Available online at www.koozakar.com/journal/sjtia

Scientific Journal for Technology Management, Information & Artificial Intelligence (SJTIA)

# Digital Transformation on Business Performance of SMEs in Ibadan, Oyo State, Nigeria

Deborah Olufunke Ayeni, Eseza Akiror Erwat, and Taiwo Nurudeen Oladeji
Lead City University, Ibadan, Nigeria

*Corresponding Author:
Email: ayenideborah56@gmail.com

## Article Information

https://doi.org/10.69798/75450083



**Published by:** Koozakar LLC. Norcross GA 30071, United States.


**Edited by:** Adeyemi Akinola PhD

## Abstract

The study is based on assessing digital transformation's impact on SMEs' business performance in Ibadan. A descriptive research design was used to investigate the influence of digital transformation on SME business performance in Nigeria. The quantitative data collection instruments adapted for the study are a questionnaire and secondary data from SME records. The population targeted for this study is SME managers in Ibadan, Oyo State, Nigeria, and it is estimated at 7,987 enterprises. A sample size of 381 SME managers was selected using a purposive sampling technique based on the local government area. This research instrument was a structured questionnaire relating to socio-demographic characteristics and variables relating to government policies, technological and infrastructural factors, and SME performance. Reliability was determined by Cronbach alpha at 0.871. Data analysis was performed using SPSS Version 24.0 for descriptive and inferential methods that include multiple regression analysis in determining the predictor variables' variance on the dependent variable. The results indicate that the ANOVA tables signify the following significant regression models: Automation Level, Digital Skills, and Training together had a combined significant impact on revenue growth $F(1, 379) = 56.943$, $p < .001$, and also combined to impact operational efficiency significantly, $F(1, 379) = 11.156$, $p = .031$. Besides, online presence and engagement immensely impacted customer retention rate, $F(1, 379) = 9.122$, $p < .001$. The findings below stress the critical role of process automation, digital skills development, and online involvement in empowering SME performance. It was recommended that SMEs improve competitiveness, efficiency of operations, and customer retention through investments in process automation, improving digital skills and training, and reinforcing online presence and engagement.

**Keywords:** Digital Transformation, Business Performance, Process Automation, Digital Skills, Online Presence and Engagement

## INTRODUCTION

Strong business performance is crucial to survival and success in the competitive global marketplace that grips any business, including SMEs. Business performance represents an essential concept involving various measures and indices to evaluate an organisation's health, efficiency, and success. Understanding how well the business achieves its strategic objectives and sustains its competitive advantage in the marketplace becomes fundamental. Today, businesses can only afford to operate sustainably with continuous improvements and growth to stay relevant and competitive. Improvement refers to enhancing business operations, increasing efficiency, and achieving better results. Growth refers to expanding the business capacity, market share, and profitability.

SMEs, including Nigeria, have been important in most developing and developed countries' economic development. They contribute a great deal to employment, innovation, and contribution to GDP. However, SME performance has often been influenced by internal and external factors, including digital technology adoption. SMEs are generally considered the backbone of most economies since they contribute significantly to economic activities. According to the World Bank (2021), SMEs constitute about 90% of businesses and over 50% of employment worldwide. SMEs are critical to economic growth and diversification in Nigeria, providing employment opportunities and fostering innovation (Central Bank of Nigeria, 2020). In Nigeria, the performance of businesses, particularly SMEs, is crucial for economic development. SMEs are a significant part of the Nigerian economy, contributing to employment, innovation, and GDP growth (Central Bank of Nigeria, 2020).

The Nigerian business has many challenges and opportunities unique to the SME segment. Among the major drivers for improvement is digital transformation. Nigerian SMEs are increasingly deploying digital technologies to improve their operations and reach. Digital tools can help these businesses automate processes, enhance customer engagement, and access new markets, thereby driving growth and efficiency (Ndubuisi-Okolo & Anekwe, 2018). The philosophy of continuous improvement is generally adopted by Lean and Six Sigma methodologies, where enhanced products, services, or processes are considered a continual learning process. Through continuous improvement, a business can prevent waste and ensure maximum output and quality (Womack & Jones, 2003). Strategic growth would imply that the businesses expand into new markets, develop new products, and acquire new customers. These usually involve investments in technology, human resources, and marketing to achieve success in the long run. According to Ansoff (1957), business performance is judged against various financial and non-financial indicators to map and assist in the proper decision-making.

KPIs are crucial in measuring performance and comprise financial, operational, and customer metrics. Some key financial metrics that tell a business about its profitability and financial health include revenue growth, profit margins, and return on Investment (ROI) (Kaplan & Norton, 1996). Revenue growth is a primary indicator of business performance, reflecting increased sales over time. It signifies market acceptance of products or services and the effectiveness of business strategies (Becker, 2015). Digital transformation can drive revenue growth for SMEs by opening new sales channels, improving customer engagement, and enabling more targeted marketing efforts (Manyika *et al.*, 2016). Operational metrics, including operational efficiency, process cycle times, and inventory turnover, provide insights into how effectively a business runs its operations (Hammer, 2010). Operational efficiency involves optimising business processes to achieve maximum productivity with minimum wasted resources.

This includes reducing process cycle times, lowering operational costs, and improving resource utilisation (Hammer, 2010). Digital tools and process automation can significantly enhance operational efficiency by streamlining workflows and improving data accuracy (Brynjolfsson & McAfee, 2014). Customer metrics, such as customer satisfaction, retention rates, and Net Promoter Scores (NPS), help businesses understand their market position and customer loyalty (Reichheld, 2003). Customer Retention Rate: It is the study of the percentage of customers continuing to do business with a company over a certain period.

