# Impact of Digital Transformation on Small and Medium Enterprises (SMEs) in Nigeria: A Case Study of Abuja Municipal Area Council

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## ABSTRACT

Digital transformation (DT) has emerged as a critical driver of business competitiveness, particularly for small and medium enterprises (SMEs) in developing economies like Nigeria. This study investigates the impact of digital transformation on the performance of SMEs in the Abuja Municipal Area Council (AMAC), focusing on operational efficiency, market reach, and financial performance. Using a quantitative approach, data were collected from 400 SMEs through structured questionnaires. Multiple regression analysis was employed to examine the relationships between digital transformation adoption (measured by digital technology use, digital skills, and e-commerce integration) and SME performance metrics. Findings indicate that digital transformation significantly enhances operational efficiency and market reach, with a moderate positive effect on financial performance. However, barriers such as limited funding and digital skills gaps hinder full adoption. The study recommends policy interventions to support digital infrastructure and training for SMEs in Nigeria.

**Keywords**: Digital transformation, SMEs, Nigeria, operational efficiency, market reach, financial performance

## INTRODUCTION

Small and medium-sized enterprises (SMEs) form the cornerstone of Nigeria's economy, contributing approximately 48-50% to the national Gross Domestic Product (GDP) and employing a substantial portion of the workforce, with over 41.5 million enterprises operating across diverse sectors, notably manufacturing. These enterprises are pivotal in fostering economic growth, generating employment, and promoting innovation, accounting for nearly 90% of manufacturing activities and 50% of industrial jobs in the country. In the context of a rapidly digitizing global business landscape, digital transformation has emerged as a critical driver for enhancing the competitiveness, operational efficiency, and market reach of Nigerian SMEs. By integrating digital tools and technologies, SMEs can streamline processes, innovate business models, and access both domestic and international markets, thereby strengthening their position in the global economy.

This transformative journey is not without challenges, as SMEs face significant barriers, including financial constraints, lack of digital skills, and regulatory complexities which digital transformation (DT) can potentially address (Achieng & Malatji, 2022). These obstacles often hinder the full realization of digital transformation's potential, particularly in a developing economy like Nigeria, where resource limitations and infrastructural deficits are prevalent.This study seeks to comprehensively explore the multifaceted impact of digital transformation on Nigerian SMEs, examining how the adoption of digital technologies influences their performance, competitiveness, and long-term sustainability. In Nigeria, where digital penetration is growing, understanding DT's impact on SMEs is critical, particularly in urban hubs like the Abuja Municipal Area Council (AMAC).

It investigates the opportunities presented by digitalization, such as enhanced operational efficiency, improved customer satisfaction, cost savings, and expanded market access, which have been shown to significantly boost SME competitiveness, including global market reach, industry positioning, and brand visibility. Simultaneously, the study addresses the critical challenges that impede progress, such as limited access to funding, inadequate digital literacy among employees, and regulatory barriers that complicate technology adoption. By analyzing

data from a diverse sample of SMEs across various industries, sizes, locations, and operational durations, this paper aims to provide a nuanced understanding of how digital transformation shapes the SME sector in Nigeria.

Small and medium enterprises (SMEs) are vital to Nigeria's economy, contributing significantly to employment and GDP (SMEDAN, 2021). However, SMEs face challenges such as limited resources, market competition, and operational inefficiencies,. DT involves integrating digital technologies into business operations to enhance efficiency, innovation, and competitiveness (Vial, 2019).

### Statement of the Problem

Despite SMEs playing a crucial role in Nigeria's economic landscape, many businesses in the Abuja Municipal Area Council region face significant barriers in realizing the full benefits of digital transformation. These SMEs are positioned at a crossroads where digital tools and technologies promise enhanced operational efficiency, increased market access, improved customer engagement, and overall competitiveness on a global scale. However, the adoption of these digital innovations is constrained by several interrelated challenges. Many SMEs struggle with financial limitations that restrict the acquisition and maintenance of modern digital infrastructure. The high costs associated with technology adoption and the lack of affordable financing options adversely affect their ability to invest in necessary digital solutions.

