

The Impact of Technological Innovation on The Performance of Small and Medium Scale Enterprise (SMES) in Kwara State

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Abstract

This study investigates the impact of technological innovation on Small and Medium Scale Enterprises (SMEs) performance in Kwara state. A survey research design was adopted to study a sample of 100 SMEs; primary data were collected using a structured questionnaire formatted on the five points likert scale. The data were analysed using descriptive statistics and inferential statistics, with sample percentage as the descriptive statistics and ordinary least square statistical method (OLS) as the inferential statistics to determine the impact of technological innovation on the performance of SMEs in Kwara state. The findings of this study indicate that communication innovation and computerized system innovation significantly impacts the performance of SMEs, it also reveals that mobile transfer innovation positively affects SMEs performance in Kwara State. The study therefore recommends that Managers of SMEs should prioritize sustaining and investing in communication technologies to enhance market share and reduce operational costs.

Keywords: Enterprise, SMEs, Technological Innovations, Kwara State

I. INTRODUCTION

Globally, the importance of small and medium scale enterprises (SMEs) as key engine of economic development and poverty reduction cannot be overemphasized. The impact of innovation and its complexity in the performance of SMEs have been the subject of debate in the economy of innovation literature. The application of technological innovation by SMEs to meet imagine business opportunities, social needs and environmental challenges have been on the rise.

Their continued sustainability and effectiveness are increasingly contingent on the strategic adoption of technological innovation, particularly in the current era of rapid globalization and digital transformation. Recent data from the World Bank indicates that SMEs account for approximately 90% of businesses worldwide and contribute over 50% of global employment, with these figures being even higher in developing economies, where they are often the primary source of formal jobs (World Bank, 2019). In some emerging economies, formal SMEs contribute up to 40% of the national income

(GDP), and this contribution can be significantly higher when informal SMEs are factored in (World Bank, 2019).

In today's highly competitive business environment, organizations, regardless of size, must embrace technological innovation to thrive and maintain relevance. While historically, technological advancements sometimes raised concerns about potential job displacement, contemporary understanding firmly positions them as indispensable for national economic competitiveness and sustainable growth (Zeynep & Bahattin, 2009; Bello and Mustapha, 2021).

The ability of a country to develop, adapt and harness its innovative potential is becoming critical in terms of long-term economy growth and competitiveness. Halty Carrere, (1979) argues that the ability to innovate technologically seems to represent the highest degree of development of an industrial Society. In the context of liberalisation and privatisation, SMEs have emerged as vital economic tools for entrepreneurship development an indigenous technology. However, SMEs have

not performed creditably well and hence have not played the expected role in the economy growth and developments of Kwara and Nigeria as a whole (Akande & Ojokuku, 2008).

In response to these, SMEs owners have increasingly adopted digital innovation to maximise returns. For instance, mobile payment services have transformed distribution network in various sectors. Despite these advancements the impact of such innovation in SME performance remains unclear prompting the need for this study.

II. STATEMENT OF THE PROBLEM

In both developed and developing countries, the government is turning to small and medium enterprises as a vital driver of economic growth, employment generation and national productivity. Their continued sustainability and effectiveness are increasingly contingents on the strategic adoption of technological innovation, particularly in the current era of rapid globalisation and digital transformation. Technological innovation is vital for a firm's competitiveness, especially for SMEs seeking to enter new markets (Becheitch, 2006). It stimulates growth at both micro and macro levels, serving as a corner stone for economic change and productivity (Solow, 1987, OECD,2005).

The literature survey reveals that the studies on the impact of technological innovation SMEs performance are observed to have concentrated in Western Middle and far East and very little evidence noticeable in Africa. The issue of technological innovation and how it relates to SMEs performance is therefore yet to exhaustively explore in Nigeria prompting the need for this research

Objectives of the study

- i. To determine the impact of technological innovation on the performance of SMEs in Kwara State
- ii. To determine the relationship between communication innovation and SMEs performance
- iii. To assess the relationship between mobile transfer innovation on SMEs performance
- iv. To evaluate the relationship between computerised system innovation and SMEs

performance

III. CONCEPTUAL FRAMEWORK

The Concept of Technological Innovation

Technological innovation is a crucial concept within the field of innovation studies, focusing on the nature and rate of technological change. Schumpeter (1939) defined it as a new means of combining production factors to generate outputs, viewing it as a sequential process essential for understanding economic growth.

