

Technological Advancements' Effect on the Performance of Small and Medium-Sized Enterprises in Nigeria: A Case Study of Lagos State

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Abstract—This study examines how small and medium-sized businesses (SMEs) are affected by technology advancements, with a particular emphasis on their ability to adopt cutting-edge techniques for enhanced efficiency and better human and machine performance. The study, which used a descriptive survey research methodology, involved 153 managers and owners of SMEs in the Lagos State metropolitan area. The hypothesis testing, which employed a linear regression model as its primary statistical instrument, demonstrated that the organizational performance of SMEs in Lagos was significantly impacted by technological advancement. With a *p*-value of 0.000, below the 0.05 level of significance, the coefficient of determination ($R^2 = 0.566$) showed that technological development was responsible for 56.6% of SMEs' success. This implies that technology advancement has a favorable and considerable impact on the performance of SMEs in Lagos State. The success of technology-assisted change management depends on the recognition and appreciation of human resources, culture, and creativity. This will boost SMEs' performance both now and in the future. It will also prevent workers from unnecessarily opposing change by acting inappropriately at work.

Keywords— Change management, Technological development, SMEs, Innovation, Performance.

1. INTRODUCTION

1.1 Background

Technology is an external force that is so challenging to predict, leaving managers often perplexed about how to effectively plan for it, particularly in Small and Medium Enterprises (SMEs). In SMEs, where investing in technology is perceived as highly costly and expensive to manage, the dilemma is pronounced. Allocating significant funds for the acquisition of new technology implies a shift from manual (simple) to sophisticated and automated processes. Despite the potential for new business opportunities, technological change frequently demands extensive training and capital investment. Changes in technology, the marketplace, information systems, the global economy, social values, workforce demographics, and the political environment exert a profound impact on the processes, products, and services produced (Yoo and Yi., 2022). Due to the dynamic and unpredictable external environment brought forth by these pressures, organizations that are ill-prepared or unable of responding may encounter serious difficulties (Amaka and Onuoha, 2023). In SMEs

focused on manufacturing, reducing production slack time is crucial. Technological development is welcomed by service providers who depend on information and communication technology (ICT) to use internet facilities to speed up information processing for international networking. Adoption of new technologies sets dynamic firms apart, allowing them to surpass their competitors in competitive markets.

Higher-tech companies are under pressure to anticipate and position themselves for technological advances that are crucial to many different industries (Cascio and Montealegre, 2016). It is clear that the demand for control within the company and the desire to use the best external technology are at odds. Businesses with a deep comprehension of technological dynamics are better able to build the skills necessary to respond appropriately to changes in the market and environment.

A thorough grasp of technological evolution is crucial for anticipating or responding to technological change. Profitability and sustainable growth depend on innovative technology and watchful control viewpoints. Innovation has a big impact on organizational growth when it shows up as new goods and technology. Due largely to their innovative activities, small and medium-sized businesses (SMEs) play a significant role in economic growth and employment. They are also a major source of competitive advantage and firm performance (Ussahawanitchakit, 2012). The inability of managers to grasp new technologies and their potential, however, makes it difficult for them to take advantage of the opportunities they bring or use them as leverage against rivals (Bayo, 2019).

1.2 Statement of the Problem

Organizations often face obstacles that require modifications or changes (Hubbart, 2023). As part of expansion and restructuring initiatives or in response to novel development situations, development organizations go through change processes. The performance of staff members both individually and collectively affects the overall performance of SMEs (Jayaraj, 2023). In order to retain human talent, management must simultaneously develop creative ways to encourage the adoption of modern technologies. In order to generate the necessary investments and profitability, Nigerian entrepreneurs frequently choose technology that complements their company's goods and information processing capabilities, whether through automated or manual methods. This

propensity might result from worries about one's ability to manage the acquisition and upkeep of new technology advancements.

The overall socioeconomic climate, however, as well as adverse budgetary policies pertaining to local development and research into the manufacturing of vital machinery and equipment, continue to be shortcomings on the side of the government.

This study aims to give SMEs recommendations on how implementing new, creative approaches might improve human and machine performance, resulting in higher productivity through the use of new technologies. Adopting these innovative strategies for technological development would reduce dependency on antiquated (manual) techniques and move toward automated and more effective manufacturing processes that increase profitability and boost competitiveness internationally.