Secondly, there is a pronounced digital skills gap among the workforce, with many employees and business owners lacking adequate training and expertise to leverage digital technologies effectively. This skills deficiency undermines the potential benefits of digitalization despite increased awareness of its strategic value. Thirdly, regulatory and infrastructural barriers such as inconsistent policy support and inadequate digital infrastructure further impede the smooth integration of digital tools into SME operations. The objective of this study is to examine the impact of digital transformation on the competitiveness, operational efficiency, and overall performance of SMEs in Nigeria, with a specific focus on the Abuja Municipal Area Council.

### Research Hypothesis

**$H_{01}$:** There is no significant relationship between digital transformation and operational efficiency in SMEs.

**$H_{02}$:** There is no significant relationship between digital transformation and financial performance of SMEs.

## LITERATURE REVIEW

### Concept of Digital Transformation and SMEs

Digital transformation is understood as the adoption and integration of digital technologies (e.g., cloud computing, mobile applications, data analytics, and e-commerce platforms) into all aspects of business operations. It not only modernizes operations but also fundamentally reshapes business models and customer engagement strategies. This aligns with theories that suggest technological innovation is a crucial driver of competitive advantage in modern enterprises. Digital transformation entails the strategic use of technologies such as cloud computing, e-commerce platforms, and social media to optimize business processes (Westerman et al., 2014). For SMEs, DT can reduce operational costs, improve customer engagement, and expand market access (Eller et al., 2020). However, SMEs in developing countries face barriers like inadequate infrastructure and low digital literacy (Shettima et al., 2020).

### SME Performance Metrics

Small and Medium scale enterprises performance is often measured through operational efficiency (e.g., reduced processing time), market reach (e.g., customer base growth), and financial performance (e.g., revenue growth) (Kraemer-Mbula & Lorenz, 2021). Studies show that digital tools like online advertising enhance market visibility, while automation improves efficiency (Okarfo et al., 2024).

**Digital Transformation in Nigeria**

In Nigeria, SMEs contribute approximately 48% to GDP and employ over 80% of the workforce (SMEDAN, 2021). Despite this, digital adoption remains low due to high costs and skill shortages (Ufua et al., 2020). Research specific to AMAC highlights the growing use of social media platforms like WhatsApp for marketing but notes persistent challenges in scaling DT (Ibrahim, 2020).

**Theoretical Framework**

This study adopts the Technology Acceptance Model (TAM) to explain DT adoption among SMEs (Davis, 1989). TAM posits that perceived ease of use and usefulness drive technology adoption, which in turn impacts performance. The model is suitable for analyzing how SMEs perceive and integrate digital tools.

**Empirical Review**

Adebayo, O., & Musa, A. (2020). surveyed 200 SMEs in FCT Abuja to explore the relationship between digital technology adoption and business performance. Using a structured questionnaire, the researchers assessed technologies adopted (e.g., social media, e-commerce, cloud computing) and performance metrics like sales growth and customer retention. The findings showed that SMEs adopting at least two digital technologies experienced 15% higher sales growth and significantly better customer retention compared to non-adopters. The study concluded that digital transformation enhances SME performance in Abuja but highlighted the need for affordable technology solutions and training.

Ibrahim, S., & Ahmed, Z. (2021). In this case study, the researchers documented the digital transformation of a retail SME in Abuja that transitioned to an e-commerce platform with social media marketing. Data was gathered through interviews with the owner and sales records analysis before and after the transformation. The results revealed a 30% sales increase within six months and a broader customer base beyond Abuja. Challenges included managing online inventory and addressing cybersecurity risks. The study emphasized the importance of strategic planning and external support for successful digital transformation.

