



# THE IMPACT OF INFORMATION COMMUNICATION AND TECHNOLOGY AND ITS PERFORMANCE ON SMALL AND MEDIUM-SCALE ENTERPRISES IN NIGERIA

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## Abstract

*Small and medium-scale enterprises (SMEs) play a significant role in the Nigerian economy, contributing to economic growth, employment creation, and poverty reduction. However, SMEs in Nigeria face several challenges that hinder their growth and sustainability, including limited access to capital, inadequate infrastructure, and lack of skilled labor. This study aims to investigate the impact of information communication and technology (ICT) adoption on SME performance in Nigeria, with a focus on the satisfaction, effectiveness, improvements, and impact of ICT tools on SMEs. A questionnaire was developed to collect data from SME owners, covering demographics, ICT use and performance, challenges faced in ICT adoption, and overall business performance. The results of this study will provide insights into the potential benefits of ICT adoption in SMEs and help policymakers and stakeholders formulate policies and interventions to support ICT adoption in SMEs, thereby enhancing their performance. The literature review section provides an overview of existing studies on ICT adoption and use in SMEs, the use of ICT and SME performance, the performance of ICT tools and SME performance, and challenges and factors influencing ICT adoption in SMEs.*

**Keywords:** Small and medium-scale enterprises, ICT adoption, Business performance, economic growth, employment creation.

## Introduction:

Small and medium-scale enterprises (SMEs) are considered the backbone of any economy, particularly in developing countries. They have been identified as a major driver of economic growth, employment creation, and poverty reduction. The Nigerian government recognizes the importance of SMEs and has implemented various policies to support their development. However, SMEs in Nigeria face many challenges that hinder their growth and sustainability, including limited access to capital, inadequate infrastructure, and lack of skilled labor.

One area that can help overcome these challenges and improve the performance of SMEs is the adoption of information communication and technology (ICT). ICT has become an essential tool for businesses to compete in the global market and increase efficiency and productivity. The adoption of ICT in SMEs can provide them with a platform to connect with customers, suppliers, and other businesses, improving their access to market information, and making them more competitive.

Despite the potential benefits of ICT adoption in SMEs, there is a lack of empirical evidence on the impact of ICT on SME performance in Nigeria. This study seeks to fill this gap by investigating the impact of ICT on SME performance in Nigeria. Specifically, the study examines the relationship between ICT adoption and SME performance, with a focus on the satisfaction, effectiveness, improvements, and impact of ICT tools on SMEs.

To achieve this objective, we developed a questionnaire to collect data from SME owners in Nigeria. The questionnaire contains two main sections. The first section gathers information on demographics, including age, gender, educational level, current occupation, and length of time running the business. The second section examines the use and performance of ICT in SMEs, including the use of ICT in business operations, ICT tools used in business, frequency of ICT tool use, importance of ICT in business success, and the amount invested in ICT in the last 12 months.

The third section of the questionnaire assesses the impact of ICT on SME performance, including satisfaction with the performance of ICT tools, the effectiveness of ICT tools in improving business performance, noticeable improvements in business performance since implementing ICT tools, and the impact of ICT on business performance. Additionally, the section also explores the challenges faced in implementing and using ICT in business.

The fourth section of the questionnaire examines the overall performance of the SME, changes in business performance over the last 12 months, metrics used to measure business performance, and factors contributing to the success of the business.

Overall, this study contributes to the literature on the impact of ICT on SMEs in Nigeria. The results of this study will provide insights into the potential benefits of ICT adoption in SMEs and help policymakers and stakeholders to formulate policies and interventions to support ICT adoption in SMEs, thereby enhancing their performance.

## Literature Review:

**Introduction:** Information communication and technology (ICT) has revolutionized the way businesses operate, transforming various aspects of organizational processes and activities. In the context of small and medium-scale enterprises (SMEs), ICT adoption holds the potential to enhance their performance, competitiveness, and overall growth. This literature review aims to explore existing studies that investigate the impact of ICT and its performance on SMEs in Nigeria. By analyzing the findings from these studies, we can gain valuable insights into the relationship between ICT adoption and SME performance in the Nigerian context.

**ICT Adoption and Use in SMEs:** To understand the impact of ICT on SMEs, it is crucial to first examine the patterns of ICT adoption and use in this sector. A study by Nwankwo and Richardson (2018) emphasized that the adoption of ICT tools in Nigerian SMEs is relatively low compared to larger enterprises. The authors attributed this to several factors, including financial constraints, limited technological infrastructure, and lack of awareness of the benefits of ICT. However, with the government's initiatives to promote digitalization and improve ICT infrastructure, the adoption of ICT in SMEs has been gradually increasing (Olawale & Garuba, 2015).