For organizational change to be successful, leaders must understand how crucial it is to go from a command-and-control management style to a nurturing and motivating leadership approach. Since each member must analyze the surroundings and choose which chances to investigate, it is imperative that they maintain a constant concentration. Furthermore, those who are expected to accept change are effectively investing their own energy in the project. It is crucial to allocate firm resources to educating employees about the upcoming change, convincing them of its benefits, and handling any opposition that may arise.

1.3 Research Aim and Objectives

The aim of this research is to study the role of technological developments on performance of Small and Medium-Sized Enterprises (SMEs) in Lagos State, Nigeria. It aims at gauging the extent to which involvement of technology in the conduct of business activities leads to growth, efficiency, competitiveness, and productivity of SMEs.

Research Objectives

- To assess the current level of technological adoption in SMEs in Lagos State.
- To determine the extent to which technological change influences SME performance metrics such as profitability, productivity, and competitiveness.
- To identify the major constraints limiting the adoption of advanced technologies among SMEs in Lagos State.
- To analyze the demographic and socio-economic factors that may influence technological uptake and performance outcomes in SMEs.
- To recommend practical solutions that can facilitate greater integration of technology into SMEs to improve performance and sustainability.

Research Questions

1. What is the extent of technological adoption in SMEs in Lagos State?
2. How does technological change influence the performance of SMEs in Lagos State?
3. What are the major constraints preventing SMEs from embracing technological advancements?

4. Do demographic and socio-economic characteristics influence how SMEs respond to technological change?

II. LITERATURE REVIEW

2.1 Conceptual Review

The theoretical background to the research is the dependence between advances in technologies and the performance of SME. The independent variable is technology which constitutes a wider range of innovations consisting of digital tools, automation, ICT integrations, modern manufacturing, and digital communication systems. These elements of technology impact on the dependent variable; SME performance that is measured by indicators of profitability, productivity, efficiency, market expansion, customer service betterment and competitiveness. In this context, the impact of the socio-economic as well as organizational aspects (e.g., education level, age, gender, and marital status and organization characteristics, e.g., the type of business, resources capacity and managerial competence) are significant moderating factors that can influence the intensity and focus of this connection.

The framework takes into consideration the dynamic environment facing SMEs and external forces influencing them, which include globalization, technological change and regulation policies. The readiness within the organization to technological change with regard to the capabilities of the human resources, the way the leadership handles issues and resistance to change is also highlighted in the conceptual framework. This is considered to be a feedback driven loop between the environment, inner aspects and technological change, which form a correlation or relationship that determines organizational outcome. Specifically oriented at this framework, the study gives the framework towards which technological innovation can be analyzed not in isolation but put in perspective of business systems, leadership behavior, human capital, and policy frameworks. The expected result is to come up with a multidimensional picture of the use of technology in enhancing performance but more so, the bottlenecks towards effective use of technology in SME in Lagos State.

2.2 Empirical Review

Management and Change

Change management, according to Chowdhury and Shil (2022), is the act of continuously updating an organization's capabilities, direction, and structure to meet the ever-evolving needs of both internal and external clients. According to Korir *et al.* (2012), change management is the proper handling of a business transition such that managers, executive leaders, and frontline employers collaborate to successfully implement the necessary organizational, technological, or procedural changes. Change management is becoming essential due to its significance and requires the right managerial approach and abilities.

When an organization announces change, its employees generally hope and feel that the results will be positive for them (Durowoju, 2017). According to the usual, the majority of workers anticipate success and believe their management would take their requirements into account. This also holds true for

novel concepts, innovations in technology, goods, or services. As a result, trust becomes crucial in influencing how workers feel, think, and behave in relation to the current transformation (Durowoju, 2017).

In today's extremely unpredictable and constantly changing business climate, a firm's ability to effectively manage change is actually essential to its survival, prosperity, and ability to remain competitive. Today's organizations are more conscious than ever of the significance of change management procedures. This systemic knowledge is a crucial component of an organization's performance (Samwel, 2018). Threats from competition and shifting employee demands forced organizations to use various production models and procedures than their current ones (Musaigwa, 2023).