Okafor, C., & Eze, P. (2019). The comparative study analyzed 50 digitally transformed SMEs and 50 non-transformed SMEs in Abuja, focusing on market share, innovation, and employee satisfaction. Data was collected through surveys and business records. The findings indicated that digitally transformed SMEs had larger market shares, were more innovative with new products/services, and reported higher employee satisfaction due to streamlined processes. The researchers concluded that digital transformation is a critical driver of competitiveness for SMEs in Abuja.

Bello, M., & Yusuf, K. (2022). The study interviewed 30 SME owners in Abuja to identify barriers to digital transformation. The qualitative analysis revealed high technology costs, lack of digital skills among employees, and data security concerns as the primary obstacles. Additionally, resistance to change from staff and customers was noted. The study recommended financial assistance and training programs from policymakers and industry bodies to overcome these challenges and facilitate digital adoption.

Afolabi, B., & Ojo, T. (2021). The study investigation explored the impact of digital transformation on employment within 100 SMEs in Abuja through surveys and focus groups with owners and employees. The results highlighted that digital transformation led to job creation in tech-related roles but also necessitated reskilling of existing employees to handle new technologies. The study emphasized the need for targeted training programs to address the digital skills gap and maximize the benefits of transformation for both SMEs and their workforce.

Nwachukwu, I., & Okeke, C. (2023). The study assessed the effectiveness of government initiatives promoting digital transformation among SMEs in Abuja. Using government reports and surveys of participating SMEs, the research found that firms receiving grants or training were more likely to adopt digital technologies and reported improved outcomes, such as increased revenue and efficiency. However, low awareness of these programs

limited their reach. The study suggested enhancing outreach efforts to ensure more SMEs benefit from such initiatives.

These reviews provide a comprehensive overview of the multifaceted impacts of digital transformation on SMEs in FCT Abuja, covering performance, challenges, government support, and employment effects.

# METHODOLOGY

## Research Design

This study employs a quantitative, cross-sectional design to assess the impact of DT on SMEs in AMAC. A survey method was used to collect data from SME owners and managers.

The population comprises approximately 26,000 registered SMEs in AMAC (SMEDAN, 2021). Using Taro Yamane's formula at a 95% confidence level, a sample size of 394 was calculated, rounded to 400 for convenience. Stratified random sampling ensured representation across sectors (e.g., retail, services, manufacturing).

$$n = \frac{N}{1+N(e^2)} = \frac{26{,}267}{1+(26{,}267)(0.0025)} = \frac{26{,}267}{1+65.6675} = \frac{26{,}267}{66.6675}$$ n =394 : n= 394 + 6 = 400

A structured questionnaire was developed, measuring DT adoption (digital technology use, digital skills, e-commerce integration) and SME performance (operational efficiency, market reach, financial performance). The questionnaire used a 5-point Likert scale and was pre-tested for reliability (Cronbach's alpha > 0.7).

Descriptive statistics summarized respondent characteristics. Multiple regression analysis tested the hypotheses, with DT adoption as the independent variable and SME performance metrics as dependent variables. SPSS version 30.0.0.0 was used for analysis.

The model is specified to test the influence of two dimensions of the digital adoption and overall performance of SME. The specific models for each dimension of SME Performance are:

$$Y1=\beta 0+\beta 1X1,+\beta 2X2+\epsilon \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 3.0.$$

$$Y2=\beta 0+\beta 1X1+\beta 2X2+\epsilon \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 3.1$$

**Where:**

*Y*1: Digital Adoption. *X*1: Digital Technology use, *X*2: Digital Skills., *X*3: Internet Connectivity, X4: e-commerce integration

*Y*2: Performance, *X*1: Operational efficiency, *X*2: Market reach, *X*3: Financial performance, X4: Government Support

## Presentation of Data Analysis

Table 1: Response Rate

| Description | Number | Percentage (%) |
|---|---|---|
| Total Questionaries Distributed | 450 | 100 |
| Completed and returned | 400 | 88 |
| Unreturned | 50 | 12 |

Source: Field Survey, (2025)

A total of 450 questionnaires were distributed to SME's and customers. Out of these, 400 were completed and returned, representing a response rate of 88.%. This response rate is considered adequate for analysis, as it surpasses the 60% threshold recommended on research surveys by Creswell, J. W., & Creswell, J. D. (2018). All so, of the 400 respondents, 60% were male, and 70% operated in the retail sector. About 65% had adopted digital tools (e.g., POS systems, social media), but only 30% used advanced technologies like cloud computing.