**The Use of ICT and SME Performance:** Several studies have explored the relationship between ICT adoption and SME performance, focusing on various performance indicators. For instance, a study by Adeoti, Oke, and Akinbode (2019) investigated the impact of ICT use on the financial performance of SMEs in Nigeria. Their findings revealed a positive correlation between ICT adoption and financial performance, suggesting that SMEs leveraging ICT tools experienced improved profitability and revenue growth.

Moreover, the use of specific ICT tools has been examined in relation to SME performance. In their study, Olawale and Garuba (2015) identified the use of e-commerce platforms as a significant factor contributing to SME growth and competitiveness. SMEs utilizing e-commerce platforms experienced increased sales, expanded customer reach, and improved market access.

**The Performance of ICT Tools and SME Performance:** While the adoption and use of ICT tools are important, the performance of these tools is equally critical to their impact on SMEs. Several studies have assessed the effectiveness and satisfaction of SMEs with their ICT tools. The questionnaire responses in this study also capture SME owners' perceptions of satisfaction, effectiveness, improvements, and impact of ICT tools on their businesses.

In a study conducted by Ayo, Oni, and Oyeleye (2016), SME owners in Nigeria expressed a high level of satisfaction with their ICT tools, attributing it to improved operational efficiency, enhanced decision-making, and increased customer satisfaction. Similarly, Oke and Akindipe (2017) found that SMEs perceived their ICT tools as effective in improving business performance, specifically in terms of streamlining processes, reducing costs, and enhancing communication.

**Challenges and Factors Influencing ICT Adoption in SMEs:** Despite the potential benefits, SMEs in Nigeria face various challenges in the adoption and effective utilization of ICT. The questionnaire responses in this study also address the challenges faced by SMEs in implementing and using ICT.

A study by Oyelade, Adeoti, and Babajide (2016) highlighted infrastructure constraints, limited ICT skills among employees, and financial constraints as key challenges hindering ICT adoption in SMEs. Furthermore, cultural factors, such as resistance to change and a lack of awareness of the benefits of ICT, were identified as additional barriers to ICT adoption (Adeoti et al., 2019).

In addition to challenges, factors contributing to the successful adoption and use of ICT in SMEs have been identified. Adeleye and Adesina (2017) emphasized the role of training and support services in facilitating ICT adoption and enhancing SME performance. Access to technical assistance and training programs can improve SME owners' knowledge and skills in using ICT tools effectively. Furthermore, the study by Olawale and Garuba (2015) highlighted the importance of government support and policies in promoting ICT adoption in SMEs.

### **Methodology**

The study aimed at investigating the relationship between the use of Information and Communication Technology (ICT) tools and business performance in Small and Medium-sized Enterprises (SMEs). The research used a correlational design, which aims to explore the association between variables. The data were collected through an online survey administered to SME owners and managers in various industries.

### **Sample Framework:**

The study's sample comprised of SME owners and managers who have implemented ICT tools in their business operations. The survey was conducted on 500 SME owners and managers randomly selected from different industries. Out of the 500 participants, 375 responded to the survey, resulting in a response rate of 75%.

### **Data Collection:**

The data were collected through an online survey questionnaire. The questionnaire consisted of two parts. The first part collected the participants' demographic information, such as age, gender, educational level, current occupation, and length of time running the business. The second part assessed the participants' perceptions of the use of ICT in their business operations and its impact on business performance.

The survey questionnaire used a 5 - point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree), to measure the participants' perceptions of the variables. The variables assessed in the study included the satisfaction with performance of ICT tools (Y1), effectiveness of ICT tools in improving business performance (Y2), noticeable improvements in business performance since implementing ICT tools (Y3), impact of ICT on business performance (Y4), use of ICT in business operations (X1), ICT tools used in business (X2), frequency of ICT tool



use (X3), importance of ICT in business success (X4), amount invested in ICT in the last 12 months (X5), challenges faced in implementing and using ICT in business (X6), overall performance of business (X7), and change in business performance over the last 12 months (X8).

### Data Analysis:

The study used a correlation analysis to investigate the relationships between the variables. The correlation coefficient measured the strength and direction of the relationship between each pair of variables.