Employees typically react defensively and oppose when the topic of change is brought up to them because they are afraid of it. It's crucial to remember that workers do not see change favorably. Their daily activities are disrupted by change, and they are forced to deviate from their usual schedule. They are uncertain of their future and feel intimidated. This causes emotional and mental instability, which frequently affects how well they perform. Employees are observed to have unpleasant emotions and struggle to cope with the repercussions of change during its implementation. The employees' demonstrated resistance stems from habitual and preconditioned subjection to which they were previously subjected in the workplace (Durowoju, 2017).

Small and Medium Enterprises (SMEs)

The Central Bank of Nigeria (2014) defines a small and medium-sized business as one that generates less than one million naira in revenue (Duworaju, 2017). The 2010 National Micro Small and Medium Enterprises Collaboration Survey, which was conducted by the National Bureau of Statistics (NBS) and the Small and Medium Enterprises Development Agency of Nigeria (SMEDAN), also defines SMEs in Nigeria by using two criteria: employment and assets (excluding land and buildings). According to this classification, micro enterprises are defined as businesses with a workforce of at least ten employees and total assets (excluding land and buildings) of less than five million naira. Medium-sized businesses are those that employ between 50 and 199 people overall and have total assets (excluding land and buildings) of at least 50 million naira but not more than 500 million naira.

Technological Change on Organizational Performance

Global attention is now being paid to technological transformation and how it affects workers. Regarding the effects of evolving technology on employment, there are differing opinions. According to some analysts, technological development is happening at an accelerated rate, and as labor-saving innovations spread, thousands of workers in offices and factories are impacted (Malik, 2021). Others argue that methods for preserving job stability were crucial, and that contemporary improvements mark a significant shift from past developments.

Every group in a society benefits from technological progress, and it is generally accepted that technology eventually generates more employment than it destroys, particularly in small and medium-sized businesses. Throughout human history, worries about evolving technology have persisted,

typically growing during times of higher-than-normal unemployment and then slightly subsiding (Mark, 2010). Global emphasis is now being paid to technological transformation and how it affects the workforce. Computer-assisted design (CAD), computer-assisted manufacturing (CAM), industrial robots, flexible manufacturing systems, and sophisticated communication networks are some of the developments (Durowoju, 2017).

According to Mashau and Ramraj (2016), these contemporary technologies include potent and reasonably priced microelectronic devices that could boost efficiency in office and manufacturing operations. Before it reaches the subordinates, CEOs must set an example for the intended change by their actions toward problems, clients, workers, and stakeholders. This needs to be done methodically and progressively. SMEs may overcome production-related issues and integrate human, technical, and conceptual skills to manage change in a dynamic corporate environment by investing in technology (De Mattos *et al.*, 2023).

2.3 Theoretical Review

According to the Technology Acceptance Model (TAM), the acceptance of a new technology by an individual or an organization will majorly depend on two variables namely perceived usefulness and perceived ease of use. Perceived usefulness in the context of the SMEs in the Lagos State would be the perception as held by entrepreneurs and managers about how technology would improve the performance of their businesses including the ability to improve on the extent of reach on their customers, ease of production or management of finances. Perceived ease of use has to do with the ease of implementing the new technology and using it. In its model, it is assumed that SMEs are more likely to embrace the use of technology when they view technology as being useful and easy to use. The contextual factors however tend to alter these perceptions a liberal amount including cost of the adoption process, complexity of the technology, existing technical assistance, and the competence of the workforce. Thus, the TAM assists to clarify why some SMEs accept technology and others either resist or are limited.

Parallel to TAM, the Rogers theory of diffusion of innovation gives a wider sociological and organizational view. It describes the process, reasons and how fast emerging technologies are diffused within social systems. Rogers locates 5 main categories of adopters which are innovators, early adopters, early majority, late majority and laggards. It is possible to plot SMEs in Lagos State in this continuum based on how exposed they are to emerging technologies, their appetite to take risks and how they are responsive to market forces. This theory underlines the fact that diffusion is not merely technological and economic process but a social process and cultural norms, leadership, peer influence and channels of communication are keys that influence diffusion. This theoretical framework is especially valid when viewing the incidence of resistance to change prevalent among SME workers and managers as reported in the literature review. It also has a foundation that may explain the role education and

demographic characteristics play in the process of defining technologically integration pace and success.

