

Impact of Digital Transformation on the Sustainability of Small and Medium Enterprises in Lagos State, Nigeria

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ABSTRACT

SMEs face numerous challenges in adapting to rapid technological advancements, particularly in the realm of digital transformation meanwhile; sustainability has highlighted the urgent need to reduce the negative environmental impact on human activity. This study investigates the extent at which digital transformation impacts the sustainability of SMEs in Lagos State, Nigeria. The study adopted quantitative approach utilizing e-survey (online) to collect relevant data for the research with focus on SMEs in Lagos (the commercial capital of Nigeria). The target population comprises of 11,663 registered SMEs in Lagos State. This number forms the total population of study. The sample size was determined at 95% confidence level given the sample size of 372. SPSS version 27.0 was used to analyse the data such as correlation, multiple regression analysis and ANOVA were used, and hypotheses were tested using multiple regression approaches to ascertain the impact of digital transformation on SMEs sustainability. The study found that, digital infrastructure and organisational readiness are key enablers, whereas digital skills, adoption of innovations, and external support have weak or unstable effects as indicated from the outcome of the findings. Conclusively, the results provide strong evidence that digital transformation is a crucial factor in the sustainability of SMEs in Nigeria. The study recommended for policymakers that there is need to combine infrastructural investment, capacity-building, and supportive institutional frameworks. While for Lagos SME leaders, the results affirm the necessity of aligning internal processes and readiness with external digital opportunities to secure long-term sustainability.

Keywords: Digital Infrastructure; Digital Skills; Innovation Adoption; Organisational Readiness; SMEs Sustainability.

1. INTRODUCTION

Sustainability has emerged as a critical concern, sparking intense discussions within the business community and highlighting the urgent need to decrease the negative environmental effect on human activity. According to Egala et al. (2024), small and medium enterprises (SMEs), often regarded as the backbone of global economies, play a vital role in driving economic development and the recent evolution of the business landscape and the increasing prevalence of digital technology has led to many SMEs embracing digital transformation. According to the World Bank Group (2022), SMEs account for the majority of businesses and employment worldwide. They are key contributors to innovation, job creation, business continuity, profitability, resilience, and overall economic stability. Despite their significance, SMEs face numerous challenges in adapting to rapid technological advancements, mostly in the realm of digital transformation. Unlike large corporations that can readily invest in advanced technologies and infrastructure, SMEs often struggle with limited financial resources, a shortage of skilled labor, and organisational resistance to change (Ghobakhloo, 2020).

Digital transformation is the incorporation of digital technologies to every facet of a business, including operations, customer engagement, and/or organisational structure. For small and medium enterprises (SMEs), it represents not only an opportunity to streamline processes but also a strategic necessity to remain competitive in an increasingly digital global economy. As noted by Khin and Ho (2019), successful digital transformation in SMEs depends on factors such as access to quality ICT tools and internet connectivity, the digital literacy of employees and management, the use of e-commerce, alignment of business strategies with digital trends, supportive government policies, financial assistance, and market dynamics. By adopting digital technologies, SMEs can significantly enhanced their customer and supplier networks, explore innovative business approach, and evaluate operations, products, and services which ultimately driving value creation and revenue growth. Furthermore, technological adoption enables increased mobility and cross-border trade, while fostering stronger interconnectivity among SMEs, particularly within regions such as Lagos State.

As explained in a report by McKinsey (2023), digital transformation is the fundamental rewiring of how an organisation operates. The report further stressed that digital transformation is very important for business organisations to sustain competitive advantage. Small and medium enterprises (SMEs) are widely known as vital contributors to economic growth, job creation, and poverty alleviation in Nigeria. Despite their significance, a large percentage of Nigerian SMEs face challenges that threaten their long-term sustainability. One of the most pressing challenges in recent years is the need to adapt to digital transformation, a shift accelerated by globalization, technological advancement, and more recently, the COVID-19 pandemic.

Digital transformation, which includes the adoption of platforms, digital tools and processes, offers immense potential for SMEs to improve productivity, reduce operational costs, enhance customer experiences, and access new markets. However, the pace of digital adoption among Nigerian SMEs remains slow and uneven. Many SMEs still operate with minimal digital infrastructure, often due to limited financial resources, lack of digital literacy, inadequate government support, poor internet connectivity, and infrastructural deficits.

This gap between potential and reality poses a significant threat to the sustainability of SMEs in Nigeria. In a highly competitive and rapidly evolving business environment, failure to embrace digital transformation could lead to reduced competitiveness, market exclusion, and eventual business failure. Moreover, existing literature on the relationship between digital transformation and SME sustainability in Lagos State, Nigeria is limited, creating a knowledge gap that hampers evidence-based policymaking and effective intervention strategies. Therefore, there is a critical need to investigate the extent to which digital transformation impacts the sustainability of SMEs in Lagos State, Nigeria, the barriers hindering digital adoption, and the strategic measures that can be implemented to foster a more digitally resilient SME sector.