The technological innovation process involves several phases necessary for implementing improvements or developing new products and services. These stages include basic research, applied research, development, engineering, manufacturing, marketing, promotion, and continuous improvement. Dooley (1953) identified key steps leading to technological innovations: research, invention, innovation, finance, and diffusion.

Jiaji (2000) asserted that technological innovation is a unified process encompassing technology, organizations, business, and finance. Entrepreneurs leverage market opportunities to enhance performance, efficiency, and reduce production costs. This process introduces new products, exploits new markets, and fosters the formation of new business entities.

In developing economies, technological innovation is defined as the implementation of designs and production methods that may be new to the firm, regardless of their novelty to the market (Mytelka, 2000). This involves applying new technologies, methods, and management strategies to enhance production quality and explore new markets.

Feifei and Li (2007) further elaborated that technological innovation includes activities such as conceptualizing new ideas, designing products, prototyping, and commercialization. Continuous product innovation is essential for SMEs to maintain competitive advantages

(Dobbs & Hamilton, 2007). Technological innovations can also facilitate sustainable development and industrial competitiveness by transforming traditional industries and enhancing operational efficiency.

Classification of Technological Innovation

According to (OECD, 2005), Technological innovations can be classified into two main categories: product and process innovations.

- i. **Product Innovation:** This refers to the introduction of new or significantly improved products that incorporate new knowledge or techniques. It necessitates a firm's technological capability to meet customer needs and adapt to market demands. Bello (2025) emphasized the importance of both market and technology in product development.
- ii. **Process Innovation:** This involves implementing new or significantly enhanced production methods or service delivery techniques. It aims to reduce production costs, improve quality, and facilitate the delivery of new or improved products. Bello (2025) found that economic incentives and accumulated resources drive small firms to adopt process innovations.

Concept of Micro, Small and Medium Enterprises (MSMEs)

The definitions of micro, small and medium enterprises vary differently in different countries and are not uniform in their size and shape. Different writers both academics and practitioners have attempted to define MSMEs in different perspectives. Today, these definitions are based on a number of criteria which vary over time and across geographical locations. Some countries use turnover of the company to determine the size of an enterprise, whereas some use fixed investment or the number of employees (Abereijo et al., 2007).

Table 1: Classification Adopted by SMEDAN for National Policy on MSMEs Size

CATEGORY	EMPLOYMENT	ASSETS (N million) (excluding land and buildings)
1 Micro enterprises	Less than 10	Less than 5
2 Small enterprises	10-49	5 – less than 50
3 Medium enterprises	50-199	50- less than 500

Source: SMEDAN, 2012

The definition of enterprise size varies among researchers as well as writers. Some define MSMEs in terms of their legal status and method of production, others attempt to use the capital assets, labour and turnover level.

In Nigeria, like other developing economies, the classification, in addition to “small” and “medium” includes “micro” scale enterprises. The definition of small-scale industries also varies from time to time and according to institutions. For instance, the Central Bank of Nigeria (CBN) (2011) defines a small or medium scale enterprises as any manufacturing or service enterprise whose business turnover does not exceed five hundred thousand naira (N500,000) and or the turnover did not exceed N5.0M. In the 1990 budget, the Central Bank of Nigeria (CBN) also defined small/medium scale enterprises, for the purpose of Commercial Bank Loans, as those enterprises with annual turnover not exceeding N500,000 and for merchant Bank loans, those enterprises with capital investments not exceeding N2m (excluding cost of land or a maximum of N5m) (CBN, 2011).

The National Policy on MSMEs adopts a classification based on the dual criteria of employment and assets (excluding land and buildings) by Small and Medium Enterprises Development Agency of Nigeria (SMEDAN, 2012) as follows:

From the literature reviewed so far, one can realize that most of the definitions in use depend on the purposes for which those definitions are required to serve and the policies which govern the MSMEs sector. However, for the purpose of this study, the definition used by the World Bank (2014) in conducting the survey, the dataset of which this study has applied, has been adopted. The World Bank (2014) defines a microenterprise as any enterprise with less than 5 employees; a small enterprise as an enterprise with between 5 and 19 employees; and medium enterprise as the one with between 20 and 99 employees. These definitions have been adopted for this study because, the dataset was collected on the basis of these classifications.

IV. THEORETICAL FRAMEWORK

Schumpeterian's (1934) Theory of Economic Development

A Theory of innovation is fundamentally a theory of change. Innovation research is typically concerned with understanding how innovation emerges, develops, grows, and how it is displaced by other innovations (Hockerts, 2003). Innovation studies regularly make citations on the work of Schumpeter (1934), which is the representative of the Austrian school of innovation theory. Schumpeter's (1934) theory of economic development delivers a broad interpretation of innovation. It comprehends the introduction of a new product, process method, the discovery of a new resource, material or semi-manufactured article, the conquest of new markets and building of new organization (Drucker, 1985).

