoption among SMEs (N = 400)

Technology Type	Adoption Rate (%)
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Mobile money / Fintech tools	85.0
Social media marketing	78.0
POS / e-payment systems	72.0
E-commerce platforms	64.0
Information management systems	49.0
ERP / automation tools	28.0

Research Question 2:

What is the relationship between technology utilization and organizational performance among SMEs in Edo State?

Pearson's correlation analysis indicated significant positive relationships between technology adoption and all three performance indicators: efficiency ($r = 0.612$, $p < 0.01$), profitability ($r = 0.578$, $p < 0.01$), and customer satisfaction ($r = 0.641$, $p < 0.01$). A multiple regression model further confirmed that technology utilization explains 46% of the variance in organizational performance ($R^2 = 0.46$, $F(3,396) = 112.4$, $p < 0.001$), showing that SMEs leveraging technology tend to achieve higher efficiency, improved profitability, and better customer retention.

Research Question 3:

What challenges do SMEs in Edo State encounter in leveraging technology for organizational performance?

Findings indicated that SMEs face several constraints in technology adoption. The major challenges were: High cost of digital tools and internet services (68%), Low ICT literacy among operators (61%), Poor infrastructure, especially power supply (55%), and Cybersecurity concerns (47%).

Table 2: Major Challenges in Leveraging Technology (N = 400)

Challenge	% Reported
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High cost of ICT tools/internet	68.0
Low digital literacy	61.0
Poor infrastructure (e.g., power)	55.0
Cybersecurity risks	47.0
Resistance to change	38.0

Research Question 4:

What strategies can be recommended to improve technology adoption and enhance organizational performance in SMEs?

Respondents highlighted several strategies:

- Capacity building and training programs for SME operators (74%)
- Government subsidies for ICT infrastructure (68%)
- Public–private partnerships to improve internet and electricity access (65%)
- Adoption of affordable, locally developed tech solutions (59%)

Hypotheses Testing

H₀₁: There is no significant relationship between technology adoption and organizational efficiency among SMEs.

Not accepted. Technology adoption significantly correlates with efficiency ($r = 0.612$, $p < 0.01$).

H₀₂: There is no significant relationship between technology adoption and profitability among SMEs.

Not accepted. A significant positive relationship exists ($r = 0.578$, $p < 0.01$).

H₀₃: There is no significant relationship between technology adoption and customer satisfaction among SMEs.

Not accepted. A strong relationship was found ($r = 0.641$, $p < 0.01$).

Table 3: Correlation Matrix of Technology Adoption and Performance Indicators

Variable	Efficiency	Profitability	Customer Satisfaction
Technology Adoption	0.612	0.578	0.641

p < 0.01

Summary of Findings

1. SMEs in Edo State show moderate-to-high adoption of technology, with 85% using mobile money, 78% social media, and 72% POS systems. However, only 28% use advanced systems such as ERP or automation tools.
2. Technology adoption was strongly correlated with performance indicators: efficiency (r = 0.612), profitability (r = 0.578), and customer satisfaction (r = 0.641). Regression analysis revealed that technology utilization explained 46% of the variance (R² = 0.46) in overall organizational performance.
3. The main challenges identified were high ICT costs (68%), low digital literacy (61%), poor infrastructure (55%), and cybersecurity risks (47%).
4. Recommended strategies included training programs (74%), government subsidies (68%), public-private partnerships for infrastructure (65%), and adoption of affordable local solutions (59%).

DISCUSSION, CONCLUSION AND RECOMMENDATIONS

Discussion

The findings of this study revealed that SMEs in Edo State have made significant progress in adopting technology, particularly in areas such as mobile money (85%), social media marketing (78%), and POS systems (72%). These results align with Adeola (2020) and Omoruyi (2022), who emphasized that ICT tools and fintech services are increasingly transforming the operations of SMEs in Nigeria. However, the relatively low adoption of advanced technologies such as ERP and automation tools (28%) suggests that SMEs still

operate largely at a basic digital level, reflecting cost and skills-related limitations highlighted in Adebayo (2018).

Furthermore, correlation and regression analyses demonstrated that technology adoption has a significant and positive effect on organizational performance. Technology utilization explained 46% of the variance in SME performance, affirming its critical role in improving efficiency, profitability, and customer satisfaction. This supports the conclusions of Okafor (2021) and Musa (2023), who found that digital innovations and e-commerce significantly enhance competitiveness and operational outcomes among SMEs. The findings also reinforce global perspectives (Laudon & Laudon, 2022) that technological integration directly contributes to productivity and long-term sustainability.

Despite these gains, SMEs in Edo State encounter persistent challenges in leveraging technology effectively. High ICT costs (68%), poor digital literacy (61%), and inadequate infrastructure (55%) remain critical barriers. These challenges resonate with Adebayo (2018), who stressed structural and educational limitations, and Eze (2019), who pointed out digital literacy gaps as a major obstacle in utilizing social media marketing effectively. Moreover, cybersecurity risks (47%) are emerging as a new challenge, reflecting the increasing vulnerability of SMEs in a digital economy.

Strategies suggested by respondents—including capacity-building programs (74%), government subsidies (68%), and improved infrastructure through public–private partnerships (65%)—highlight the collective recognition that sustainable technology adoption requires systemic interventions. This finding corresponds with policy recommendations by Musa (2023) and Adeola (2020), who advocated for tax incentives, training, and infrastructural investments to ease digital transformation among SMEs.

In sum, the discussion affirms that technology adoption significantly improves organizational performance, but scaling its benefits requires addressing financial, infrastructural, and educational bottlenecks.

CONCLUSION

This study provides empirical evidence that technology adoption plays a pivotal role in driving the organizational performance of SMEs in Edo State, Nigeria. While SMEs have

embraced basic technologies such as fintech tools, social media platforms, and POS systems, the adoption of advanced systems remains low. The study established strong positive relationships between technology adoption and organizational performance indicators—efficiency, profitability, and customer satisfaction—demonstrating that digital transformation is essential for SME competitiveness and sustainability. However, systemic barriers, including high costs, low digital literacy, poor infrastructure, and cybersecurity threats, hinder optimal technology use. To maximize the benefits of technology, a multi-stakeholder approach involving entrepreneurs, government, and private partners is required to address these challenges.

RECOMMENDATION

Regular training programs should be organized to enhance the digital literacy and managerial competence of SME operators, enabling them to adopt and utilize advanced technological tools effectively.

Government agencies, development banks, and private investors should provide subsidies, grants, or low-interest credit facilities to reduce the high cost of ICT tools and internet services for SMEs.

Public–private partnerships should be strengthened to improve access to reliable electricity, broadband internet, and digital infrastructure, which are essential for effective technology utilization.

SMEs should be sensitized on the risks associated with digital platforms and supported with affordable cybersecurity solutions to protect their data and customer trust.

Policymakers and technology developers should encourage the design and adoption of locally developed, affordable technological solutions tailored to the needs and scale of Nigerian SMEs.

The government should provide tax incentives and regulatory frameworks that encourage SMEs to invest in technology-driven innovations and integrate them into their operations.

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