Hypotheses

H₀₁: Digital infrastructure does not have significant effect on SME's sustainability in Lagos State

H₀₂: Digital skills have no positive and significant effect on SME's sustainability in Lagos State

H₀₃: Innovation adoption does not contribute significantly to the effect of SME's sustainability in Lagos State

H₀₄: Organisational readiness has no significant effect on SME's sustainability in Lagos State

H₀₅: External support does not have significant effect on SME's sustainability in Lagos State

H₀₆: Digital transformation dimensions have no positive and significant effect on sustainability of SMEs in Lagos State

2. LITERATURE REVIEW

2.1. Conceptual Review

Due to the heterogeneous nature of small and medium enterprises (SMEs), in the existing literature globally, there is no accepted definition (Morakanyane et al., 2017; Dlamini et al., 2020). This lack of consensus stems from the varied perspectives of stakeholders such as governments, business leaders, academics, and policymakers (Nyathi et al., 2018). Countries and institutions often use different quantitative criteria including business size, number of employees, annual turnover, assets, and development stage to define SMEs. In some cases, the definition is shaped by specific government legislation. As a result, it is challenging to encapsulate the full scope of SMEs within a single, standardized description. Despite definitional differences, SMEs are widely recognized as key drivers of global economic growth, employment, and innovation, Egala et al., (2024). However, their long-term sustainability has become an increasingly critical issue, especially under growing environmental, social, and economic pressures. In the context of

SMEs, sustainability extends beyond financial performance. It encompasses business resilience, environmental stewardship, and the creation of social value. Sustainability in SMEs refers to their capacity to operate in a way that ensures enduring economic success while minimizing negative environmental and social impacts.

Digital transformation (DT) is a multidimensional concept that has gained significant attention in academia, business, and policy-making. It actually a means to the integration of digital technologies into all areas of an organisation, fundamentally changing how businesses operate, deliver value to customers, and adapt to market demands, according to Malodia et al. (2023). More than just adopting new technologies, DT entails organisational, cultural, and strategic shifts. Digital transformation is viewed as a multidimensional phenomenon that have effect on all aspects of human activities including, the politics, economy and society and technology. Hence, Bresciani et al. (2021) explained that digital transformation is the radical and comprehensive changes caused or influenced by the use of digital technology in every aspect of human life. Schallmo et al, (2017) defined digital transformation from an organisational point, arguing that digital transformation is the use of technology to generally improve performance or reach. It is also defined as the way of implementing disruptive technologies to boost productivity, value creation and social welfare.

Digitalization according to Gartner (2023) refers to the utilization of innovative digital technologies to change a business model and provide new revenue and value-producing opportunities. (i) Digital infrastructure involves the beginners' technologies and systems that support the operation, connectivity, likewise the delivery of digital services and applications. It includes both physical and virtual components that enable the creation, storage, processing, transmission, and access to digital data and services across networks. At earliest, digital infrastructure provides the necessary support for digital transformation in businesses, governments, and societies. For SMEs, digital infrastructure is critical for integrating digital tools into daily operations, enabling online transactions, remote communication, data management, and innovation. (ii) Digital skills is the abilities required to positively use digital devices, networks and communication applications to access and manage information, create digital content, solve problems and communicate in a digital environment. These skills range from basic literacy in using computers and smartphones to more advanced capabilities such as data analysis, programming, cybersecurity, and digital marketing, according to the Organisation for Economic Co-operation and Development (OECD, 2019). (iii) Innovation adoption is the process at which an individuals, organisations, or societies accept, implement, and integrate new ideas, technologies, products, or processes into their existing systems or routines. It is a key component of the diffusion of innovations theory developed by Everett Rogers (2003), which explains how, why, and at what rate new innovations spread through a population or market. (iv) Organisational readiness is the collective preparedness of an organisation to undertake and sustain change initiatives including digital transformation, innovation adoption, or process redesign. It involves both psychological (mindset, motivation) and structural (systems, resources,

processes) capacities within the organisation (Benjamin, 2025; Jo & Hong, 2023). (v) External support refers to external actors and mechanisms that assist organisations particularly SMEs through financial, technical, advisory, and ecosystem-based interventions to foster growth, innovation, and sustainability. These mechanisms are vital for enabling SMEs especially in Nigeria to overcome resource constraints, improve digital readiness, and sustain growth in an increasingly digital economy, Gartner (2023).

2.2. Theoretical Review

Several theories revolve around the digital transformation concept. These theories have been employed to comprehend the mechanism by which sustainability can be attained and maintained. These theories can be broadly categorized into two: Technology-Organisation-Environment (TOE) framework and Dynamic Transformation theory (DTT).