Schumpeter's (1934) theory posits that innovation in business is the major reason for increased investments and business success. By innovation he means, the changes in the methods of production and transportation, production of a new product, change in industrial organization, opening up of a new market etc. The innovation does not mean invention rather it refers to the commercial applications of a new technology, new material, new methods and new sources of energy (Drucker, 1985).

Rogers' (1983) Diffusion of Innovation Theory

Rogers (1983) describes innovation-diffusion process as an uncertainty reduction process and he

proposes attributes of innovations that help to decrease uncertainty about the innovation. Attributes of innovations include five characteristics of innovations which are relative advantage, compatibility, complexity, trialability, and observability. Rogers (1983) argues that individual perceptions of these characteristics predict the rate of adoption of innovations. He defines the rate of adoption as the relative speed with which an innovation is adopted by members of a social system. That is, the number of individuals who adopted the innovation for a period of time can be measured as the rate of adoption of the innovation.

Uncertainty is an important obstacle to the adoption of innovations Rogers (1983). Innovation's consequences may create uncertainty. Consequences are the changes that occur in an individual or a social system as a result of the adoption or rejection of an innovation (Rogers, 1983). To reduce the uncertainty of adopting the innovation, individuals should be informed about its advantages and disadvantages to make them aware of all its consequences. Moreover, Rogers claimed that consequences can be classified as desirable versus undesirable (functional or dysfunctional), direct versus indirect.

In summary, Rogers (1983) argues that innovations offering more relative advantage, compatibility, simplicity, trialability, and observability will be adopted faster than other innovations. Getting a new idea adopted even when it has obvious advantages is difficult, however innovators should be prepared to cope with unprofitable and unsuccessful innovations, and a certain level of uncertainty about the innovation.

Review of Empirical Literature

In a study conducted by Jarji (2016) on the Impact of Innovation on Performance of Small and Medium Enterprises (SMEs) in Tanzania: A Review of Empirical Evidence, this explanatory study used a desktop methodology to investigate worldwide existing empirical study results on the relationship between

innovation and SME performance. The literature survey revealed that studies on innovation and its effect on performance have concentrated in Western, Middle, and Far East regions, with very little empirical evidence noticeable in Africa. The issue of innovation and how it relates to firm's performance, especially for SMEs, is therefore yet to be exhaustively explored.

The results from the review further found no consistent results on whether innovations altogether influence firm performance. The conclusion is therefore not generally viable. The nature of the empirical results reported in this paper indicates a need for such studies, especially in Africa, where the research gap is widely observed in this area. The paper is thus a wake-up call for empirical studies that assess the impact of innovation on SMEs performance in Africa and Tanzania in particular, where studies of this nature are rarely found in the review of literature conducted in this paper.

Egbetokun, A. and Adedayo, O. (2008) researched Innovation in Nigerian SMEs: types and impact. This paper sought to explore the types of innovation predominant in SMEs in developing countries and to investigate the impact of these innovations on different dimensions of firm performance based on an industry-wide innovation survey carried out in Nigeria in 2007. Although innovation is important for superior firm performance, their results found that the type of innovation that SMEs pursue is not a critical consideration in their performance. While there was no difference found in the focus of SMEs on either product or process innovations, evidence showed that SMEs would focus more on incremental product and process innovations. Incremental innovation was found to be very important for Nigerian SMEs and a significant predictor of product quality, but not of revenue. They recommend that SMEs choose to pursue such innovations that best fit their strategies and available resources. Such a level of innovation allows Nigerian SMEs to more extensively exploit the domestic market but cannot support extensive new product development required to

enter export markets.

Zeynep and Bahattin (2009) investigated the Impact of Technological Changes on Small and Medium Enterprises (SMEs) in Turkish Agri-Food Industry. This study clarifies some factors influencing the growth of the Turkish agri-food industry with the aim of identifying some technological changes and their impact within small-medium food enterprises in the last ten years. Information about these technological changes in the Turkish food industry was gathered through questionnaires and interviews. Some technological changes determined were enlarged capacity of utilization and market share, application of Information and Communication Technologies (ICT), expansion of production lines, use of new packaging systems, and participation of the workforce in process improvement. It was observed that the number of food enterprises, especially small and medium, have gradually increased over the years and tackled some problems related to processing issues, technological expansion varieties, some technological changes, and the factors responsible for technological changes in agro-food industries. The study also proposes how to increase the financial base of small-medium food enterprises.

