International Journal of Academic Management Science Research (IJAMSR)
ISSN: 2643-900X
Vol. 10 Issue 1 January - 2026, Pages: 202-207

Drivers Of Technological Transformation On Performance Of Small And Medium Enterprises In South-South Nigeria

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ABSTRACT: *In this 21st century, no organization performs optimally without being technologically compliance as well as move with the rapid change in technical know-how. The objective of this study is to ascertain drivers of technological transformation on performance of small and medium enterprises in the selected South-South, Nigeria. The specific objectives of the study are to examine the extent of the effect of technological change elements on organizational performance of small and medium scale enterprises, determine the extent to which technological change is engaged in marketing of goods and services of small and medium enterprises, ascertain the extent technological change affects staff training and discover the relationship between technological change and organization's technological capabilities. The analysis for this study was based on the sample size of 300 respondents. Stratified Sampling Technique was used to determine small and medium scale enterprises. The questionnaire was distributed evenly among the selected SMEs in the three (3) States of Delta, Edo and Bayelsa States respectively. Data was analyzed using mean and standard deviation to answer the research questions one to four. The t-test statistics was used to test hypotheses 1 to 4 at 0.5% level of significance. The findings of the study show that technological change is utilized to a high extent by entrepreneurs of small and medium scale enterprises to create enabling business environment in selected South-South States, Nigeria, marketing of goods and services, and advertising products and services on the internet, staff training. The study concluded that technological change helps to improve the organizational capability of small and medium scale enterprises in South -South states of Nigeria. The study recommended that educational institutions should incorporate digital courses in all levels of education to develop technical compliant workers at the point of employment.*

Key Words: Technological Transformation, Resource Capability, Learning Capability, Performance and SMEs

INTRODUCTION

Sustainable growth and profitability require technological change, adaptive control, and product innovation, these have tremendous impact on organizations' growth (Cepeda & Arias-Pérez, 2019; Azamela, Tang, Owusu, Egala, & Bruce 2022). Small and medium-sized firms (SMEs) contribute significantly to job creation and economic growth, owing to their innovative activities, which have become a key factor in determining competitive advantage and firm performance (Ussahawanitchakit, 2022).Technology transformation (innovation) are helpful in the increase of small and medium-sized businesses' economic performance in the world today. The fast changing business environment has made the SMEs to incorporate new technologies into them. These innovations have become a necessity for a technology oriented business which promotes economic competitiveness and entrepreneur welfare in the society. The SMEs of different sizes are interested in adopting technology thereby becoming potentially innovative (World Bank, 2025; Igwebuike & Iyadi, 2021).

Notably, SMEs serve as the production wheels for these countries' large-scale enterprises; SMEs serve as the impetus for accelerated economic growth and development. However, Nigeria has unable to achieve the much-anticipated quicker pace of economic development through SME (Awe, 2022). Small and mid-size enterprises (SMEs) are focusing more on using technology to spur growth, client value, and market differentiation in today's growing multifaceted world. As a result, these businesses are embracing innovative technologies for breakthrough change and diversification, which is eventually the case in a recovering global economy (Peter, 2021; Iyadi & Christopher, 2022). Despite government efforts, the sector's GDP contribution is still only 5%, which is low compared to other Sub-Saharan African nations where it averages 30% (World Bank, 2010; Iyadi & Egwuenu, 2017). The majority of businesses in Nigeria's manufacturing sector are small and medium-sized enterprises (SMEs). In addition, little research has been done on how to use technological improvements to increase the profitability of SMEs in Nigeria's South-South states. In the light of the above, the paper examined drivers of effect of technological transformation on the performance of Small and Medium Scale Enterprises in South-South States of Nigeria.

Statement of Problem

For any organization to succeed, it should be able to compete within its market, and attempt to outweigh other competitors in the international frontiers. The organization must imbibe the culture of innovation because of its importance as confirmed in many studies. Unfortunately, SMEs in the South-South states of Nigeria found it difficult to stand against its competitors from foreign countries. Due to technological advancements, local businesses are unable to compete with their overseas competitors in terms of

product quality and other marketing capacities. Although Nigeria's small and medium-sized business owners participate in survival - oriented business behaviour, there is a need to advance through global integration despite the fact that the local institutional framework is not consistently supportive. They should imbibe similar worldwide economic integration of small and medium-sized firms as other nations. The issue chosen for this study is how small and medium-sized businesses might be established to deal with the challenges of globalization in light of Nigeria's readily available infrastructure and utilities. As a result, the goal of this study is to evaluate how technological advancement has impact small and medium-sized firms' performance in South-South States of Nigeria.