2.2.1 Technology-organisation-environment (TOE) framework

The Technology-Organisation-Environment framework, was propounded by Tornatzky and Fleischer in 1990, and offers a details framework by understanding the adoption and assimilation of technological innovations within organisations. The TOE framework looks at three main domains which are technological context, organisational context and environmental context; and examines how interactions between these factors positively affect the adoption and utilisation of technology (Tornatzky & Fleischer, 1990). From the explanation of SMEs, the assumption of TOE framework shows that content such as technological complexity, organisational readiness, and market dynamism plays a critical and important roles in structuring the effectiveness of technological changes on performance. When implementing the TOE framework, SMEs can address and identify the key major challenges of technological adoption, capitalize on opportunities, and enhance their performance in today's evolving digital landscape. This framework explored how technological, organisational and environmental factors affect technology adoption and its outcome in firms.

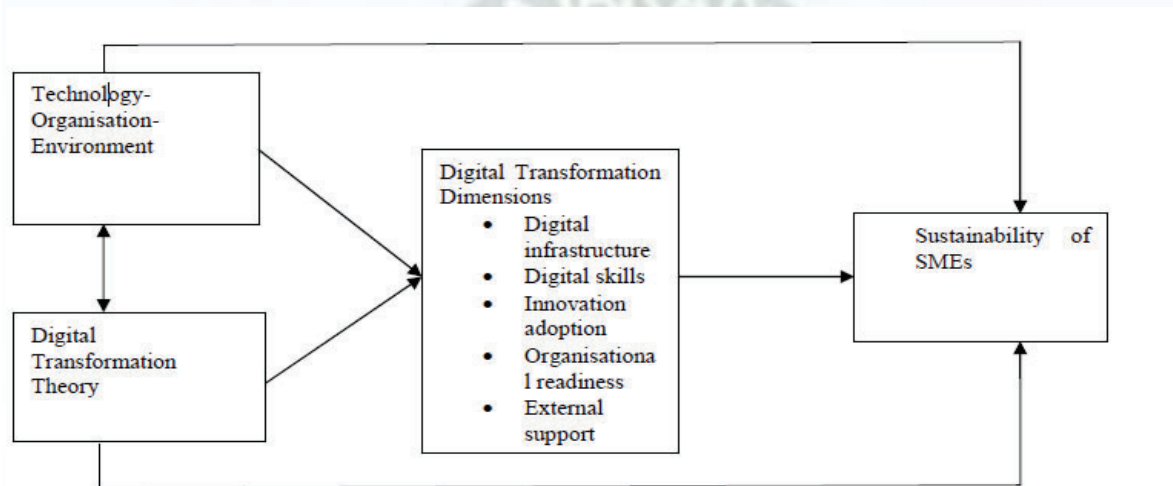
2.2.2 Digital Transformation Theory (DTT)

Digital transformation theory emphasizes that the process extends beyond only adopting new technologies; it requires a fundamental move in organisational culture, leadership, and operational processes. For small and medium enterprises (SMEs), this transformation often involves integrating tools such as cloud computing, e-commerce platforms, mobile payment systems, data analytics, and customer relationship management (CRM) solutions (Vial, 2019). The theory argues that digital transformation enhances organisational agility, enabling firms to respond swiftly to market changes, improve operational efficiency, and deliver more personalized customer experiences. Key enablers of digital transformation include access to relevant technologies, strong leadership support, organisational readiness, and the development of digital skills (Kane *et al.*, 2015). However, the theory also acknowledges significant barriers such as resistance to change, insufficient technical expertise, and financial constraints which are particularly challenging for SMEs. Unlike larger organisations, SMEs often lack the resources

necessary for seamless technology adoption (Matt et al., 2015). Furthermore, the theory underscores that digital transformation is not a one-time initiative but a continuous process that demands ongoing investment in both technology and skill development.

2.2.3 Theoretical Framework

The theories utilized in this research encompass the Technology-Organisation-Environment (TOE) and Digital Transformation Theory (DTT).



Technology-Organisation-Environment (TOE) and Digital Transformation Theory (DTT) Source: Researchers' Conceptualization, (2025)

Fig. 2.1: A framework of the impact of digital transformation dimensions on sustainability of SMEs in Lagos State, Nigeria – showing a combination of Technology-Organisation-Environment (TOE) and Digital Transformation Theory (DTT).

From the above diagram, the application of Technology-Organisation-Environment (TOE) developed by Tornatzky and Fleischer in (1990) and Digital Transformation Theory (DTT) by Vial (2019) to this study has the competence to expand the frontiers of knowledge on digital transformation dimensions and sustainability of SMEs in Lagos State, Nigeria.

2.3 Digital Transformation on the Sustainability of SMEs in Nigeria

Gyamerah et al. (2025) examined digital transformation within the SME context, focusing on the intersection of leadership, digital capabilities, and digital strategy. Grounded in dynamic capability theory, the study proposed a model to explore how digital transformational leadership (DTL) influences digital transformation (DT) in small and medium-sized enterprises (SMEs). Using structural equation modeling, the researchers analyzed data from 256 SMEs in Ghana to test the proposed hypotheses. The findings revealed a positive relationship between DTL and

DT, indicating that DTL significantly enhances digital IT capabilities (ITDC), employee digital skills, and the formulation of digital strategies. Furthermore, ITDC and employee digital capabilities were found to partially mediate the relationship between leadership and digital transformation, while digital strategy exhibited a weaker mediating effect. Overall, the study provides valuable insights into the mechanisms through which transformational leadership drives digital transformation in SMEs, highlighting the critical roles of digital capabilities and strategic alignment.