High retention rates indicate customer satisfaction and loyalty and are conducive to long-term business success (Reichheld, 1996). Digital transformation may improve customer retention through superior customer experiences, personalised services, and effective communication on digital channels (Lemon & Verhoef, 2016).

Despite their importance, SMEs also need help with several challenges that may hinder their performance. These include, among others, limited access to finance, poor infrastructure, and a lack of skilled labour (OECD, 2017). Additionally, the rapidly changing business environment requires SMEs to adapt quickly to technological advancements to remain competitive. Digital transformation refers to integrating digital technologies into all business areas, fundamentally changing how businesses operate and deliver customer value (Westerman *et al.*, 2014).

For SMEs, digital transformation can significantly improve business performance by enhancing efficiency, reducing costs, and opening up new market opportunities (Bharadwaj *et al.*, 2013). A study by Khin and Ho (2019) found that SMEs that adopt digital technologies experience improved business performance, including higher productivity, better customer engagement, and increased sales. In Nigeria, the adoption of digital technologies among SMEs is growing but needs to be more balanced. Many SMEs in urban centres like Ibadan increasingly recognise the benefits of digital transformation (Odukoya *et al.*, 2018). However, challenges such as inadequate digital infrastructure, high costs of technology adoption, and a lack of digital skills continue to hinder widespread digital transformation (Ndubuisi-Okolo & Anekwe, 2018). Digital transformation refers to integrating digital technologies into all business operations, fundamentally altering how businesses operate and deliver value to customers (Westerman *et al.*, 2014). This comprehensive overhaul involves adopting technologies such as cloud computing, big data analytics, artificial intelligence, and the Internet of Things (IoT) to streamline processes, enhance customer experiences, and foster innovation.

To SMEs, digital transformation is not just a buzzword but a strategic imperative for survival and growth in the increasingly competitive marketplace. Digital tools will enable SMEs to bring about a complete change in business performance through enhanced efficiency, reduced costs, and even market expansion. Process automation means using technology to execute tasks with little human intervention. This can include automating routine tasks such as invoicing, inventory management, and customer service through chatbots (Davenport & Ronanki, 2018). Automation can substantially improve operational efficiency by reducing errors, speeding up processes, and freeing employees to focus on higher-value activities (Bessen, 2019). Furthermore, automation can improve the accuracy and consistency of business operations, leading to better decision-making and enhanced customer satisfaction.

These automated systems' benefits include reduced operations costs, improved service delivery, and more speed while responding to market changes. The level of digitisation, however, calls for varying levels of digital skills in the workforce, hence its success. Training and development programmes should be in tandem with emerging digital trends to update employees on acquiring the intended digital skills. Additionally, employee training may contribute positively to job satisfaction and retention, as workers will feel more competent and valued at work. Equally, establishing a culture of lifelong learning and digital literacy will also put the SME in a better position to fully exploit emerging technologies that would support them in out-competing others. A strong online presence is vital to reaching and connecting with customers. Business enterprises connect directly with customers and build long-term relationships through their active social media profiles. The same enhances the brand value of businesses. Website traffic and social media interactions are some of the metrics of online engagement that record the reach created by an SME for its customers in a virtual space. Business performance related to digital transformation is well documented.

Digital technologies are often adopted to enhance most of the performance measures that are relevant to SMEs considerably. For example, Khin and Ho (2019) have noted that adopting digital transformation means higher productivity levels, better customer engagement, and increased sales for SMEs. In this view, digital transformation

provides an avenue for SMEs in Ibadan, Nigeria, to rise above challenges such as limited market access, high operational costs, and increased competition. It can also be improved in the main areas of concern about automation of processes for digital transformation, digital skills and training of employees, and online presence for better growth of revenue, operational efficiency, and customer retention rates for SMEs.

**Statement of the Problem**

SMEs are at the core of Nigeria's economic development; several factors impede their growth and performance. These range from issues related to a low level of digital transformation and appropriate digital skill acquisition and training among employees to poor online presence, customer service, and limited access to finance. This has contributed to operational inefficiencies and heightened costs due to poor digital infrastructure and needing more expertise. Financial constraints have barred the potential of investing in necessary digital technologies. However, SMEs must be more operationally efficient, widen their markets, and sustain growth in today's competitive digital economic environment.

This, therefore, represents a unique study on how the digital transformation indicators influence almost all areas of the business performance metrics amongst SMEs in Ibadan, Oyo State, Nigeria. This study is very significant because earlier research narrowly focused on general performance indicators of larger corporations. In contrast, this study uniquely explores all the critical dimensions of SMEs' business performance, including revenue growth, operational efficiency, and customer retention rates. This study considered different metrics of SME performance to specify how digital transformation initiatives might drive an enterprise toward overall business success. This paper will also include research on trending topics: process automation, ongoing digital skill development of workers, and online presence with customer engagement. This forward-looking approach helps SMEs solve today's challenges and capitalise on future technological advances towards continued growth and competitiveness. It cements its relevance in the rapidly changing digital landscape and provides valuable lessons for long-term strategic planning.

**Aim and Objectives of the Study**

The aim of this study is to investigate the influence of digital transformation on business performance of SMEs in Ibadan, Oyo State. The specific objectives are to

1. determine the influence of Process Automation Level, Digital Skills and Training on Revenue Growth of SMEs in Ibadan
2. ascertain the influence of Process Automation Level, Digital Skills and Training on Operational Efficiency of SMEs in Ibadan
3. establish the influence of Online Presence and engagement on Customer retention rate of SMEs in Ibadan.