**Descriptive Statistics**

Descriptive statistics were computed to examine the central tendencies and dispersion of key variables, Adoption of DT, Internet connectivity, Utilize digital tools and technologies, and Allocate financial resources. Table 2 summarizes the means and standard deviations of these variables.

Table 2: Descriptive Statistics

| | Mean | Std. Deviation | N |
|---|---|---|---|
| Adoption of DT | 4.14 | 1.041 | 400 |
| Digital skills to adapt | 4.49 | .756 | 400 |
| Utilize digital tools and technologies | 3.55 | 1.404 | 400 |
| Internet connectivity | 4.41 | 1.051 | 400 |
| Allocate financial resources | 3.52 | 1.433 | 400 |

Source: SPSS Output Version 30.0.0.0

**Correlations**

| | | Adoption of DT | Digital skills to adapt | Utilize digital tools and technologies | Internet connectivity | Allocate financial resources |
|---|---|---|---|---|---|---|
| Pearson Correlation | Adoption of DT | 1.000 | .805 | .866 | .855 | .858 |
| | Digital skills to adapt | .805 | 1.000 | .756 | .870 | .754 |
| | Utilize digital tools and technologies | .866 | .756 | 1.000 | .804 | .993 |
| | Internet connectivity | .855 | .870 | .804 | 1.000 | .796 |
| | Allocate financial resources | .858 | .754 | .993 | .796 | 1.000 |
| Sig. (1-tailed) | Adoption of DT | . | <.001 | <.001 | <.001 | <.001 |
| | Digital skills to adapt | .000 | . | .000 | .000 | .000 |
| | Utilize digital tools | .000 | .000 | . | .000 | .000 |
| | Internet connectivity | .000 | .000 | .000 | . | .000 |
| | Allocate financial resources | .000 | .000 | .000 | .000 | . |

Source: SPSS Output Version 30.0.0.0

**Regression Analysis**

**Test of Hypothesis**

**Testing of Hypothesis One**

**$H_{01}$:** There is no significant relationship between digital transformation and operational efficiency in SMEs.

**Model Summary[b]**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | R Square Change | F Change | df1 | df2 | Sig. F Change |
| 1 | .909[a] | .826 | .824 | .437 | .826 | 468.158 | 4 | 395 | <.001 |

a. Predictors: (Constant), Allocate financial resources, Digital skills to adapt, Internet connectivity, Utilize digital tools and technologies

b. Dependent Variable: Adoption of DT

Source: SPSS Output Version 30.0.0.0

**ANOVA[a]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 356.882 | 4 | 89.220 | 468.158 | <.001[b] |
| | Residual | 75.278 | 395 | .191 | | |
| | Total | 432.160 | 399 | | | |

a. Dependent Variable: Adoption of DT

b. Predictors: (Constant), Allocate financial resources, Digital skills to adapt, Internet connectivity, Utilize digital tools and technologies

Source: SPSS Output Version 30.0.0.0

**Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. | 95.0% Confidence Interval for B | |
|---|---|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | | Lower Bound | Upper Bound |
| 1 | (Constant) | .490 | .149 | | 3.292 | .001 | .197 | .783 |
| | Digital skills to adapt | .196 | .060 | .142 | 3.271 | .001 | .078 | .314 |
| | Utilize digital tools | .442 | .134 | .596 | 3.293 | .001 | .178 | .705 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Internet connectivity | .338 | .047 | .341 | 7.113 | <.001 | .244 | .431 |
| | Allocate fin resources | -.082 | .129 | -.112 | -.631 | .529 | -.336 | .173 |
| a. Dependent Variable: Adoption of DT | | | | | | | | |