Objectives of the Study

Generally, the objective of this study is to ascertain the effect of technological changes/innovations on the performance of small and medium enterprises in the selected South-South states of Nigeria.

The specific objectives of the study are to:

i. examine the extent of the effect of technological learning capability on the performance of small and medium scale enterprises in selected South-South States of Nigeria.
ii. investigate the extent to which technological resource capability improve organizational performance of small and medium scale enterprises in selected South-South States of Nigeria?

Research Hypotheses

The hypotheses of the study were formulated thus:

Ho_1: Technological learning capability has no significant effect on the performance of small and medium scale enterprises in selected South-South States of Nigeria.

Ho_2: Technological resource capability has no significant effect on the performance of small and medium scale enterprises in selected South-South States of Nigeria.

REVIEW OF RELATED LITERATURE

Conceptual Clarification

Technological Learning Capability

Technological learning capability is defined in different forms in the literature. According to technological learning capability is acquiring, harmonizing, and improving knowledge and capabilities and provides businesses with sustainable innovative capacity and business results. Assert that technological learning capability is the ability to develop and design new products and processes and to update information about the physical world in novel ways, therefore transferring this knowledge into designs and instructions for the production of desired outputs. According to Skare and Soriano (2021), the entire concept of technological capability may be connected to technological knowledge and the ability to develop new products or procedures while utilizing manufacturing know-how to achieve higher levels of efficiency. According to Usai et al. (2021), businesses are unique and differentiated by their technological prowess, which influences innovation a potential source of competitive advantage.

Technology Resource Capability

Technological resource capabilities are continuously evolving, improving the functioning of industries, and forcing firms to consider their options and search for potential development and innovation (Oliveira & Martins, 2021; Iyadi & Ojumude, 2023). Through the development of new, innovative products, services, and business processes leveraging emerging technologies, entrepreneurial ventures can significantly boost their chances of long-term success (Madsen, 2018). However, how companies choose to incorporate and apply digital resource technologies into their core operations and service delivery models greatly influences both their innovation capacity and overall growth potential (Nambisan, 2017; Iyadi & Oruakpor, 2023). Increased chances for new product and process innovations can result from the substantial support that digital tools and platforms can provide for organizational skill development, competence building, and knowledge creation initiatives (Roberts, 2022). Innovation depends heavily on a company's absorptive capacity, or its ability to identify the value of external information, assimilate it, and use it for business purposes. This capacity is strongly related to both internal and external knowledge access. Digitalization can strengthen absorptive capacity inside a company and raise the possibility of producing innovative solutions and operational improvements if it enhances knowledge identification, acquisition, and sharing mechanisms, for instance through big data analytics (Roberts et al., 2022; Iyadi, 2023).

Small and Medium Scale Enterprises Overview in Nigeria

The Federal Government of Nigeria has resolved to support SMEs' growth in domestic industrial operations in an effort to increase their economic impact and to ensure balanced industrial development. This aims to reposition the industry for global competitiveness as well as make it a source of export revenue (Ehinomen & Adeleke, 2022). In order to achieve this, technical innovation and involvement in R&D-related activities might further increase the productivity of SMEs. However, depending on their industry, size, goals, resources, locations, and the chances afforded by the business environment in which they operate, SMEs' ability for innovation greatly differs (Burrone & Jaiya, 2025).

Performance of SMEs

Whether at the individual, organizational, or system level, performance refers to the assessment of efficacy and efficiency in completing tasks, responsibilities, and objectives. Measurements and assessments are based on relevant criteria and benchmarks to promote success and continuous improvement. The organization's performance indicates its capacity to meet its long-term goals (Ughovero, Ogundare & Akparobi, 2021). Therefore, SME performance is the achievement of objectives by an organization with measurable value-added. According to Ogundare, Iyamabhor, and Ojieh (2023), firm performance is the result of the combined

efforts of all the firm's resources. According to Ughovero, Ogundare, and Akparobi (2021), performance is the ultimate goal that organizations aim to attain by developing strategies and making the best use of their resources. SMEs' performance may depend on a variety of factors, but considering the role that technology has played recently, it is an undeniable source of performance for businesses in the modern world. Based on the aforementioned claim, Ogundare, Iyamabhor, and Ojieh (2023) highlight that an organization's performance is contingent upon the effective integration of suitable technology. Accordingly, organizational performance has been impacted both directly and indirectly by the use of information technology (Ogundare, Iyamabhor & Ojieh, 2023).