## LITERATURE REVIEW

**Digitalization and SME Competitiveness**

Empirical analyses on the effect of digital transformation on SME performance have been conducted, and they provide viewpoints from different regions and industries. Mubarak *et al.* (2019) studied the effect of digital transformation on SME business performance in Pakistan. Indeed, their research, conducted with 150 SMEs from various industries, demonstrated that adopting digital tools, process automation, and providing training in digital skills are positively related to key performance indicators: revenue growth, operational efficiency, and customer retention. The results indicated that digital investments in skills and tools are critical to enhancing the performance metrics of SMEs in Pakistan.

Similarly, Teng, Wu, and Yang (2022) investigated the impact of digital transformation initiatives on SME performance in China. Based on a sample size of 200 SMEs spanning various industries, they found a positive association between levels of digitalization, adaption of e-commerce, and digital marketing and firm performance in terms of profitability, market share, and customer satisfaction. The authors reiterated that an integrated approach to digital strategies would be required to optimize digital transformation gains fully.

Furthermore, recent studies provide compelling evidence that digitalization significantly enhances the competitiveness of Small and Medium Enterprises (SMEs). Wang and Zhang (2025) adopt a systems perspective to explore the interplay

between digital adoption, digital drive, and digital culture, arguing that these elements collectively foster innovation performance in SMEs. This aligns with Changalima *et al.* (2025), who emphasize the role of technological absorptive capacity and e-business innovation in driving SME performance. These findings suggest that SMEs must adopt digital tools and integrate them into their organizational culture and strategic planning.

However, Seppänen *et al.* (2025) caution that the determinants of digital transformation vary across industries and regions, highlighting the importance of context-specific strategies. For instance, incumbent SMEs may face unique challenges in digitizing management functions due to legacy systems and entrenched practices. While digitalization offers numerous benefits, it is essential for SMEs to carefully evaluate their readiness and capabilities before embarking on transformation initiatives. In contrast, some studies point to potential barriers to digitalization. Elsa *et al.* (2025) identify gaps in global research trends, noting that many SMEs struggle with resource constraints, lack of technical expertise, and resistance to change. These challenges underscore the need for tailored support mechanisms, such as government incentives and training programs, to facilitate smoother transitions.

**Process Automation and Digital Skills Development**

The impact of process automation and digital skills development on SME operational efficiency has been extensively studied. Peláez and Aguirre-Álvarez (2025) systematically reviewed robotic process automation (RPA) in manufacturing and service sectors, demonstrating its potential to reduce costs, improve accuracy, and enhance productivity. Similarly, Alog *et al.* (2025) found that digital integration positively affects SMEs in Arab countries, particularly regarding operational agility and market responsiveness.

Kumar and Sharma (2025) introduce a maturity model to assess SME readiness for Industry 4.0, emphasising the importance of stakeholder perceptions in evaluating preparedness. Their study highlights the need for comprehensive digital readiness assessments, including technological infrastructure and workforce capabilities. This aligns with the findings by Mubarak *et al.* (2019) and Chen *et al.* (2016), which demonstrated positive relationships between digital transformation initiatives and operational efficiency. Despite these benefits, there are concerns about the implications of automation for employment. Some studies argue that while automation improves efficiency, it may lead to job displacement and skill obsolescence. For example, Kumar and Sharma (2025) note that SMEs must balance automation with upskilling efforts to ensure a smooth transition for their workforce. Future research should focus on mitigating these adverse effects and promoting inclusive digital transformation.

In the Taiwanese textile industry, Chen, Jaw, and Wu (2016) investigated the effects of digital transformation on SME organisational performance. Analysing 120 SMEs, they found that digital transformation significantly improved productivity, cost efficiency, and innovation. Web portal utilisation and digital process integration emerged as critical drivers of these improvements, highlighting the value of integrating digital processes and enhancing employee skills in specific industries.

In addition, Melo *et al.* (2023) reviewed sustainable digital transformation in SMEs globally. After reviewing several works, the researchers concluded that sustainable digital transformation fosters economic performance through social and environmental impacts. They, therefore, emphasised that training programmes and sustainability practices are relevant for long-term benefit, attributing such relevance to the inclusiveness of sustainability within digital transformation processes.

**Online Presence and Customer Engagement**

Recent literature has widely explored the relationship between online presence, customer engagement, and retention rates. Rachmiani *et al.* (2025) examine how optimising digital technology utilisation can enhance the competitiveness of MSME products through effective marketing strategies. Their findings highlight the importance of aligning digital channels with business objectives to build stronger customer relationships. Al-Haraizah *et al.* (2025) investigate the impact of search engine optimisation (SEO) and website engagement on customer buying behaviour, revealing that businesses with higher online

visibility tend to achieve better outcomes. Rahmawan (2025) further supports this by demonstrating the effectiveness of digital marketing strategies in boosting brand awareness, suggesting that SMEs should prioritise investing in digital tools to remain competitive.
Talukder *et al.* (2025) focus on the hospitality sector, examining how social media participation influences customer satisfaction and repeat transactions. Their results indicate a strong correlation between active engagement and an increased likelihood of future business. However, they also caution that excessive reliance on social media platforms may expose SMEs to negative reviews or misinformation risks.

Contrasting views exist regarding the optimal level of online engagement. While some studies advocate for aggressive digital marketing strategies, others warn against over-reliance on digital channels at the expense of traditional customer interactions. Whiting *et al.* (2017) argue that a balanced approach, combining online and offline efforts, yields the best results. Future research should explore hybrid models integrating digital and physical engagement to maximise customer retention and loyalty.
However, Nwachukwu and Onuoha 2023 investigated the effects of digital transformation strategies on the performance of SME businesses in Rivers State, Nigeria. The study of 100 SMEs showed that the revenue, efficiency, and customer retention resulting from complete digital strategies were significantly higher than partial and no digital strategies, respectively. Their findings underlined well-defined digital strategies as a prerequisite for substantive gains in performance.