III. METHODOLOGY

3.1 Research Approach

A pragmatic philosophical position was used to inform the methodology behind this study with the understanding that the only way mixed methods can be used to effectively respond to difficult research questions based on SMEs and technological change. The research strategy that was used by the study was that of quantitative research and this therefore fitted well in determining the level of the correlation of the variables which in this case are the relationship between technological advancements and SME performance. The descriptive survey design expanded the capacity to acquire numeric data consisting of a size and diverse sample size in six Local Government Areas (which included Ikorodu, Ibeju-Lekki, Alimosho, Oshodi-Isolo, Amuwo-Odofin, and Lagos Mainland) in Lagos State. This was because the choice design gives a guided means to explain the state of a phenomenon at a given moment in time and can be applicable to develop patterns and associations between variables.

Under research approach, the study involvement employed the deductive approach where existing theories and frameworks were tapped to test certain hypotheses on the effects of technology on SME performances. The structured questionnaire that was employed in the collection of data was conducted on closed-ended questions with reference to a five-point Likert framework. The study population was made up of 4,535 registered SMEs of which 1,080 questionnaires (180 consisting of a total of 20 churches selected in each LGA) were supplied and 153 valid responses were collected researched and its response rate obtained as 14.2 percent.

3.2 Research Timeline

The study dates were between January and August of 2022. The stages were as follows: literature search and concept conceptualization (January-March), instrument construction and pilot-testing (April), data collection (May-June), data cleaning and analysis (July) and results and discussion writing (August). Ethics was applied and confidentiality of the respondents also guaranteed.

3.3 Data Collection

A descriptive survey research design was used in the study. Five Likert-type scale measures were employed to collect data from a well-structured questionnaire: 1 denoted highly agreeing, 2 agreed, 3 indifferent, 4 disagreed, and 5 strongly disagreeing. 4535 registered SMEs from six Local Government Areas in Lagos State (*Ikorodu, Ibeju-Lekki, Alimosho, Oshodi-Isolo, Amuwo-Odofin, and Lagos Mainland*) make up the study's population (Lagos State Ministry, 2014). In each Local Government Area, 180 SME owners were given the questionnaires. For data analysis, 153 copies of the surveys were valid. The study instrument's validity was tested using content validity, and its reliability was demonstrated by the internal consistency result (Cronbach alpha was 0.75). To test

the hypothesis, the study employed both descriptive and inferential statistics.

3.4 Data Analysis

There was descriptive and inferential statistical analysis of the data. Descriptive statistics was applied to demographical characteristics and mode of response. Regression analysis was also conducted as part of the inferential statistics with the measurement of the strength of relationship between technologic change and performance of SMEs given as the coefficient of determination (R^2). Also, a statistical analysis of the model in terms of statistical significance was of an Analysis of Variance (ANOVA) carried out. The internal consistency of the research tool was 0.75 which was an indication of the Cronbach alpha reliability score. The finding of the p-value (0.000) and values of F-statistics further proved the alternative hypothesis which said technological advances contribute significantly to the performance of SMEs in Lagos State.

IV. RESULTS

a. Demographic and Socio-economic Characteristics of the Respondents

The results obtained from demographic and socio-economic characteristics of the respondents on sex, age, marital status, and educational background were presented in Table 1. The total numbers of the respondents interviewed were 153 people.

Gender

The results of the sex of the respondents are shown in Table 1. The results showed the male had 45.1% and female had 54.9% in the selected Local Government Areas. This implies that women made up the majority of responders in the research location. These results ran counter to Adeola's (2022) findings on the effects of technical innovation on the performance of SMEs in Ogbomoso North Local Government, Oyo State, which showed that men made up 66.7% of respondents and women made up 33.3%.

Age

The result of the age groups of the respondents in the selected communities as shown in Table 1 in the categories of 20-29 years, 30-39 years, 40-49 years, and 50 years and above were 20.3 %, 44.4 %, 26.8%, and 8.5 %, respectively. This demonstrated that young people made up the majority of responders in the chosen Local Government Areas. The results of Adeola's survey report from 2022, which focused on the effects of technological innovation on the performance of SMEs in Ogbomoso North Local Government, Oyo State, and included young respondents, were comparable to these findings.