Adeyeye, T. (2014) investigated the impact of technological innovation on organizational performance. The objectives of the study were to determine the relationship between strategic planning and marketing planning capabilities on organizational performance in the manufacturing industry. The study employed survey research. Primary data was used with a questionnaire as the research instrument. The subjects were 137 employees of Nestle Foods Nigeria Plc. The four hypotheses formulated for this study were tested using correlation, regression analysis, Pearson's Correlation, and Analysis of Variance (ANOVA), with the aid of Statistical Package for Social Sciences (SPSS). The findings from the study revealed that strategic planning and marketing capability independently and jointly influence

organizational performance. Also, there is positive interaction between performance variables (i.e., resource availability, staff quality, productivity, sales revenue, financial strength, public image, and goodwill). Based on the finding, it was recommended that there is the need for organizations to be innovative technologically to be competitive in the market. And companies should train their employees for better efficiency and effectiveness.

Model Specification
Based on empirical findings and theoretical frameworks, a model was developed to evaluate the impact of technological innovation on the performance of SMEs in Ilorin. This model aimsto centralize SMEs performance and assess how various technological innovations influence it.

The study regression model is as follows:
 $SMEs\ P=\beta_0+\beta_1CI+\beta_2MTI+\beta_3CSI+\varepsilon$

Where;
SMEs P = SMEs Performance
CI = Communication Innovation
MTI = Mobile Transfer Innovation
CSI = Computerized System Innovation
 β_0 = The intercept or autonomous parameter estimate

$\beta_0 - \beta_4$ = The slope of the coefficients of the independent variables to be determine
 ε = Error term

Decision Rule for Hypotheses Test
Accept null hypothesis if p-value is greater than 0.05 and reject null hypothesis if p-value is less than 0.05.

V. METHOD OF DATA ANALYSIS
This study employed quantitative research approach to establish the impact of technological innovation on the performance of small and medium scale enterprises in Kwara state. The target population consist of all the SMEs owners and employees in Ilorin metropolis. The bushiness selected for this study were chosen judgmentally based on their competitive nature and operational history at least for five years.

Given the known population size, the sample size was calculated using Taro Yamane's (1964) formula. The sample size of the study is 86 but the researchers increased the sample to 100 SMEs owners in Ilorin to reduce the effect of the default associated with questionnaire administration.

Data was collected through structured questionnaire. The questionnaire was pilot tested; validity of the instrument was tested by the use of experts' opinion while reliability was tested by split half method. Data collected were analysed by the use of both descriptive and inferential statistics.

Table 2: Descriptive Statistics

	Mean	Std. Deviation	N
SMEs Performance	3.6129	1.32724	93
Communication Innovation	3.2903	1.19401	93
Mobile Transfer Innovation	3.6129	1.29407	93
Computerized system Innovation	3.6667	1.30495	93

Source: Researcher’s Analysis, 2025

The mean result for the variables presented in table above shows that SMEs performance has a mean value of ($M = 3.6129$; $SD = 1.32724$). This indicates that SMEs performance as an indicator of the dependent variable has a moderate response rate, which implies that the participants had a good opinion expressed on SMEs performance in the organizations.

Communication innovation as an indicator of the independent variable has a mean value of ($M = 3.2903$; $SD = 1.19401$). This indicates that communication innovation has a moderate response rate, which implies that the participants had a good opinion expressed on communication innovation's effect on SMEs performance in Ilorin. The second indicator of independent

variable (mobile transfer innovation) has a mean value of ($M = 3.6129$; $SD = 1.29407$). This indicates that mobile transfer innovation has a good response rate, which implies that the participants had a strong opinion expressed on mobile transfer innovation and SMEs performance in Ilorin metropolis.

Finally, computerized system innovation has a mean value of ($M = 3.6667$; $SD = 1.30495$). This indicates that computerized system innovation as an indicator of the independent variable has a good response rate, which implies that the participants had a moderate opinion expressed on computerized system innovation on SMEs performance in Ilorin metropolis.