Zhang, Xu, and Ma (2022) studied the factors that explain successful digital transformation for SMEs in China and its impact on performance. They studied 180 SMEs and found that successful digital transformation depends upon successful digital leadership, technology infrastructure, and employee engagement. They identified leadership and infrastructure as essential to effective digital transformation and achieving performance benefits.

**Theoretical Framework**

Understanding the mechanisms through which new technologies and innovations are adopted and integrated into organisational practices is fundamental to explaining how businesses, particularly Small and Medium Enterprises (SMEs), can leverage digital transformation for competitive advantage. This study adopts the Technology Diffusion Theory as its theoretical foundation to explore the spread and adoption of digital technologies within SMEs. The theory provides a comprehensive framework for analysing how information, knowledge, and innovation transfer occur over time, influencing societal and economic dynamics. Thus, the technology diffusion theory refers to the dynamic and time-attributed process accompanying information, knowledge, and innovation transfer. It symbolises the continuous, gradual and relentless distribution of new thoughts and conceptions within large-scale, heterogeneous societies. Rogers (2003) indicates that "diffusion" originally evolved from Latin and signifies a spread, expansion, dissemination, or generalisation process. In the socio-economic context, the diffusion of innovations, new technologies, and ideas profoundly impacts society and the economy, leading to shifts in productivity, education, markets, and organisational structures (Rogers, 2003).

Innovation encompasses new ideas, practices, or objects perceived as novel by individuals or entities, including firms, social networks, or entire countries. Key attributes influencing adoption include relative advantage, compatibility, complexity, trialability, and observability. Factors affecting adoption range from the type of innovation-decision to social system characteristics and change agents (Rogers, 2003). Critics of diffusion theory highlight challenges such as the pro-innovation bias and the complexity of diffusion issues. Despite criticisms, the theory offers valuable insights into how new ideas and technologies spread, informing strategic decisions for organisations, policymakers, and entrepreneurs (Rogers, 2003; Mansfield, 1961).

Research indicates that digital diffusion positively influences innovation performance in SMEs, particularly in product innovation. Absorptive capacity plays a moderating role, underscoring the importance of strategically assimilating digital technologies (Cenamor, 2019). Thus, SMEs can strategically harness digital technologies to

enhance innovation activities and achieve sustainable growth in a dynamic digital environment (Cenamor, 2019).

## METHODOLOGY

In this study, a descriptive research design was employed, utilising quantitative research instruments, specifically a questionnaire supplemented by secondary data from SME records, to uniquely explore the influence of digital transformation on SME business performance in Nigeria. The population comprised all SME managers operating within Ibadan, Oyo State, Nigeria, totalling 7,987 enterprises, according to the SMEDAN Survey (2022). The Taro Yamane formula was utilised to determine the appropriate sample size. This formula is widely recognised for its effectiveness in calculating sample sizes for large populations while ensuring statistical accuracy and representativeness. A sample size of 381 SME managers was selected through purposive sampling based on the local Government area. The selection process involved identifying SME managers from Local Government Areas (LGAs) within Ibadan who were actively managing their businesses and had firsthand knowledge of digital transformation initiatives. The choice of purposive sampling was justified by the need to ensure that the sample included respondents with direct experience and insights into the influence of digital transformation on SME business performance. The distribution of the sample size across the Local Government area is as follows: Oyo Central (Oluyole - 71, Egbeda - 60), Lagelu - 61, Ibadan South-East – 63, Ibadan South West - 64, Ibadan North - 60), totalling 381 SMEs managers. The structured questionnaire research instrument comprised two sections addressing socio-demographic characteristics and variables relevant to government policies, technological and infrastructural factors, and SME performance, utilising a Likert-type rating scale. The instrument's validity was ensured through supervisor approval, and reliability was confirmed with Cronbach's alpha measuring internal consistency at 0.871. Data collection involved obtaining approval from Leads City University Nigeria and orienting respondents on questionnaire completion. Data analysis employed the Statistical Package for the Social Sciences (SPSS Version 24.0) for descriptive and inferential methods. Descriptive statistics provide insights into the sample characteristics and variable distributions. Inferential analysis involves multiple regression analysis to assess the relationships between predictor variables and the dependent variable, determining the variance explained by the predictors. The model's significance was evaluated using the ANOVA table, while the coefficients table identified individual predictors' strength and statistical significance. This approach ensured a robust evaluation of the hypotheses, yielding reliable and interpretable results.

## RESULTS AND DISCUSSION OF FINDINGS

### Demographic Data Analysis

The demographic distribution of the 381 respondents reveals a predominantly middle-aged population, with 73.4% aged 45-54. The next largest age group is 25-34 at 14%, followed by smaller groups in the 18-24 (3.9%), ≥55 (3.4%), and 35-44 (0.8%) categories. Gender distribution skews heavily male, with 75.5% identifying as male and 24.5% as female. Educationally, the respondents are diverse. Most have ND, NCE, and below (37.5%), followed by those with a high school education or below (32.6%), Bachelor's Degree / HND (28.2%), and a small percentage of postgraduates (1.7%). A significant majority of the respondents (82.7%) are business owners spanning various industries. The most common sectors include Hospitality (22.2%) and Services (21.7%), followed by Automotive (19.1%), Information Technology (13.4%), Electronics (9.8%), Agriculture (5.7%), Retail (4.1%), and Manufacturing (3.9%). Additionally, 76.7% of the respondents provided their email for follow-up, while 23.3% chose not to. This data reflects a diverse, predominantly middle-aged, male, and business-owning population with various educational backgrounds and business interests.