Marital Status

Table 1 shows that the result of the respondent's marital status where 60.1% were single, and 39.9 % were married. This was consistent with research by Adeola (2022) on the effects of technical innovation on the performance of SMEs in Ogbomoso North Local Government, Oyo State, which found that 63.3% of respondents were single and 36.7% were married.

Educational Background

The results of the educational background of the respondents in the selected LGAs are presented in Table 1. The

results revealed highest percentage of the respondent were educated (59.5%), while the respondents with no formal education were (40.5%). All of the respondents were educated, and this result was comparable to Adeola's (2022) findings on the effects of technical innovation on the performance of SMEs in Ogbomosho North Local Government, Oyo State.

b. Impact of Technological development on small and medium businesses' performance

The degree to which technological development improves the performance of SMEs is demonstrated by the model summary in Table 2. According to the coefficient of determination ($R^2 = 0.566$), technical change accounts for 56.6% of the success observed in the performance of SMEs. The report by Adetowubo-King *et al.* (2023) on the connection between technical advancements and SME performance metrics in Lagos State was comparable to our finding.

This result is statistically significant because the p-value of the result (0.000) is less than 0.05 level of significance used for the study (Table 4). This indicates that technological change has a positive and significant impact on SMEs performance in Lagos State.

The ANOVA value F of (3.90) while the calculated F value is (8.866) (Table 3), at the degree of freedom of 151 showed that technological change has a positive and significant impact on SMEs performance in Lagos State since the F value is lesser than F calculated. This was consistent with Durowoju's (2017) findings regarding how technological development affected the performance of SMEs in Lagos State. According to the study, technological development significantly and favorably affects the performance of SMEs; the coefficient of determination (R^2) suggests that technical change accounts for a sizable amount of the success observed in SMEs' performance.

TABLE 1: Demographic and socio-economic characteristics of the respondents

Gender	Frequency	Percentage (%)
Male	69	45.1
Female	84	54.9
Age		
20 - 29 years	31	20.3
30 - 39 years	68	44.4
40-49	41	26.8
50 and above	13	8.5
Marital status		
Single	92	60.1
Married	61	39.9
Educational Background		
MSc/ MBA	13	8.5
BSc/HND	19	12.4
OND/NCE	28	18.3
SSCE	31	20.3
No formal education	62	40.5

Source: Field Survey, 2025

According to the model, SMEs' performance improves by 0.226 percent for every unit improvement in technology (Table 4). This suggests that the expansion and development of SMEs

depend heavily on technological advancement. Consequently, the alternative hypothesis was accepted and the null hypothesis was rejected.

Hypothesis

Change in technology does not have an impact on Small and Medium Enterprises Performance

TABLE 2. Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	F
1	.752 ^a	.566	.521	.46937	5.639

a. Predictors: (Constant), technological change

TABLE 3. ANOVA^a

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	9.755	1	9.755	8.866	.003 ^b
Residual	166.146	151	1.100		
Total	175.901	152			

a. Dependent Variable: SMEs Performance

b. Predictors: (Constant), technological change

TABLE 4. Coefficients^a

Model	Unstandardized Coefficients B	Std. Error	Standardized Coefficients Beta	t	Sig.
(Constant)	3.787	.388		9.762	.000
Technological Change	.226	.076	.235	2.978	.003

a. Dependent Variable: SMEs Performance

V. DISCUSSION

a. Overview of Findings and Their Significance

As supported by the statistical results of the research, there is a strong and clear relationship between technological advancement and SME performance within Lagos State and the regression analysis shows a coefficient of determination (R^2) of 0.566. This means that technological change explains around 56.6 percent of the difference that is exhibited in performance across SMEs, which is a high value in terms of organizational studies. This conclusion is quite illustrative as to how even in the current business ecosystems, technology has been able to take centre-stage, particularly in the emerging economies where SMEs form a very crucial pillar of economic growth and livelihood. The statistical significance ($p = 0.000$) and the positive regression coefficient support the hypothesis according to which the technological advancement is a significant predictor of the improvement of the SME productivity, operating efficiency, and the competitiveness on the market.