Adetowubo-King et al. (2023) investigated the effects of technological changes on the performance of Small and Medium Enterprises (SMEs) in Lagos State, Nigeria, using an explanatory research design. The study sampled SME owners across six local government areas within the state, totaling 180 participants. The findings revealed a significant positive relationship between technological change and SME performance. The study concluded by highlighting the crucial role of technological innovation and adaptation in improving the competitiveness of SMEs.

Ji and Singh (2023) explored the innovation-related challenges that SMEs must address in the context of digitalization. The study, grounded in interpretivist philosophy and an inductive approach, employed a qualitative, exploratory research design. Data were gathered through interviews with six SME participants, and thematic analysis was used to identify key themes. Recommended changes included enhancing the business ecosystem and improving customer experience, while identified challenges involved financial constraints, intense market competition, and cybersecurity threats. By analyzing both the obstacles and proposed solutions, the study offers valuable insights for SME owners and stakeholders, encouraging the adoption of digital technologies and innovation as strategies for sustaining competitive advantage.

Ihenyen et al. (2023) investigated the impact of digital transformation on the growth of businesses in Nigeria, with a focus on small and medium-sized enterprises (SMEs). The study employed descriptive research design and surveyed 200 SMEs across various sectors. Data was analyzed using regression analysis to assess the relationship between digital transformation adoption and SMEs' financial performance. The findings revealed a significant positive correlation, with competitive advantage, current implementation status, improved operational efficiency, and enhanced customer experience emerging as key influencing factors. The study concluded that Nigerian SMEs should prioritize the adoption of digital transformation to enhance their financial performance.

Achieng and Malatji (2022) investigated how SMEs in sub-Saharan Africa can formulate effective strategies for integrating digital technologies to enhance operational resilience. The study identified key contextual barriers to digital transformation namely economic, market-based, and sociotechnical factors. Despite these challenges, the findings suggest that digitally enabled resilience allows SMEs to maintain their vital contribution to economic growth and development within the sub-Saharan region.

2.4 Gaps in literature

There is an obvious intensity in the quest to drive global adoption of the capabilities of digital transformation across every sphere and scale of business given its immense benefits and operational sustainability capabilities. This includes the SMEs in around the world and in Lagos State (Nigeria) in particular. However, there are limited body of evidence-based research that focused the impact of digital transformation and sustainability of SMEs in Lagos State. The existing studies mostly overlooked the unique socio-economic, infrastructural, and institutional dynamics that drive adoption business-wide digitalization within the Nigerian context. Furthermore, while prior literatures did not explore the integration of multiple dimensions such as digital infrastructure, organisational readiness, innovation adoption, and external support especially how their combined effect drive SME sustainability. Therefore, it is noteworthy that this gap is critical to long-term business resilience and performance. Consequently, the need to explore context-specific, multidimensional research and provide empirical evidence to support business decisions and inform policy decisions and strategic interventions aimed at enhancing the adoption of digital technologies and sustainability of SMEs in Lagos State.