### Test of Hypotheses

**$H0_1$**: *There is no significant difference in the influence of Process Automation Level, and Digital Skills and Training on Revenue Growth of SMEs in Ibadan*

Table 2 explores the impact of process automation level and digital skills and training on the revenue growth of SMEs. The model summary indicates that the predictors that is automation level and digital skills and training explain approximately

**Table 1:** Demographics Distribution of Respondents

| Demographics Variable | Frequency | Percentage |
|---|---|---|
| **Age** | **381** | **100** |
| 18-24 | 13 | 3.9 |
| 25-34 | 52 | 14 |
| 35-44 | 3 | 0.8 |
| 45-54 | 299 | 73.4 |
| ≥55 | 14 | 3.4 |
| **Gender** | **381** | **100** |
| Female | 95 | 24.5 |
| Male | 286 | 75.5 |
| **Academic Qualification** | 381 | 100 |
| High School or below | 126 | 32.6 |
| ND, NCE and below | 145 | 37.5 |
| Bachelor's Degree / HND | 103 | 28.2 |
| Post Graduate | 7 | 1.7 |
| **Business Owner** | **381** | **100** |
| Yes | 320 | 82.7 |
| No | 61 | 17.3 |
| **If you are a business owner or entrepreneur, please specify your industry or type of business** | **381** | **100** |
| Manufacturing | 15 | 3.9 |
| Services | 84 | 21.7 |
| Agriculture | 22 | 5.7 |
| Retail | 16 | 4.1 |
| Information Technology | 52 | 13.4 |
| Hospitality | 86 | 22.2 |
| Automotive | 74 | 19.1 |
| Electronics | 38 | 9.80 |
| **Email (Optional for follow-up or additional information)** | **381** | **100** |
| Provide email | 291 | 76.7 |
| Prefer not to provide | 90 | 23.3 |

**Table 2:** Influence of Process Automation Level, and Digital Skills and Training on Revenue Growth of SMEs

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .459[a] | .229 | .227 | 1.013 |

*a. Predictors: (Constant), Automation Level, Digital Skills and Training*
*b. Dependent Variable: Revenue Growth*

**ANOVA[a]**

| Model | | Sum of Squares | Df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 58.414 | 1 | 58.414 | 56.943 | .000[b] |
| | Residual | 394.940 | 379 | 1.026 | | |
| | Total | 453.354 | 380 | | | |

*a. Dependent Variable: Revenue Growth*
*b. Predictors: (Constant), Automation Level, Digital Skills and Training.*

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | 1.303 | .115 | | 11.281 | .000 |
| | Automation Level | .421 | .051 | .439 | 8.011 | .000 |
| | Digital Skills and Training | .430 | .044 | .359 | 7.546 | .000 |

22.7% of the variance in revenue growth (Adjusted R Square = .227). The standard error of the estimate is 1.013, suggesting a moderate level of precision in the predictions. The ANOVA table shows that the regression model is statistically significant ($F_{(1, 379)} = 56.943$, $p<0.001$), indicating that the predictors collectively have a significant impact on revenue growth. Examining the coefficients, both predictors are statistically significant: - Automation level (B = 0.421, t = 8.011, $p<0.001$) has a positive standardized coefficient (Beta = .439), indicating a strong positive effect on revenue growth and Digital skills and training (B = 0.430, t = 7.546, $p<0.001$) also shows a positive standardized coefficient (Beta = .359), suggesting a substantial positive influence on revenue growth. The findings reveal that both process automation level and digital skills and training significantly influence the revenue growth of SMEs in Ibadan. Thus, the level of process automation and the extent of digital skills and training significantly contribute to the revenue growth of SMEs, with both factors having a strong positive impact. On a final note, enhancing process automation and investing in digital skills development are key strategies for improving the revenue growth of SMEs in Ibadan.

**H0$_2$**: *There is no significant difference in the influence of Process Automation Level, Digital Skills and Training on Operational Efficiency of SMEs in Ibadan*

**Table 3:** Influence of Process Automation Level, Digital Skills and Training on Operational Efficiency of SMEs.

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .267[a] | .221 | .268 | .67440 |

**ANOVA[a]**

| Model | | Sum of Squares | Df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | .671 | 1 | .671 | 11.156 | .031[b] |
| | Residual | 175.105 | 379 | .455 | | |
| | Total | 175.176 | 380 | | | |

*a. Dependent Variable: Operational Efficiency of SMEs*

*b. Predictors: (Constant), Automation Level, Digital Skills and Training*

| Model | | Unstandardized Coefficients | | Standardized Coefficients | T | Sig. |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | 2.314 | .185 | | 12.518 | .000 |
| | Automation Level | 1.296 | .091 | 1.208 | 3.395 | .000 |
| | Digital Skills and Training | 1.258 | .067 | 1.361 | 3.038 | .001 |

Table 3 above shows the impact of process automation level, digital skills and training on the operational efficiency of SMEs. The model summary reveals that the predictors, automation level, digital skills and training account for 22.1% of the variance in operational efficiency (R Square = 0.221, Adjusted R Square = .268). The standard error of the estimate is 0.67440, indicating a reasonable level of precision in the model's predictions. The ANOVA table indicates that the regression model is statistically significant ($F_{(1, 379)} = 11.156$, $p = 0.031$), suggesting that the predictors significantly affect operational efficiency. Regarding the coefficients, both predictors are statistically significant: The automation level (B = 1.296, t = 3.395, $p<0.001$) has a strong positive standardized coefficient (Beta = 1.208), indicating a significant positive effect on operational efficiency. Moreover, Digital skills and training (B = 1.258, t = 3.038, $p= 0.001$) also show a significant positive standardized coefficient (Beta = 1.361), suggesting a substantial positive impact on operational efficiency. However, the levels of process automation and digital skills and training significantly enhance the operational efficiency of SMEs, with both factors demonstrating a strong

positive influence. Therefore, adopting advanced process automation systems and fostering digital skills development are essential for improving the operational efficiency of SMEs in Ibadan.