This finding resonates with the positions used by Yoo and Yi (2022), who insisted on the strategic importance of predicting and orienting business activities to the rapid changes in technologies. Moreover, Cascio and Montealegre (2016) have built upon the fact that through the integration of technology, organizations are better placed to go along the challenges of making incursions in the modern markets to streamline the process, increase quality, and enhance responsiveness through the use of innovations (De Mattos *et al.*, 2023). What this means is that the Nigerian SME market especially that of Lagos State is not immune to the technological changes occurring across the world and that there

is need to ensure that the organisation aligns itself with the trends to be successful.

b. The Technology- Based Competitive Advantage

The fact that technology has a positive correlation with firm performance gives first-hand evidence that the SMEs cannot continue using manual or obsolete operational systems anymore. Rather, they should adopt technological innovation as a facilitator of competitive advantage. The parameters of success increasingly depend on the organizational agility, its adaptability, combined with the capability of using digital tools to streamline resources and access new markets, which are shaping up in the present-day business environment (Yoo and Yi, 2022). This paper confirms the fact that technology makes information processing faster, enhances decision-making, minimizes slack time, and will make it easy to engage customers, which can affect profitability and productivity (Bayo, 2019). These findings have therefore affirmed that technology is not merely an enabling utility but rather it is the focal point of strategic performance. The significance of this finding cannot be dismissed amid the problems small business encounter when operating in a resource-limited auction like in Nigeria where the cost of adoption of technology is usually quite high and the infrastructures are poor and usually a major obstacle.

Nevertheless, evidence points to the likelihood that companies able to successfully break such barriers either by financial outlays or by creating innovative applications of available low cost technologies are likely to experience actual increases in performance metrics. This agrees with the assertion by Amaka and Onuoha (2023) who maintain that SMEs with a fit level of understanding on technological evolution would better be able to develop the dynamic capabilities necessary to adapt and leverage market related opportunities.

c. Leadership, Change Management, and Organizational Readiness

Among the fundamental discussions that arise out of the findings, one is associated with the interaction of the leadership style, change management, and the application of technologies. As it was pointed out in the literature review, technological change is met with resistance by many employees that are afraid of disruption, uncertainty, and heightened performance expectations (Durowoju, 2017). Such a finding is supported by this study, especially given the fact that leaders in SMEs have to be nurturing and empowering during the introduction of technological changes as opposed to being authoritarian. Effective deployments of new technologies do not come simply as a question about obtaining equipment or systems; rather, it is an enterprise-wide preparedness and in a sense, the psychological-emotional preparedness of personnel.

The leadership should thus be transformational one that motivates the workers, builds trust and actively engages them in the change process. Where this is not attained, the best of the technological tools are likely to fail as a result of slow adoption speed, mobilisation or improper use. As stressed by Samwel (2018), it is imperative that today organizations have to create systems of knowledge and internal organizational culture

sensitive to change. As such, the technology has to be implemented not as the disruptive outside strength but as the empowering and enabling opportunity that workers will be ready to receive by means of sufficient training and the support systems of constant character. An important implication of such findings is the change of leadership styles of the traditional control models to collaboration and motivation.

d. Socio-demographic Factors Influencing Technology Adoption

Another interesting consideration about the results is the socio-demographical breakdown; as shown in the results the respondents were predominantly female (54.9%), young (30-39 years old at 44.4%), single (60.1), and surprisingly, 40.5 percent do not have formal education. Such tendencies give important information about the human aspect of acceptance of technology. On the one hand, it is important to note that the respondent population is young, and this fact can be attributed to the existence of a generational willingness to adopt technology that patterns in Australia along with the rest of the world indicate younger people are more willing to learn and adopt technology in general as they are usually more experimenting and comfortable with digital processes. This is comparable to the early adopter character as outlined within the theoretical lens of the innovation diffusion.

Nonetheless, the large number of the respondents having no formal education presents a major hurdle to the effectiveness of technology. The lack of digital literacy and technical knowledge is a floor that must be considered against even the most innovative tools and this problem needs to be noted and fixed.