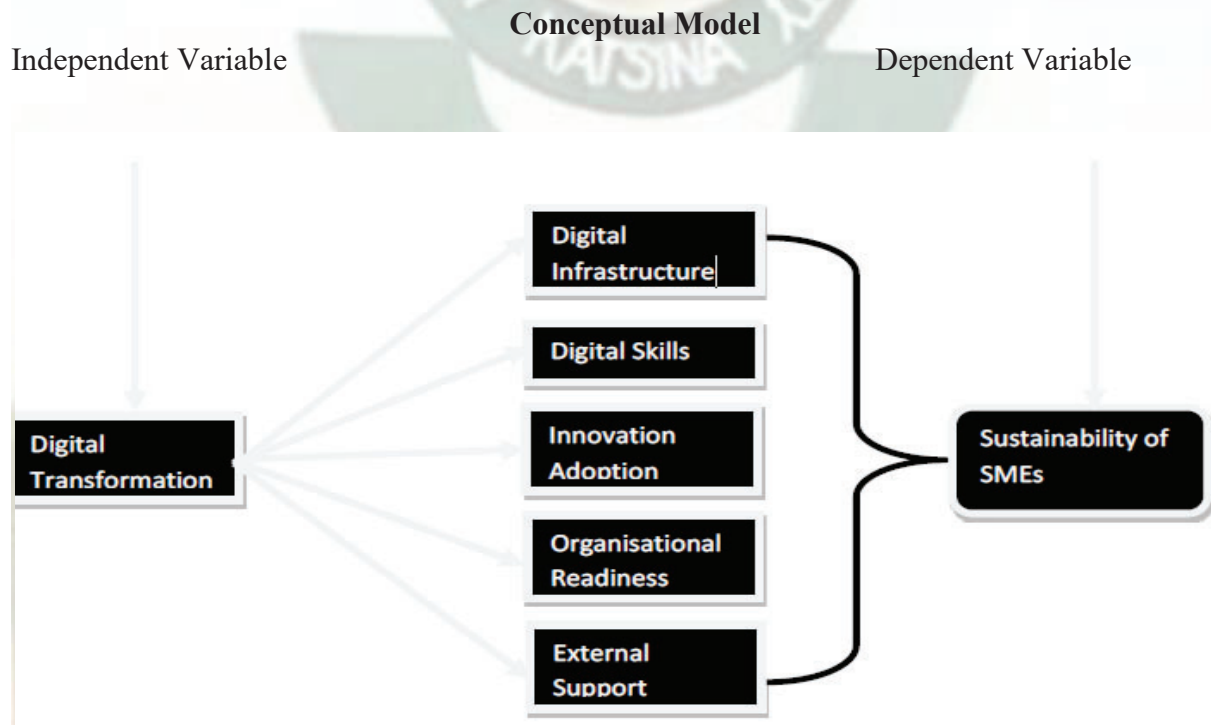


Figure 1: Conceptual Model, 2025
Source: Researcher’s conceptualization, 2025

3. METHODOLOGY

In the quest to understanding the impact of digital transformation on the sustainability of SMEs in Nigeria, this research is designed on the positivism philosophy which asserts objectivity and empirical evidence-based in understanding the subject. Consequently, the study adopted quantitative approach utilizing e-survey (online) to collect relevant data for the research with focus on SMEs in Lagos (the commercial capital of Nigeria). The Nigeria bureau of statistics posited that the number of actively registered SMEs in Lagos is 11,663. This number forms the total population of study. The sample size was determined through raosoft sampling estimator software showing the confidence level at 95% and 5% error margin which gives the sample size of 372. However, only 192 filled and completed the questionnaire, given 52% responses rate. A simple random sampling technique was utilized to identify the respondents while the variable measures are constructed to reflect the predefined scales in the literature. The survey is structured on 6 major elements with 30 sub-elements using a five-point Likert scale ranging from (strongly disagree to strongly agree and undecided as mid metric).

The data required for the study were sourced from both primary and secondary data. The primary source refers to the utilization of close-end e-survey submitted by stakeholders (owners and decision-makers) of SMEs in Lagos State (Nigeria) in order to evaluate the impact of digital transformation on the sustainability of SMEs in Nigeria. The data collection framework was designed to reflect the impact of independent variable, digital transformation (with its constituent elements such as digital infrastructure, digital skills, innovation adoption, organisational readiness, external support) on the SMEs sustainability which is the dependent variable. The information of the respondents was captured from demographic information which includes gender, age of respondents, education level of the respondents, type of organisation, business age (years of operation), employment (number of employees), and the role of the respondents in the business. Moreover, descriptive and inferential statistics were utilized in the analysis of data. Descriptive statistics includes mean, standard deviation and correlation while multiple linear regression is used for inferential analysis.

Model specification

Multiple regression of Model:

$$\text{SMEs Sustainability} = f(DT) \dots\dots\dots (1)$$

$$\text{SMEs Sustainability} = \beta_0 + \beta_1(DI) + \beta_2(DS) + \beta_3(IA) + \beta_4(OR) + \beta_5(ES) + \beta_\mu \dots\dots\dots (2)$$

where DI is the Digital infrastructure; DS is the Digital skills; IA is the Innovation adoption; OR is the Organisational readiness and ES is the External support; β_0 is the constant; $\beta_1, \beta_2, \beta_3, \beta_4, \beta_5$ is the coefficient estimator and β_μ is the error term.

4. RESULTS AND DISCUSSION

Table 4.1: Dmeographic and Descriptive Analyses on Respondents' information

Category	Frequency	Percent
Gender – Female	60	31.3
Gender – Male	132	68.8
Age <=25	48	25
Age 26-40	75	39.1
Age 41-60	66	34.4
Age 61+	3	1.6
Education - Non-formal	3	1.6
Education – Primary	3	1.6
Education – Secondary	9	4.7
Education – Tertiary	177	92.2
Organisation – Mix	33	17.2
Organisation - Production	57	29.7
Organisation - Service Provider	102	53.1
Business Age <=5	75	39.1
Business Age 6-10	51	26.6
Business Age 11-15	15	7.8
Business Age 15+	51	26.6
Employment (number of employee) <10 Staff	138	71.9
Employment (number of employee) 11-20 Staff	15	7.8
Employment (number of employee) >20 Staff	39	20.3
Role - Executive Decision Maker	42	21.9
Role – Founder	108	56.3
Role - Senior Executive/Influencer	42	21.9

Source: Researcher's Field Survey, 2025

The survey reflects the responses from 192 Small and Medium Scale (SME) business owners and decision-makers in Lagos, Nigeria. The responses provided insights into the demographic and organisational characteristics. The demographics of the respondents on gender composition showed that the male (68.8%) constituted higher respondents while females constituted 31.3%. The age composition of the respondents revealed diverse groups, with the largest segment aged 26–40 years (39.1%), age–60 years (34.4%), 25 years and below (25%), while only respondents above 60 years and above constitute 1.6%. The education qualifications of the respondents are typically high with 92.2% having tertiary qualifications, secondary education which constitute 4.7% while respondents with both primary education and non-formal education constitute 1.6% each.