Theoretical Review: Lewin's Change Management Model

In this study the Lewin (1951) proposed three steps for successful organizational change: Unfreezing: efforts to bring about change in the face of individual and societal resistance. Refreezing, which is the third phase, is described as "stabilizing a change intervention by balancing driving and restraining forces." According to the definition of movement, it is "a change process that transforms the organization from the status quo to a desired end state." In this regard, "Harper (2021) recommended that management must make sure that all pertinent stakeholders are given the chance to engage in collaborative decision-making and issue resolution if successful change is to occur." If change beneficiaries are more aware of the requirements and benefits of change, they could be less resistive to it. The third step, known as "refreezing," places a strong emphasis on the employer implementing new organizational procedures and duties. For this phase to be effective, employees must be acknowledged because incentive is a crucial factor. Reward is essential for behavior modification, and employees that adopt technological change should receive the proper recognition for their changed behavior. Skills, knowledge, and experience are needed to operate current systems and develop technical change from technological capacity. Lall (1992) asserts that technological competence is an ongoing process of acquiring and producing technological knowledge through interaction with the environment and the development of a firm's accumulated skills and knowledge. Bell and Pavitt (1995) acknowledge that managing internal changes in production technologies has an impact on efficiency in addition to the acquisition of external technology.

METHODOLOGY

The study used the descriptive survey research design method where sample data of investigation documented, described and explained what is existent or non-existent on the present status on discourse understudy. Information gathered from Corporate Affairs Commission, Abuja shows that there were 1251 fully registered Small and medium enterprises located in the three South-South, States, of Delta, Edo and Bayelsa. This is further distributed as follows 876 entrepreneurs of small scale enterprises and 375 entrepreneurs of medium scale enterprises. The sample for the study was deduced from entrepreneurs of small and medium scale enterprises in South-South States of Nigeria. Stratified Sampling Technique was used to determine small and medium scale enterprises. This is to ensure that sample elements have equal chances of being selected in order to achieve a corresponding and reliable result. Hence, the sample size for the study is 303 SMEs respondents from the selected south-south states. The questionnaire was distributed evenly among the selected SMEs in the three (3) States of Delta, Edo and Bayelsa States respectively. The questionnaire was divided into two sections; Section (A) contains questions relating to the respondents' personal profile, section (B) contains information on technological transformation. Sets of the structured questionnaire were given to some experts in the academia and entrepreneurial industry to carry out both face and content validity. This is to ensure that questions are simple and easily understood by the respondents. The study used a t-test analysis to ascertain whether all independent variables significantly influence the performance of SMEs.

RESULTS AND DISCUSSION

A total of 303 copies of questionnaire were distributed on the respondents, 303 copies were retrieved. Out of the 303 copies of questionnaire returned, 3 copies were not properly filled, thus the analysis for this study was based on the sample size of 300 respondents.

Table 1: Technological Learning Capability and Performance of SMEs (n = 300)

S/N	ITEMS	Very high extent	High extent	Low extent	Never	Mean	Std. dev.	Decision
1	Market technology turbulence and competitive intensity	130	136	40	6	2.69	1.12	HE
2	Stiff competition has been a threat to our business survival	233	134	113	32	2.76	.75	HE
3	Technological change poses fear to the survival of our business	272	158	65	17	3.53	.70	VHE
4	Intense competition compels SMEs to seek more information about customers' needs	223	192	69	28	3.11	.96	HE
5	An unsafe and unhealthy situation has caused low productivity	285	154	53	20	3.32	.84	HE

6	Environmental changes are continuously exerting new pressures	261	171	61	19	3.18	.88	HE
7	Consumerism serves as barriers to business growth and survival	252	173	73	14	3.36	.84	HE
8	Changing consumer behavior and income	257	168	70	17	3.30	.84	HE
9	Helps to develop and implement appropriate strategies	274	158	58	22	3.28	.82	HE
10	Technological change enhances collaboration and outsourcing	255	186	52	19	3.29	.83	HE
	GRAND MEAN					3.20	.92	HE

Source: Field study, 2026

Table 1 indicates that item 3 has the highest mean score of (x = 3.53). Its mean falls within the range of 3.50 – 4.00. This shows that both the small and medium enterprises view technological learning as a strategy to the survival/performance of their business, which in turn makes them run into huge investment in technical equipment and personnel and at the same time increase operating and production cost at the initial stage. Hence, any more improvement or change in the subsisting technology tends to increase more running cost.