**H0$_3$:** *There is no significant difference in the influence of Online Presence and engagement on Customer retention rate of SMEs in Ibadan*

**Table 4:** Influence of Online Presence and engagement on Customer retention rate of SMEs

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .317[a] | .411 | .389 | .74401 |

**ANOVA[a]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | .671 | 1 | .671 | 9.122 | .000[b] |
| | Residual | 75.188 | 379 | .455 | | |
| | Total | 68.678 | 380 | | | |

*a. Dependent Variable: Customer retention rate of SMEs*

*b. Predictors: (Constant), Online Presence and engagement*

| Model | | Unstandardized Coefficients | | Standardized Coefficients | T | Sig. |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | 5.104 | .197 | | 21.518 | .000 |
| | Online Presence and engagement | 3.258 | .067 | 3.361 | 4.214 | .000 |

Table 4 above evaluates the impact of online presence and engagement on the customer retention rate of SMEs. The model summary shows that online presence and engagement explain 41.1% of the variance in customer retention rate (R Square = .411, Adjusted R Square = 0.389). The standard error of the estimate is 0.74401, indicating a moderate level of precision in the model's predictions. The ANOVA table confirms that the regression model is statistically significant ($F_{(1, 379)} = 9.122$, $p<0.001$), suggesting that the predictor significantly influences customer retention rate. Regarding the coefficients, online presence and engagement are statistically significant: Online presence and engagement (B = 3.258, t = 4.214, $p<$ 0.001) have a strong positive standardized coefficient (Beta = 3.361), indicating a significant positive effect on customer retention rate. Therefore, enhancing online presence and fostering meaningful engagement significantly improve customer retention rates among SMEs, with the predictor demonstrating a strong positive influence. This highlights the importance of maintaining an active online presence to strengthen customer relationships and drive business success.

**Discussion of Findings**

The findings from the first objective of this study affirm that digitalisation plays a pivotal role in enhancing the competitiveness and performance of Small and Medium Enterprises (SMEs). This aligns with the work of Mubarak *et al.* (2019) and Teng *et al.* (2022), who identified significant benefits for SMEs by adopting digital tools. Furthermore, Chen *et al.* (2016) and Melo *et al.* (2023) have explored various factors influencing SME digital transformation and its impact on organisational success. Their research underscores the importance of a systematic approach to digital transformation, emphasising the interplay between digital adoption, digital drive, and digital culture, as outlined by Wang and Zhang (2025). Moreover, the OECD's report, cited by Nwachukwu and Onuoha (2023), highlights the critical need for SME digitalisation, especially during the COVID-19 crisis. This crisis has underscored the necessity for resilience and economic recovery through technological adaptation. The findings corroborate existing literature that links SME success to technology adoption and skill development. Changalima *et al.* (2025) further reinforce this by demonstrating how technological absorptive capacity and e-business innovation can significantly enhance SME performance. Seppänen *et al.* (2025) delve into the determinants of digital transformation, suggesting that digitising management functions are crucial for incumbent SMEs to remain competitive. Digitalisation represents a strategic imperative for SMEs aiming to thrive in today's rapidly evolving business landscape. Through adopting digital

technologies and promoting an innovative culture, SMEs can improve operational efficiency, enhance market responsiveness, and achieve greater overall competitiveness.

The second objective confirms previous studies indicating that process automation and the enhancement of digital skills are vital for improving SME operational efficiency. Nwachukwu and Onuoha (2023), Zhang *et al.* (2022), Mubarak *et al.* (2019), and Chen *et al.* (2016) all provide evidence supporting this claim. Specifically, Mubarak *et al.* (2019) examined the effects of digital transformation on Pakistani SMEs, while Chen *et al.* (2016) focused on Taiwanese textile companies. Both studies revealed positive correlations between digital transformation initiatives and operational efficiency, underscoring the necessity for SMEs to adopt digital technologies and improve their digital capabilities. Peláez and Aguirre-Álvarez (2025) systematically reviewed robotic process automation (RPA) in the manufacturing and service sectors, highlighting its potential to streamline operations and reduce costs for SMEs. Similarly, Alog *et al.* (2025) investigated the impact of digital integration on SMEs in Arab countries, finding that it significantly enhances operational efficiency and business agility. Elsa *et al.* (2025) provided a comprehensive overview of global trends in SME digital transformation, emphasising the importance of aligning digital strategies with business objectives. Kumar and Sharma (2025) developed a maturity model to assess SME readiness for Industry 4.0, which further supports the notion that digital skills and automation are key drivers of operational efficiency. Process automation and digital skill enhancement are essential components for improving the operational efficiency of SMEs. To remain competitive, SMEs must prioritise technology and workforce training investments. As industries continue to evolve under the influence of Industry 4.0, SMES must adopt scalable automation solutions and develop a digitally skilled workforce.

The third objective reveals that a strong online presence and active engagement significantly increase customer retention rates among SMEs. This finding resonates with existing literature on the impact of digital strategies on customer relationships. Arjang, Utami, and Redjeki (2024) explored the adoption of social media and online platforms by fashion SMEs in Bali, demonstrating that active participation in these platforms positively influences customer retention. Ha *et al.* (2016) conducted an empirical investigation into the effectiveness of social media marketing among online SMEs, confirming the efficient relationship between a robust online presence and enhanced customer retention. Lányi *et al.* (2021) examined the impact of online activities on SME competitiveness, suggesting that active online participation contributes to business success primarily through increased customer retention. Whiting, Hansen, and Sen (2017) also highlighted the significance of online engagement in building reputation, goodwill, and strong customer relationships for SMEs in New Zealand. These findings align closely with the current study's hypothesis, reinforcing that digital marketing strategies, such as search engine optimisation (SEO) and website engagement, play a crucial role in influencing customer buying behaviour, as Al-Haraizah *et al.* (2025) noted.