The information from business perspective revealed that service businesses constituted the largest proportion of the SMEs participants at 53.1%, while businesses that are into Production (manufacturing) constitute 29.7%, while mixed business enterprises constitute 17.2%. In formation of the age in business (years of operation), it revealed that 39.1% of the respondents were in the first 5 years of operation, 6 to 10 years range represent 26.6%, 11-15 year of operation represents 25.2% while only 7.8% of participants in the ranged years. In terms of size, 71.9% employed fewer than 10 staff, 7.8% had 11–20 employees, and 20.3% had more than 20 employees. In their roles, over half of the respondents (56.3%) were founders, 21.9% were executive decision-makers, and another 21.9% were senior executives or influencers, indicating a high percentage of those with direct responsibility for business strategy and direction.

The organisational and demographic profile of the respondents reveals that Nigerian SMEs have young, well-educated founders and managers who are predominantly male and operate small-scale service-based firms with limited staff capacity. It can be inferred that the high tertiary education level indicates high potential for digital adoption and innovation while the higher ratio of small businesses with fewer than ten workers suggests structural constraint for scale. The age group which is concentrated in the productive 26–40 and 41–60 age brackets, reveals an active population capable of leading digital transformation while lower ratio of older respondents may indicate low intergenerational transmission of business leadership. Secondly, most founders and decision-makers among the respondents indicate that information on digital transformation reflect direct leadership perceptions that are critical to guide strategies for enhancing sustainability among Nigeria's SMEs.

Table 4.2: Statistics: Survey elements response

Research Variables	Questions	Mean	SD
SMEs Sustainability	Our business has consistently maintained or increased profitability over the past five years.	4.00	1.049
	We have a long-term plan in place to ensure the sustainability of our operations.	4.03	.954
	Our business has shown resilience in adapting to market or economic changes.	3.77	1.074
	Our business is financially stable and can withstand unexpected disruptions.	3.45	1.134
	Our businesses have experienced growth in market share or customer base in recent years.	3.66	1.165
Digital infrastructure	Our business has access to high-speed and reliable internet services.	3.61	1.184

	We possess up-to-date digital tools and equipment necessary for our operations.	3.56	1.133
	Our ICT infrastructure is adequate to support digital transformation.	3.48	1.092
	We have a secure and well-maintained network for data management.	3.33	1.190
	Investment in digital infrastructure is a priority for our business.	3.56	1.277
Digital skills	Employees in our organisation are well-trained in using digital tools and platforms.	3.66	1.124
	Management demonstrates strong digital literacy in strategic decision-making	3.70	1.116
	We regularly provide digital skills training and development for staff.	3.53	1.215
	Our staff can efficiently use online platforms for communication and collaboration.	3.78	1.099
	The lack of digital skills is not a barrier to our digital transformation.	3.23	1.275
Innovation adoption	Our business uses e-commerce platforms to reach and serve customers.	3.45	1.395
	We use enterprise software systems like ERP or CRM in our operations.	2.94	1.460
	Digital innovation is regularly adopted to improve products/services.	3.52	1.189
	We track and adopt new technologies relevant to our industry.	3.67	1.163
	Digital tools are integrated into our daily business processes.	3.69	1.119
Organisational Readiness	Our leadership supports and drives digital transformation initiatives.	3.67	1.108
	Digital transformation aligns with our business goals and strategy.	3.77	.967
	The organisational culture embraces change and innovation.	3.80	1.021
	We have a clear strategy for implementing digital technologies.	3.66	1.152
	The structure of our organisation supports digital innovation and agility.	3.78	1.041
External support	We have benefited from government initiatives promoting digital adoption.	2.42	1.200
	There is adequate financial support (e.g., grants, loans) for SMEs' digital transformation.	2.63	1.260

	We receive support from industry networks or associations to adopt digital tools.	2.66	1.409
	The market encourages SMEs to innovate through digital technology.	3.41	1.185
	Policies and regulations support our digital transformation efforts.	3.27	1.293
	Valid N (listwise) = 192		

Source: Researcher’s Field Survey, 2025

Table 4.1:Reliability Statistics

Cronbach's Alpha	N of Items
.920	30

The Cronbach's Alpha ratio of 0.920 indicates high-level internal consistency which indicates that the items are highly correlated and measure the same underlying construct confirming the reliability of the instrument for study and decision-making.