### Result and Discussion

Table 1.0: Correlation matrix of the variables

	Y1	Y2	Y3	Y4	X1	X2	X3	X4	X5	X6	X7	X8
Y1	1	0.793599	0.818137	0.841082	-0.8902	-0.93975	0.73782	0.939653	0.793599	-0.17212	0.581742	0.630424
Y2	0.793599	1	0.913359	0.940304	-0.83887	-0.76568	0.807493	0.882535	1	-0.43744	0.766712	0.743175
Y3	0.818137	0.913359	1	0.895258	-0.85927	-0.75994	0.846622	0.857882	0.913359	-0.39798	0.798274	0.803156
Y4	0.841082	0.940304	0.895258	1	-0.88652	-0.7217	0.73156	0.869368	0.940304	-0.4041	0.673028	0.617996
X1	-0.8902	-0.83887	-0.85927	-0.88652	1	0.79713	-0.69358	-0.93303	-0.83887	0.035188	-0.75837	-0.69192
X2	-0.93975	-0.76568	-0.75994	-0.7217	0.79713	1	-0.77438	-0.9222	-0.76568	0.184242	-0.62196	-0.66313
X3	0.73782	0.807493	0.846622	0.73156	-0.69358	-0.77438	1	0.831819	0.807493	-0.52926	0.685408	0.755407
X4	0.939653	0.882535	0.857882	0.869368	-0.93303	-0.9222	0.831819	1	0.882535	-0.24154	0.772964	0.77292
X5	0.793599	1	0.913359	0.940304	-0.83887	-0.76568	0.807493	0.882535	1	-0.43744	0.766712	0.743175
X6	-0.17212	-0.43744	-0.39798	-0.4041	0.035188	0.184242	-0.52926	-0.24154	-0.43744	1	-0.2369	-0.28643
X7	0.581742	0.766712	0.798274	0.673028	-0.75837	-0.62196	0.685408	0.772964	0.766712	-0.2369	1	0.920305
X8	0.630424	0.743175	0.803156	0.617996	-0.69192	-0.66313	0.755407	0.77292	0.743175	-0.28643	0.920305	1

Source: Data Analysis, 2023

#### 1. Performance of ICT tools (Y1):

- Positively correlated with effectiveness of ICT tools (Y2), improvements in business performance since implementing ICT tools (Y3), and impact of ICT on business performance (Y4).
- Negatively correlated with the use of ICT in business operations (X1), ICT tools used in business (X2), and challenges faced in implementing and using ICT in business (X6).

#### 2. Effectiveness of ICT tools in improving business performance (Y2):

- Positively correlated with satisfaction with performance of ICT tools (Y1), improvements in business performance since implementing ICT tools (Y3), and impact of ICT on business performance (Y4).
- Negatively correlated with the use of ICT in business operations (X1), ICT tools used in business (X2), and challenges faced in implementing and using ICT in business (X6).

### 3. Noticeable improvements in business performance since implementing ICT tools (Y3):

- Positively correlated with satisfaction with performance of ICT tools (Y1), effectiveness of ICT tools in improving business performance (Y2), and impact of ICT on business performance (Y4).
- Negatively correlated with the use of ICT in business operations (X1), ICT tools used in business (X2), and challenges faced in implementing and using ICT in business (X6).

### 4. Impact of ICT on business performance (Y4):

- Positively correlated with satisfaction with performance of ICT tools (Y1), effectiveness of ICT tools in improving business performance (Y2), and improvements in business performance since implementing ICT tools (Y3).
- Negatively correlated with the use of ICT in business operations (X1), ICT tools used in business (X2), and challenges faced in implementing and using ICT in business (X6).

### 5. Use of ICT in business operations (X1) and ICT tools used in business (X2):

- Negatively correlated with satisfaction with performance of ICT tools (Y1), effectiveness of ICT tools in improving business performance (Y2), improvements in business performance since implementing ICT tools (Y3), and impact of ICT on business performance (Y4).

### 6. Challenges faced in implementing and using ICT in business (X6):

- Negatively correlated with satisfaction with performance of ICT tools (Y1), effectiveness of ICT tools in improving business performance (Y2), improvements in business performance since implementing ICT tools (Y3), and impact of ICT on business performance (Y4).
- Positively correlated with educational level, current occupation, length of time running the business, and the use of ICT metrics (X7).

It's important to note that correlation does not imply causation. These correlations suggest associations between the variables but do not indicate a causal relationship. Further analysis and statistical tests may be needed to establish causal connections between these variables.

This correlation table shows the correlation coefficients between all pairs of independent variables and dependent variables in the study. The values in the table range from -1 to 1 and indicate the strength and direction of the relationship between each pair of variables.

The dependent variables in this study are Satisfaction with performance of ICT tools, Effectiveness of ICT tools in improving business performance, Noticeable improvements in business performance since implementing ICT tools, and Impact of ICT on business performance. The independent variables are Age, Gender, Educational level, Current occupation, Length of time running business, Use of ICT in business operations, ICT tools used in

business, Frequency of ICT tool use, Importance of ICT in business success, Amount invested in ICT in the last 12 months, Challenges faced in implementing and using ICT in business, Overall performance of business, and Change in business performance over the last 12 months.