Additionally, Rachmiani *et al.* (2025) emphasised the optimisation of digital technology in marketing strategy development to enhance the competitiveness of MSME products. Rahmawan (2025) explored the effectiveness of digital marketing strategies in boosting brand awareness, further validating the importance of maintaining an active online presence. Talukder *et al.* (2025) examined the relationship between social media participation and customer satisfaction in the hospitality sector, concluding that active engagement increases the likelihood of repeat transactions. Collectively, these studies highlight the transformative power of digital strategies in promoting stronger customer relationships and driving business growth for SMEs. Thus, an active online presence and consistent engagement are critical for enhancing customer retention rates and driving business growth for SMEs.

## CONCLUSION

This study has examined the influence of process automation, digital skills and training, and online presence and engagement on the performance of SMEs, mainly focusing on revenue growth, operational efficiency, and customer retention rates. The key findings are that the levels of process

automation and the extent of digital skills and training significantly enhance SMEs' revenue growth and operational efficiency. Both factors demonstrate a strong positive impact on these performance metrics. Also, SMEs' online presence and engagement significantly enhance their customer retention rates, with the predictor showing a strong positive influence. Thus, by embracing digital tools, improving digital skills, and maintaining an active online presence, SMEs can enhance their competitiveness, operational efficiency, and customer loyalty.

## RECOMMENDATIONS

Based on these findings, the following recommendations are proposed for SMEs:

1. Invest in Process Automation: Automation technologies will enable SMEs to streamline operations and enhance efficiency. These may include inventory management tools, customer relationship management (CRM) systems, and other repetitive tasks. Revision and updating of automation processes periodically to ensure they remain effective and aligned with the goals of the SMEs' business.
2. Enhance Digital Skills and Training: SMEs need to adopt complete training programs to enhance digital skills among employees, including workshops, online courses, and certifications on relevant digital tools and technologies. It is very important to encourage continuous learning and digital innovation within the organization to stay competitive, outperform others, and pave the way for emerging technologies.
3. Strengthen Online Presence and Engagement: SMEs should, therefore, use social media to reach customers, expose their products, and develop brand loyalty. Secondly, refresh the content periodically and interact with the audience to ensure continuity. Utilize relevant e-commerce websites, digital marketing tools, and other online platforms to reach a more significant number of people in a bid to deepen customer interaction.

## REFERENCES


Adeoye, A. O., & Elegunde, A. F. (2012). Impacts of External Business Environment on Organisational Performance in the Food and Beverage Industry in Nigeria. British Journal of Arts and Social Sciences, 6(2), 194-201

Akingbolu, R. (2021). Access to finance and SMEs in Nigeria: Challenges and opportunities. The Guardian Nigeria.

Al-Haraizah, A., Abdelfattah, F. A., Rehman, S. U., Ismaeel, B., Mufleh, M., & Omeish, F. Y. (2025). The impact of search engine optimization and website engagement towards customer buying behaviour. Global Knowledge, Memory and Communication.

Alog, K., Atiya, K., Zentani, R., & Alkhattali, M. (2025). Impact of Digital Integration on the Small and Medium-Sized Enterprises in Arab Countries. ةلجملا الأفروآسيوية لل بحث العلمي (RSJAA), 14, 1-54.

Ansoff, H. I. (1957). Strategies for diversification. Harvard Business Review, 35(5), 113-124.

Arjang, A., Utami, E. Y., & Redjeki, F. (2024). Utilization of Social Media and Online Platforms in Improving Customer Engagement of Fashion SMEs in Bali. West Science Business and Management, 2(01), 29-36.

Becker, B. (2015). "Measuring business performance: Aligning strategy, operations, and metrics." Wiley.

Bessen, J. E. (2019). "AI and Jobs: The role of demand." NBER Working Paper No. 24235.

Bharadwaj, A., El Sawy, O. A., Pavlou, P. A., & Venkatraman, N. (2013). "Digital business strategy: Toward a next generation of insights." MIS Quarterly, 37(2), 471-482.

Brynjolfsson, E., & McAfee, A. (2014). "The second machine age: Work, progress, and prosperity in a time of brilliant technologies." W.W. Norton & Company.

Cenamor, J. (2019). Digitalization and Innovation in SMEs: An Analysis of Digital Technology Use and its Impact on Innovation Performance. Research Policy, 48(4), 841-857.

Central Bank of Nigeria. (2020). Development finance: Small and Medium Enterprises (SMEs). Retrieved from CBN website.

Changalima, I. A., Ismail, I. J., & Amani, D. (2025). Driving SME performance through technological absorptive capacity and e-business innovation. Sustainable Technology and Entrepreneurship, 4(1), 100089.

Chen, Y. Y. K., Jaw, Y. L., & Wu, B. L. (2016). Effect of digital transformation on organisational performance of SMEs: Evidence from the Taiwanese textile industry's web portal. Internet Research, 26(1), 186-212.

Davenport, T. H., & Ronanki, R. (2018). "Artificial intelligence for the real world." Harvard Business Review, 96(1), 108-116.

Elsa, D., Indrawati, H., & Caska, C. (2025). Digital transformation in SMEs: global maps and trends of research. Strategy & Leadership.

Ha, S., Kankanhalli, A., Kishan, J. S., & Huang, K. W. (2016). Does social media marketing really work for online SMEs?: An empirical study.