Table 3: Model Summary of Technological innovation and SMEs performance

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F change	
1	.682a	.579	.571	.43483	.579	104.380	3	89	.000	1.475

Source: Researcher's Analysis, 2025

a. Predictors: (Constant), Computerized system Innovation, Communication Innovation , Mobile Transfer Innovation

b. Dependent Variable: SMEs Performance

The multiple regression result on the overall model was evaluated in terms of its ability to predict SMEs performance in Ilorin. Table above showed that $R = 0.682$, $R^2 = 0.579$, adjusted $R^2 = 0.571$, $SD = 0.4348$. The multiple correlation coefficient between the predictors and the criterion variable was 0.682; the predictors accounted for 0.579 of the variance in SMEs performance in Ilorin

metropolis. The variance is explained by the model (Communication innovation, mobile transfer innovation and computerized system innovation). This means that the model explains 68.2% of the variance in SMEs performance in Ilorin metropolis in the organizations. This value indicates that the model is a good prediction of the dependent variable. Adjusted R square shows a better estimate of the true population to be 0.571.

Table 4: Summary of Regression Result

Hypothesis	Variables	Beta	t-value	P-Value	Decisions
H01	Communication innovation	.716	12.405	0.000	Rejected
H02	mobile transfer innovation	.325	6.010	0.000	Rejected
H03	computerized system innovation	.272	5.218	0.000	Rejected

Source: Researcher’s Analysis, 2025

developing countries.

As revealed in the above table, the t-value for communication innovation is 12.405 while the associated P-value is 0. 000. Since the p- value is less than 0.05 ($0. 000 < 0.05$), there is sufficient evidence to conclude that communication innovation has significant effect on SMEs performance. However, the null hypothesis (H01) is rejected.

Also disclosed is the t-value for mobile transfer innovation which is 6. 010, while the associated P-value is 0. 000. Since the p-value is less than 0.05 ($0. 000 < 0.05$), there is sufficient evidence to conclude that communication mobile transfer has significant effect on SMEs performance. Hence, null hypothesis (H02) is rejected.

Finally, computerized system innovation revealed a t-value of 5.218 while the associated P-value is 0.000. Since the P-value is less than 0.000 ($0.000 < 0.05$), there is sufficient evidence to conclude that computerized system innovation has a significant effect on SMEs performance. Therefore, the formulated Null hypothesis (H03) is reject and we conclude that computerized system innovation influences SMEs performance in Ilorin metropolis.

Discussion of Findings

The findings of this study indicate that communication innovation significantly impacts the performance of SMEs. This suggests that advancements in communication have enabled managers to enhance productivity levels within their enterprises. This aligns with the research by Abiodum and Adedayo (2008), which highlighted the importance of technological innovation as a key predictor of product quality for SMEs in

Additionally, the study found that mobile transfer innovation positively affects SMEs performance. The efficiency of mobile payment technologies has streamlined transactions, facilitating business operations and growth. This observation supports the findings of Adeyeye (2014), who explored the relationship between technological innovation and organizational performance, noting that technology and strategic planning collectively enhance performance in the manufacturing sector.

Furthermore, the research revealed that computerized system innovation also has a significant effect on SMEs performance in Ilorin. The integration of computerized systems into business operations is likely to improve transaction efficiency and overall management. This finding resonates with Jarji's (2016) study, which confirmed that technological innovation positively influences the performance of SMEs in Tanzania.

Overall, these findings underscore the critical role of various forms of technological innovation in enhancing the performance of SMEs, suggesting that investment in these areas can lead to substantial improvements in productivity and competitiveness.

Summary of Findings

This study investigated the effect of technological innovation on the performance of SMEs in Ilorin, Kwara State. The findings revealed that technological innovation significantly impacts SMEs performance. Specifically, innovations in communication, mobile transfer, and computerized systems have positively influenced productivity,

expansion, and effective management in these enterprises.

VI. CONCLUSION AND RECOMMENDATIONS

Based on the findings of this study, the following conclusions have been drawn. Technological innovation is a critical determinant of SMEs performance in Ilorin metropolis Communication innovation, mobile transfer innovation, and computerized system innovation each play a powerful role in enhancing the operational effectiveness of SMEs in Ilorin, Kwara State. Based on the conclusions of this study, the following policy recommendations are proffered:

Since the findings of the study indicates that technological innovation significantly impacts SMEs,

- i. Managers of SMEs should prioritize sustaining and investing in communication technologies to enhance market share and reduce operational costs.
- ii. Also, there is a need to consider computerizing their operations to minimize stock wastage, prevent loss, and mitigate financial and non-financial risks.
- iii. It is also recommended that SME managers provide more avenues for mobile transfers and online payments, as these can save time, reduce bad debts, and facilitate smoother transactions.

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