Table 2: Technological Resource Capability and Performance of SMEs (n = 300)

S/N	ITEMS	Very high extent	High extent	Low extent	Never	Mean	Std. Dev	Decision
11	Need for a new type of decision making process	195	184	113	20	2.52	1.09	HE
12	Need for new types of managerial, diplomatic, and social skills	223	167	96	26	2.53	.99	HE
13	Increase in amount of market competition and uncertainty	150	206	126	37	3.07	.88	HE
14	More diversity and higher quality in the organization's products or services	144	165	166	47	3.14	.90	VHE
15	Increase in external politics and legislative reform in complexity	120	184	161	27	2.92	.88	HE
16	Reliance on computer-based techniques which demand a higher intellectual capability of managers	130	223	132	28	2.80	.93	HE
17	Greater requirement for strategic planning	120	249	115	28	2.74	.93	HE
18	Improved technical and networking skills	156	255	73	28	2.88	.85	HE
19	Improved and adequate human capital	116	150	106	140	2.10	.82	HE
20	Proper choice of technological change	125	156	113	118	3.04	1.12	HE
	GRAND MEAN					**2.57**	**1.09**	**HE**

Source: Field Study, 2026

Table 2 shows that items indicates that the small and medium enterprises in Delta, Edo and Bayelsa States have the organizational capability to adopt technological transformation. The grand mean of 2.57 was obtained for the cluster revealing that the selected states in South-South, Nigeria has the capability to embrace technological changes which will in turn enhance their productivity.

Data Analysis

Hypothesis one

Ho_1: Technological learning capability has no significant effect on the performance of small and medium scale enterprises in selected South-South States of Nigeria.

Table 3 T-test of Technological Learning Capability and Performance of SMEs

Enterprise	N	x	SD	Df	t	Sig (2-tailed)	Decision
Small	277	3.13	.92	510	-1.75	.08	Significant
Medium	235	3.28	.92				

Table 3 indicates that the calculated t-value 1.75 is significant at 0.08. This is because 0.08 is greater than 0.05. The null hypothesis not rejected. Hence, there is significant effect between the mean scores of small and medium enterprises in Delta, Edo and Bayelsa States on the involvement of technological learning in creating a robust business environment.

Hypothesis Two

Ho_2: Technological resource capability has no significant effect on the performance of small and medium scale enterprises in selected South-South States of Nigeria.

Table 4 T-test of Technological Resource Capability and Performance of SMEs

Enterprise	N	x	SD	Df	t	Sig (2-tailed)	Decision
Small	277	2.51	1.12	510	-1.30	.20	Significant
Medium	235	2.64	1.05				

Table 4 indicated that the calculated t value -1.30 and significant. This is because 0.20 is greater than 0.05. The null hypothesis is rejected. Therefore there is significant effect between the mean scores of small and medium enterprises in Delta, Edo and Bayelsa States on the extent of technological resource capability and performance of SMEs.

CONCLUSION AND RECOMMENDATIONS

Conclusion

Based on the study's findings, it is evident that small and medium enterprises (SMEs) widely recognize and utilize technological change to a significant degree in creating a favorable business environment. The results of the study underscore the positive impact of technological transformation on the production of goods and services within SMEs in the selected South-South States. Additionally, the study highlights the frequent utilization of technological change in staff training by SMEs. Moreover, the findings reveal that several organizations lack the necessary capabilities to adapt to technological change, affecting their business operations in the South-South State of Nigeria. In conclusion, the study confirms that SMEs in the selected South-South States possess the organizational capacity to embrace technological change.

Recommendations

Based on the findings, the following recommendations were made:

i. Educational institutions should incorporate digital courses in all levels of education to develop technical compliant workers at the point of employment.
ii. Government of South-South, States should subsidize the cost and tax of internet sales to reduce the burden of lack of fund on entrepreneurs.
iii. The internet providers should build in software that will facilitate delivery of goods through the internet.

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