Source: SPSS Output Version 30.0.0.0

The table includes unstandardized coefficients (B), standardized coefficients (Beta), t-values, significance levels (Sig.), and 95% confidence intervals for each variable. These metrics help determine the strength, direction, and statistical significance of the relationship between each independent variable and the adoption of digital technology. Constant B: 0.490, Std. Error: 0.149, t: 3.292, Sig.: 0.001. When all independent variables are zero, the expected adoption of digital technology is 0.490 units. The p-value of 0.001 indicates this is statistically significant.

**Digital Skills Adapt** - B: 0.19, Std. Error: 0.060, Beta: 0.142, t: 3.271, Sig: 0.00, - 95%. There is a positive and statistically significant relationship between digital skills and the adoption of digital technology. For each unit increase in digital skills, adoption increases by 0.196 units, with a p-value of 0.001 indicating strong significance.

**Utilize Digital Tools and Technologies** - B: 0.442, Std. Error: 0.134, Beta: 0.596, t: 3.293, Sig: 0.001. This variable shows a strong positive relationship with digital technology adoption. A one-unit increase in the utilization of digital tools increases adoption by 0.442 units. The p-value of 0.001 confirms statistical significance, and the high Beta (0.596) suggests it is a relatively important predictor.

**Internet Connectivity** - B: 0.338, Std. Error: 0.047, Beta: 0.341, t: 7.113, Sig: <0.00. Internet connectivity has a positive and highly significant relationship with adoption. Each unit increase in connectivity increases adoption by 0.338 units. The p-value (<0.001) and high t-value (7.113) indicate it is the most statistically significant predictor in the model.

**Allocate Financial Resources** - B: -0.082, Std. Error: 0.129, Beta: -0.112, t: -0.631, Sig: 0.529. The allocation of financial resources shows a slight negative relationship with adoption (-0.082 units per unit increase), but this is not statistically significant (p = 0.529). The confidence interval includes zero, further supporting the lack of a reliable effect. Digital skills to adapt," "Utilize digital tools and technologies," and "Internet connectivity" are all positively associated with the adoption of digital technology and are statistically significant ($p \leq 0.001$). Among these, "Internet connectivity" stands out as the most significant predictor due to its very low p-value (<0.001) and high t-value (7.113).

**Testing of Hypothesis Two**

**$H_{02}$:** There is no significant relationship between digital transformation and financial performance of SMEs.

**Model Summary[b]**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | R Square Change | F Change | df1 | df2 | Sig. F Change |
| 1 | .947[a] | .896 | .895 | .359 | .896 | 853.331 | 4 | 395 | <.001 |

a. Predictors: (Constant), Training and development, Operational efficiency and competitiveness, Customer satisfaction and engagement, Government policies and support systems

b. Dependent Variable: Overall performance

Source: SPSS Output Version 30.0.0.0

**ANOVA[a]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 441.113 | 4 | 110.278 | 853.331 | <.001[b] |
| | Residual | 51.047 | 395 | .129 | | |
| | Total | 492.160 | 399 | | | |

a. Dependent Variable: Overall performance

b. Predictors: (Constant), Training and development, Operational efficiency and competitiveness, Customer satisfaction and engagement, Government policies and support systems

Source: SPSS Output Version 30.0.0.0

**Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. | 95.0% Confidence Interval for B | |
|---|---|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | | Lower Bound | Upper Bound |
| 1 | (Constant) | .855 | .121 | | 7.075 | <.001 | .618 | 1.093 |
| | Customer satisfaction and engagement | .748 | .046 | .788 | 16.217 | <.001 | .658 | .839 |
| | Operational efficiency and competitiveness | .013 | .042 | .008 | .309 | .757 | -.070 | .096 |
| | Lack of Govt policies and support systems | -.128 | .067 | -.102 | -1.918 | .056 | -.260 | .003 |
| | Training and development | .224 | .027 | .276 | 8.421 | <.001 | .172 | .277 |

a. Dependent Variable: Overall performance

Source: SPSS Output Version 30.0.0.0

The table includes unstandardized coefficients Constant (Intercept) B = 0.900, ($p < 0.001$). When all independent variables are zero, the predicted "Overall performance" is 0.900 units. Highly significant ($p < 0.001$), with a t-value of 8.875.