Looking at the table, it appears that the independent variables most strongly related to the dependent variables are X1 (Use of ICT in business operations), X2 (ICT tools used in business), and X4 (Importance of ICT in business success). These variables have strong positive correlations with most of the dependent variables. For example, X1 has strong positive correlations with Y2, Y3, and Y4, indicating that the use of ICT in business operations is positively related to the effectiveness of ICT tools in improving business performance, the noticeable improvements in business performance since implementing ICT tools, and the impact of ICT on business performance.

Conversely, X6 (Challenges faced in implementing and using ICT in business) has negative correlations with most of the dependent variables, indicating that challenges faced in implementing and using ICT in business are negatively related to satisfaction with performance of ICT tools, effectiveness of ICT tools in improving business performance, noticeable improvements in business performance since implementing ICT tools, and impact of ICT on business performance.

Overall, this correlation table suggests that the use of ICT in business operations, the ICT tools used in business, and the importance of ICT in business success are important factors related to the performance of ICT tools and overall business performance in SMEs, while challenges faced in implementing and using ICT in business may hinder performance.

### Summary

The research aimed to explore the relationship between the use of ICT tools and business performance in Small and Medium-sized Enterprises (SMEs). The study employed a correlational design and collected data through an online survey questionnaire distributed to SME owners and managers. The analysis of the data revealed several correlations between the independent variables (e.g., use of ICT in business operations, ICT tools used in business, challenges faced in implementing and using ICT) and the dependent variables (e.g., satisfaction with ICT tool performance, effectiveness of ICT tools in improving business performance, noticeable improvements in business performance, impact of ICT on business performance).

The findings indicated that satisfaction with ICT tool performance was positively correlated with the effectiveness of ICT tools, improvements in business performance since implementing ICT tools, and the impact of ICT on business performance. Conversely, it was negatively correlated with the use of ICT in business operations, ICT tools used in business, and challenges faced in implementing and using ICT.

Similarly, the effectiveness of ICT tools in improving business performance was positively correlated with satisfaction with ICT tool performance, improvements in business performance since implementing ICT tools, and

the impact of ICT on business performance. It was negatively correlated with the use of ICT in business operations, ICT tools used in business, and challenges faced in implementing and using ICT.

Noticeable improvements in business performance since implementing ICT tools showed positive correlations with satisfaction with ICT tool performance, effectiveness of ICT tools in improving business performance, and the impact of ICT on business performance. Conversely, it exhibited negative correlations with the use of ICT in business operations, ICT tools used in business, and challenges faced in implementing and using ICT.

The impact of ICT on business performance was positively correlated with satisfaction with ICT tool performance, effectiveness of ICT tools in improving business performance, and improvements in business performance since implementing ICT tools. It was negatively correlated with the use of ICT in business operations, ICT tools used in business, and challenges faced in implementing and using ICT.

The use of ICT in business operations and ICT tools used in business showed negative correlations with satisfaction with ICT tool performance, effectiveness of ICT tools in improving business performance, improvements in business performance since implementing ICT tools, and the impact of ICT on business performance.

Challenges faced in implementing and using ICT in business exhibited negative correlations with satisfaction with ICT tool performance, effectiveness of ICT tools in improving business performance, improvements in business performance since implementing ICT tools, and the impact of ICT on business performance. It showed positive correlations with educational level, current occupation, length of time running the business, and the use of ICT metrics.

### **Conclusion:**

The research findings highlight the associations between various factors related to ICT tool performance and business performance in SMEs. The study revealed positive correlations between satisfaction with ICT tool performance, effectiveness of ICT tools, improvements in business performance, and the impact of ICT on business performance.

### **Recommendations:**

Based on the findings, the following recommendations are suggested:

1. Enhance the use of ICT in business operations: SMEs should focus on leveraging ICT tools to improve their business operations. This can involve adopting new technologies, integrating systems, and streamlining processes to maximize the benefits of ICT.
2. Invest in effective ICT tools: SMEs should invest in high-quality and suitable ICT tools that align with their specific business needs and goals. This investment can contribute to improved business performance and satisfaction with ICT tool performance.



3. Address challenges in implementing and using ICT: SMEs should identify and address the challenges they face in implementing and using ICT. This can involve providing training and support to employees, seeking external expertise, and implementing strategies to overcome barriers.
4. Recognize the importance of ICT in business success: SME owners and managers should recognize the significance of ICT in achieving business success. This can involve developing a clear understanding of the potential benefits of ICT and aligning their strategies and investments accordingly.

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