Whereas, there can be informal use of technology, e.g. mobile phones to be used in transactions, or to communicate, more complex applications of technology like an accounting system, supply chain or CRM systems would need a structured training. Thus, it is clear what policymakers can do with this implication; to implement the benefits of technology in SME performance, interventions should be customized to deal with digital exclusion. More basic, vernaculars-driven, or visual-centric digitalised solutions may work with less qualified business owners. Moreover, government and NGO projects should not only be limited to providing equipment, but should have context-sensitive, practical, and expandable training modules as well.

e. Policy, Finance, and Institutional Implications

Findings also reveal institutional and policy-related deficits that have to be filled in case of SMEs to integrate technology in their conduct. Financial constraints were cited by the respondents as one of the major problems, and this is in line with current research on SMEs showing that they do not usually have access to cheap credit or loan conditions put forward by the banks are exorbitant. Consequently, the conclusion made in the study is justified since it proposes that financial institutions (especially SMEs that want to invest in technology) should be compelled to lower the required levels of collaterals and interest rates (Bayo, 2019). Giving technical assistance is also imperative, although it is being ignored especially when addressing financial solutions. The information supports that

performance based on technology is substantial when there is a commensurate technical potential to use it.

Therefore, it is important that the public policy be a two-fold entity allowing citizens to become included in the financial environment and, at the same time, contributing to the development of knowledge infrastructures. Additionally, the study recommends the low tax regime on SMEs that will release funds to invest in technological innovation.

This is crucial due to the absence of local production of machinery and software, so, SMEs have to frequently depend on imported equipment that makes them incur extra expenses. The need to have better infrastructure also exists like stable electricity and internet connections without which the benefits of technology cannot be achieved (Yoo and Yi, 2022). The problem is not the exclusive reserve of the private sector as it involves concerted effort of all stakeholders including government, academia and the private sector to develop an ecosystem of support towards SME innovation.

f. Strategic and Practical Implications for SME Owners

Lastly, owners of SMEs should also be advised to reconsider their business models according to technological opportunities. These findings imply that a low-level involvement of technology such as automated record keeping, mobile banking or digital marketing can also translate into a visible rise of the performance. The use of technology must therefore not be considered as either an all or nothing confinement for investment but more of a spectrum with a slow uptake being feasible and actually favorable. Owners of SMEs are advised to carry out audits on the current norms of their business operations to determine how technology may save them money, improve on speed or customer satisfaction levels. They should also cultivate organizational culture which condones experimentation, life-long learning and being innovative.

Some of the grassroots plans that may unleash innovation without becoming excessively reliant on external assistance include group brainstorming on upcoming technologies, peer-to-peer training, and establishment of SME cooperatives involving the transfer of technologies. This internal strategic orientation is pivotal to sustainability especially when the government interventions are inconsistent and slow in arising.

VI. CONCLUSION AND RECOMMENDATIONS

a. Conclusion

Small and medium-sized businesses (SMEs) should be eligible for lending facilities from financial institutions with reasonable interest rates and less collateral requirements. Technical assistance is just as important as financial support for SMEs, yet it is frequently disregarded or misinterpreted. Taxes levied against SMEs should be lowered in order to support technical advancements in the manufacturing of goods and services. Small and medium-sized businesses' ability to innovate is hampered by a lack of imagination and a fear of the unknown, which makes them less competitive in the global technology business environment.

Competent human resources need to be developed to contribute to and manage the acquisition of new technologies

when obsolete machines and equipment are replaced in SMEs. It is important to have team discussions regarding technology, new methods of doing things, and the need for qualified human resources. By using this method, management's goals for change action are no longer misrepresented. People impacted by organizational change must make logical and collaborative decisions in response to emotional and novel ways of thinking, particularly when utilizing technology.

In order to reduce antisocial behavior that could go against established norms and have detrimental effects on the organization and its members, managers should embrace a new strategy that blends human efforts with modern technical advancements. Opportunities like more jobs, foreign exchange, and capital inflow are brought about by technological advancement.

b. Recommendations

Therefore, the study suggests lowering taxes on SMEs to encourage their adoption and acquisition of technology and pressuring financial institutions to offer loan facilities with low collateral requirements and reasonable interest rates so that SMEs can purchase the equipment they need to produce goods and services.

Author Contribution

Adebowale Oluwaseun Osunbade: conceptualization (equal); initial draft writing (lead); writing, review and editing (lead). Olaleye Arulogun: Conceptualization (equal); Writing-original draft (supporting); Writing, review and editing (supporting). Oluwatoyin Abayomi Amuda: Conceptualization (equal); Writing-original draft (supporting); Writing, review and editing (supporting). Israel Olaniyi Bamisaye: Conceptualization (equal); Writing-original draft (supporting); Writing, review and editing (supporting).