Model Summary ^b										
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	.707 ^a	.500	.487	.6181	.500	37.265	5	186	.000	1.682

a. Predictors: (Constant), ES, DI, IA, DS, OR

b. Dependent Variable: SME SUS

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	71.189	5	14.238	37.265	.000 ^b
	Residual	71.064	186	.382		
	Total	142.253	191			

a. Dependent Variable: SME SUS

b. Predictors: (Constant), ES, DI, IA, DS, OR

Source: Researcher’s Field Survey, 2025

Regression Model Summary

The regression analysis was conducted to examine the impact of digital transformation dimensions on the sustainability of SMEs in Nigeria. The independent variable that is digital transformation with sub-variables of digital infrastructure (DI), digital skills (DS), innovation adoption (IA), organisational readiness (OR), and external support (ES), while SME sustainability (SME SUS) serving as the dependent variable. The correlation coefficient (R = 0.707) of model produced indicates a strong positive relationship between the predictors (Digital Transformation) and SME sustainability while the coefficient of determination (R² = 0.500) indicates that 50% of the variance in SME sustainability is explained by the combined effect of the digital transformation variables. The value of adjusted R² at 0.487 further confirmed that after adjusting for the predictor numbers, almost 49% of the variation in SME sustainability can be reliably attributed to these predictor factors.

Additionally, the Durbin-Watson statistic at 1.682 implies the absence of significant autocorrelation in the residuals which corroborates the reliability of the regression estimates. While the ANOVA results implies that the model is statistically significant overall at F = 37.265, p < 0.001. This indicates that, digital transformation drivers exert a meaningful influence on the sustainability in the context of SMEs in Lagos, Nigerian.

Table 4.3: Multiple Regression Coefficients:

Coefficients^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.535	.205		7.501	.000
	DI	.404	.102	.465	3.971	.000
	DS	-.218	.101	-.226	-2.150	.033
	IA	.124	.082	.155	1.512	.132
	OR	.285	.116	.296	2.459	.015
	ES	.039	.056	.048	.700	.485

a. Dependent Variable: SME SUS

Source: Researcher’s Field Survey, 2025

$$\text{SMEs Sustainability} = f(DT) \dots\dots\dots (1)$$

$$\text{SMEs Sustainability} = \beta_0 + \beta_1(DI) + \beta_2(DS) + \beta_3(IA) + \beta_4(OR) + \beta_5(ES) + \beta_\mu \dots\dots\dots (2)$$

$$\text{SMEs Sustainability} = 1.535 + 0.404(DI) - 0.218(DS) + 0.124(IA) + 0.285(OR) + 0.056(ES) + 0.205$$

4.1 Hypothesis Testing – Impact of Individual Predictors

Ho1: Digital infrastructure does not have significant effect on SME’s sustainability in Lagos State

The coefficient of Digital infrastructure at $\beta = 0.404$ at $p < 0.001$ was found to be the most significantly positive predictor of SME sustainability. This indicates the critical role robust technological foundations such as reliable internet connectivity, digital platforms, and ICT facilities play in determining the long-term viability of SMEs. This finding aligns with result of Benard, et. al. (2021) on the role of ICT4D in the growth and development of SMES in Kenya; but not consistent with the findings among Germany’s SMEs as the impact of digitalization on technological (product and process) innovations is absent in those SMEs that conduct intramural R&D, while in non-R&D SMEs, this impact is positive (Radicic & Petković, 2023). Nevertheless, among SMEs in Lagos, Nigeria it was found that digital infrastructure provides the enabling environment for firms to access markets, streamline operations, and innovate at scale in spite constraint growth caused by the current infrastructural deficits, the positive and significant contribution of digital infrastructure underscores its importance as a critical driver of SME sustainability. Hence, the null hypothesis Ho1 is rejected and alternative accepted.

Ho2: Digital skills have no positive and significant effect on SME’s sustainability in Lagos State

The digital skills element of the digital revolution with coefficient of $\beta = -0.218$, p at 0.033 implied a negative and statistically significant relationship with SME sustainability. This result indicates contextual challenges the contradicts *apriori* expectation given that digital skills are perceived as crucial for leveraging technology in SMEs. It also implies that Lagos SMEs may have spent money on the hiring or training of digitally skilled personnel; however, skill mismatch or inappropriate integration into business models can be the cause of inefficiencies without resultant productivity. This is consistent with the finding of Gilch and Sieweke (2021) which posits that compared to the large organisation, if digital skills required in SMEs are developed separately from organisational strategy would not yield substantial business outcomes. Thus, the null hypothesis Ho2 is accepted and alternative rejected.

Ho3: Innovation adoption does not contribute significantly to the effect of SME’s sustainability in Lagos State

The coefficient of innovation adoption is $\beta = 0.124$ at $p = 0.132$ which signify positive but statistically insignificant effect on SME sustainability. This position may have been in consistent with *apriori* theoretical expectations such that the lack of significance implies that innovation adoption in Lagos (Nigeria) SMEs has not been fully optimised and yet to be translated into

measurable sustainability gains. This may be due to an idea that SMEs develop innovation at a surface or incremental level rather than as a strategic competence while limited resources, weak intellectual property regimes, and market uncertainty may constrain SMEs from reaping maximum benefits from innovation. (Pu, *et al*, 2021). To corroborate this position, Arsawan, *et al*, 2022 buttressed that while innovation is critical for competitiveness, its impact on sustainability is strengthened when supported by robust infrastructure, financing, and an innovation culture Thus, the null hypothesis Ho3 is accepted and alternative rejected. Thus, the null hypothesis Ho3 is accepted and alternative rejected.