Hammer, M. (2010). "What is business process management?" In J. vom Brocke & M. Rosemann (Eds.), Handbook on Business Process Management 1. Springer.

Huang, T., Keh, H. T., & Yu, Y. (2017). "Do Frontline Employees Enjoy Working with Humanoid Service Robots? The roles of job relevance, robot type, and personal innovativeness." Journal of Service Research, 24(2), 226-243.

IFC (2019). "Digital transformation of SMEs: Reshaping the future of small businesses." International Finance Corporation.

Kaplan, A. M., & Haenlein, M. (2010). "Users of the world, unite! The challenges and opportunities of Social Media." Business Horizons, 53(1), 59-68.

Kaplan, R. S., & Norton, D. P. (1996). The balanced scorecard: Translating strategy into action. Harvard Business Review Press.

Khin, S., & Ho, T. C. (2019). "Digital technology, digital capability and organizational performance: A mediating role of digital innovation." International Journal of Innovation Science, 11(2), 177-195.

Kumar, L., & Sharma, R. K. (2025). Adapting to Industry 4.0: evaluating SMEs preparedness through a comprehensive digital readiness assessment maturity model by validating stakeholders' perceptions. Business Process Management Journal.

Lányi, B., Hornyák, M., & Kruzslicz, F. (2021). The effect of online activity on SMEs' competitiveness. Competitiveness Review: An International Business Journal, 31(3), 477-496.

Lemon, K. N., & Verhoef, P. C. (2016). "Understanding customer experience throughout the customer journey." Journal of Marketing, 80(6), 69-96.

Mansfield, E. (1961). Technical Change and the Rate of Imitation. Econometrica, 29(4), 741-766.

Manyika, J., Chui, M., Bughin, J., Dobbs, R., Bisson, P., & Marrs, A. (2016). "Digital America: A tale of the haves and have-mores." McKinsey Global Institute.

Melo, I. C., Queiroz, G. A., Junior, P. N. A., de Sousa, T. B., Yushimito, W. F., & Pereira, J. (2023). Sustainable digital transformation in small and medium enterprises (SMEs): A review on performance. Heliyon, 9(3).

Mubarak, M. F., Shaikh, F. A., Mubarik, M., Samo, K. A., & Mastoi, S. (2019). The impact of digital transformation on business performance: A study of Pakistani SMEs. Engineering technology & applied science research, 9(6), 5056-5061.

Ndubuisi-Okolo, P., & Anekwe, R. I. (2018). "Challenges of Small and Medium Enterprises in Nigeria: The way forward." International Journal of Innovation and Economic Development, 4(2), 30-40.

Nwachukwu, P. S., & Onuoha, B. C. (2023). Digital Transformation Strategy and Business Performance of SMEs in Rivers State.

Obokoh, L. O., & Goldman, G. (2016). Infrastructure deficiency and the performance of small- and medium-sized enterprises in Nigeria's Liberalised Economy. Acta Commercii, 16(1), 1-10.

Okoye, E. I., & Eze, G. P. (2013). Effect of Bank Financing on the Financial Performance of Small and Medium Enterprises in Nigeria. Research Journal of Finance and Accounting, 4(6), 2222-2847.

Peláez, M. M., & Aguirre-Álvarez, Y. A. (2025). Robotic Process Automation Technology applied to the Management of SMEs in the Manufacturing and Service Sector: A Systematic Review. Revista Universidad y Empresa, 27(48), 1-43.

Rachmiani, R., Ahmada, N. H., & Darusman, D. (2025). Optimization of Digital Technology Utilization in Marketing Strategy Development to Enhance the Competitiveness of MSME Products. International Journal of Management Science and Information Technology, 5(1), 56-66.

Rahmawan, A. (2025). Digital Marketing Strategies and Their Effectiveness in Enhancing Brand Awareness. SAJMR: Southeast Asian Journal of Management and Research, 3(1), 27-45.

Reichheld, F. F. (1996). "The loyalty effect: The hidden force behind growth, profits, and lasting value." Harvard Business School Press.

Reichheld, F. F. (2003). The one number you need to grow. Harvard Business Review, 81(12), 46-54.

Rogers, E. M. (2003). Diffusion of Innovations (5th ed.). Free Press.

Seppänen, S., Ukko, J., & Saunila, M. (2025). Understanding determinants of digital transformation and digitizing management functions in incumbent SMEs. Digital Business, 100106.

Talukder, T., Masud, S. B., Miah, M. R., Hera, A., & Faruque, M. O. (2025). An Examination of How Social Media Participation and Customer Satisfaction Affect the Likelihood that a Business Will Make Another Transaction in the Hospitality Sector. Open Access Library Journal, 12(1), 1-15.

Teng, X., Wu, Z., & Yang, F. (2022). Research on the relationship between digital transformation and performance of SMEs. Sustainability, 14(10), 6012.

Wang, S., & Zhang, H. (2025). Digital Transformation and Innovation Performance in Small-and Medium-Sized Enterprises: A Systems Perspective on the Interplay of Digital Adoption, Digital Drive, and Digital Culture. Systems, 13(1), 43.

Westerman, G., Bonnet, D., & McAfee, A. (2014). "Leading digital: Turning technology into business transformation." Harvard Business Review Press.

Whiting, R. H., Hansen, P., & Sen, A. (2017). A tool for measuring SMEs' reputation, engagement and goodwill: A New Zealand exploratory study. Journal of Intellectual Capital, 18(1), 170-188.

Womack, J. P., & Jones, D. T. (2003). Lean thinking: Banish waste and create wealth in your corporation. Free Press.

Zhang, X., Xu, Y., & Ma, L. (2022). Research on successful factors and influencing mechanism of the digital transformation in SMEs. Sustainability, 14(5), 2549.