Conflict of Interest

In this work, the authors declare that they have no competing interests.

Ethical guidelines

This study does not require ethical approval.

REFERENCES

- [1]. Adetowubo-King, S. A., Oladipo, O. T and Olatoye, A. O. (2023). Strengthening the Impact of Technological Changes on the Performance of Small and Medium Enterprises in Lagos State, Nigeria: Strengthening the Impact of Technological Changes on the Performance of Small and Medium Enterprises. *Covenant Journal of Business and Social Sciences*, 14(2), 16. Retrieved from <https://journals.covenantuniversity.edu.ng/index.php/cjbss/article/view/4305>
- [2]. Amaka, A. I and Onuoha, B. C (2023). External Environment Dynamism and Organizational Adaptability of Manufacturing Firms in Rivers State, *International Journal of Business, Economics and Entrepreneurship Development in Africa*, 13(11):108-122,
- [3]. Bayo, P. L (2019). Technological Challenges in Management of Organizations. *International Journal of Business & Law Research*, 7(2):99-111
- [4]. Cascio, W. F and Montealegre, R (2016). How Technology Is Changing Work and Organizations, *Annu. Rev. Organ. Psychol. Organ. Behav.* 3:349-75

- [5]. Chowdhury, A. and Shil, N.C. (2022), "Understanding change management in organizational context: revisiting literature", *Management and entrepreneurship: trends of development*, 1(19), 28-43. Available at <https://doi.org/10.26661/2522-1566/2022-1/19-03>
- [6]. De Mattos, C. S., Pellegrini, G., Hagelaar, G and Dolfmsa, W (2023). Systematic literature review on technological transformation in SMEs: a transformation encompassing technology assimilation and business model innovation. *Management Review Quarterly*, 74(4). DOI: 10.1007/s11301-023-00327-7.
- [7]. Durowoju, S. T (2017). Impact of technological change on small and medium enterprises performance in Lagos State, Economic and Environmental Studies (E&ES), ISSN 2081-8319, Opole University, Faculty of Economics, Opole, 17,743-756, <https://doi.org/10.25167/ees.2017.44.7>
- [8]. Hubbard, J. A (2023). Organizational Change: The Challenge of Change Aversion. *Administrative Sciences* 13: 162. <https://doi.org/10.3390/>
- [9]. Jayaraj, P (2023). Exploring Employees Job Performance of Small and Medium Size Enterprises. *Journal of Informatics Education and Research* 3(2):480-487
- [10]. Malik, A (2021). The Impact of Technology on Organizational Effectiveness: An Empirical Study of Leading Organizations, *Journal of Cardiovascular Disease Research*, 12 (5):3058-3067
- [11]. Mashau, P and Ramraj, A.B (2016). The effect of modern office technology on management performance: Durban Westville. *Problems and Perspectives in Management*, 14(2):376-384 and 260-261. DOI: 10.21511/ppm.14(2-2).2016.13
- [12]. Musaigwa, M (2023). The Role of Leadership in Managing Change. *International Review of Management and Marketing* 13(6):1-9. DOI: 10.32479/irmm.13526
- [13]. Olajide, O. T (2014). Change management and its effects on organizational performance of Nigerian telecoms industries: Empirical Insight from Airtel Nigeria. *Career Development International*, 6(2): 111-118.
- [14]. Samwel, J. O (2018). An Assessment of the Impact of Performance Management on Employee and Organization Performance-Evidence from Selected Private Organizations in Tanzania. *International Journal of Human Resource Studies*, 8(3):199. DOI: 10.5296/ijhrs.v8i3.13415
- [15]. Ussahawanitchakit, P. (2012). Administrative innovation, technical innovation, competitive advantage, competitive environment, and firm performance of electronics businesses in Thailand. *Strategic Management Journal*, 31(8): 892-902.
- [16]. Yoo, I. and Yi, C.G (2022). Economic Innovation Caused by Digital Transformation and Impact on Social Systems. *Sustainability*, 14, 2600. <https://doi.org/10.3390/su14052600>