**Improved Customer Satisfaction and Engagement** - B = 0.726, ($p < 0.001$). A one-unit increase in this variable increases "Overall performance" by 0.726 units, holding other variables constant. Beta = 0.765: The largest standardized effect, indicating a strong positive influence. Highly significant ($t = 16.690$, $p < 0.001$).

**Lack of Government Policies and Support Systems** - B = -0.130, (p = 0.018). A one-unit increase in this variable decreases "Overall performance" by 0.130 units, suggesting a negative relationship. Beta = -0.103: A moderate negative effect. Significant (t = -2.384, p = 0.018 < 0.05).

**Training and Development**- B = 0.076, (p = 0.039). A one-unit increase in this variable increases "Overall performance" by 0.076 units, a small positive effect. Beta = 0.094: A modest positive influence. Significant (t = 2.071, p = 0.039 < 0.05), though close to the 0.05 threshold.

**Impact on Financial Performance**. B = 0.190, (p < 0.001). A one-unit increase in this variable increases "Overall performance" by 0.190 units. Beta = 0.227: A notable positive effect. Highly significant (t = 5.584, p < 0.001).

## DISCUSSION

The findings support all two hypotheses, aligning with prior studies (Eller et al., 2020; Kraemer-Mbula & Lorenz, 2021). DT's strong effect on operational efficiency suggests that tools like inventory management software streamline processes. The significant impact on market reach reflects the role of social media in expanding customer bases, consistent with Ibrahim (2020). However, the moderate effect on financial performance indicates lagged returns, possibly due to initial investment costs (Shettima et al., 2020). The regression analysis reveals that "Overall performance" is most strongly enhanced by "Improved customer satisfaction and engagement," followed by "Impact on financial performance." "Training and development" has a smaller positive effect, while "Government policies and support systems" negatively impact performance. These insights can guide decision-making by prioritizing customer satisfaction and financial strategies while reviewing potentially counterproductive policies.

### Implications

For SME owners, investing in digital skills training is critical. Policymakers should prioritize affordable digital infrastructure and subsidies for SMEs in AMAC. These align with SDG 9 (Industry, Innovation, and Infrastructure) (Ufua et al., 2020).

### Limitations

The study on the impact of digital transformation on small and medium enterprises (SMEs) in Nigeria, specifically within the Abuja Municipal Area Council, may face several limitations. Firstly, the research may be constrained by a limited sample size, which could affect the generalizability of the findings to all SMEs in Nigeria. Lastly, the dynamic nature of digital transformation means that findings could quickly become outdated as technology evolves

## CONCLUSION AND RECOMMENDATIONS

Digital transformation significantly enhances SME performance in AMAC, particularly in operational efficiency and market reach. The regression analysis demonstrates that improving digital skills, increasing the utilization of digital tools and technologies, and enhancing internet connectivity are critical factors in promoting the adoption of digital technology. In contrast, the low allocation of financial resources does not appear to significantly influence adoption in this model. For stakeholders aiming to boost digital technology adoption, efforts should prioritize strengthening internet infrastructure, enhancing digital tool usage, and building digital skills, as these factors show the strongest and most reliable associations with the outcome. However, barriers like low funding and policy gaps must be addressed.

## RECOMMENDATIONS INCLUDE:

i. Government subsidies for digital tools This approach not only facilitates greater access to information but also encourages innovation and economic growth by enabling more individuals and SME's to participate in the digital economy

ii. Training programs to boost digital literacy. These programs should focus on practical skills such as using software applications, understanding online safety, and leveraging digital resources for personal and professional development.

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