Ho4: Organisational readiness has no significant effect on SME's sustainability in Lagos State.

The coefficient of organisational readiness ($\beta = 0.285$, $p = 0.015$) implies positive and significant association with SME sustainability. This corroborates the crucial role of internal preparedness, in terms of leadership commitment, cultural acceptance of digital transformation as well as effective resource allocation to achieve the goal of sustainable outcomes. When SMEs strategically align and adapt digital transformation, they seamlessly integrate digital tools into their operations to achieve efficiency and long-term viability. This finding corroborates with the resource-based view (RBV) which opines that organisational abilities are key in leveraging external resources to achieve competitive strength (Lubis, 2022). Also, Ghobakhloo and Iranmanesh (2021) also points out that organisational preparedness typically separates successful digital transformation companies from unsuccessful ones. Therefore, the null hypothesis Ho4 is rejected and alternative accepted.

Ho5: External support does not have significant effect on SME's sustainability in Lagos State

The coefficient external support of $\beta = 0.039$ at $p = 0.485$ indicated a positive but insignificant effect on SME sustainability. Among several growth enablers of SMEs are diverse government interventions, institutional support, and financial assistance However, the outcome of the analysis indicated that such support has no significant direct impact on sustainability in the Nigerian SME sector at the moment. This might be explained by the fragmented nature of policy measures, limited access to credit facilities, or administrative barriers that reduce the effectiveness of outside interventions. Previous studies (Adam & Alarifi, 2021; Mole, *et al*, 2017) have shown that although external assistance is crucial, its usefulness would get undermined if not targeted or coordinated properly or at the reality of SMEs' operation. Therefore, the null hypothesis Ho5 is accepted and alternative rejected.

Ho6: Digital transformation dimensions have no positive and significant effect on sustainability of SMEs in Lagos State

Overall, the model also provided a correlation coefficient ($R = 0.707$) which signifies a good positive relationship among the predictors and SME sustainability. The coefficient of determination ($R^2 = 0.500$) implies that approximately 50% of the variance in SME sustainability

is explained by the combined impact of the digital transformation variables. The adjusted R² value of 0.487 guarantees that even after controlling for the number of predictors, nearly 49% of sustainability variance can still be precisely explained through these variables. Nonetheless, Bindeeba *et.al* (2025) contended that digital transformation has multidimensional impacts on sustainable business performance but the can be restrained by business environment, the finding of the result of SMEs in Lagos was corroborated by Melo, *et al*, (2023) and Teng, *et al*, (2022) in both developed and emerging markets studies which reinforced the contribution of digital transformation to enhance operational efficiency, market outreach, and strategic agility necessary to sustain SMEs in dynamic business environments. Therefore, the null hypothesis Ho₆ is rejected, and the alternative hypothesis is accepted.

Table 4.4: Test Summary

Ho ₁	Digital infrastructure does not have significant effect on SME's sustainability in Lagos State	Rejected
Ho ₂	Digital skills have no positive and significant effect on SME's sustainability in Lagos State	Accepted
Ho ₃	Innovation adoption does not contribute significantly to the effect of SME's sustainability in Lagos State	Accepted
Ho ₄	Organisational readiness has no significant effect on SME's sustainability in Lagos State	Rejected
Ho ₅	External support does not have significant effect on SME's sustainability in Lagos State	Accepted
Ho ₆	Digital transformation dimensions have no positive and significant effect on sustainability of SMEs in Lagos State	Rejected

Source: Researcher's Field Survey, 2025

4.2 Discussion and Implications

The outcome of the findings indicate that digital transformation is a crucial factor in SME sustainability in Nigeria. However, the mechanisms through which it can be optimised are unbalanced as digital infrastructure and organisational readiness are typically the most critical drivers. This finding highlights the importance of building strong technological foundations and of making the firm internally prepared to exploit digital benefits. In the absence of these two determinants, benefits of other variables such as digital skills or innovation take-up may be severely restricted.

The perverse impact of digital skills raises important policy and management issues. It explained that digital skill development strategy in Nigeria require realignment to address the needs of SMEs in Lagos state (Nigeria). Beyond the generic ICT training, sector-based, solution-oriented, and practical training might be necessary to boost its relevance among the SMEs in Lagos.

Additionally, SMEs could be supported to entrench digital skills in their processes, decision-making, and customer interfaces to translate capabilities into tangible outcomes.

The limited impact of external support and innovation adoption reflects systemic limitations such as finance, market or cultural limitation can restrict innovation adoption, while policy inefficiencies and access limitations can hinder external support. It signifies that an integrated ecosystem with supportive infrastructure, fiscal incentives for innovation, and policies favourable to innovation are crucial requirements.

Summarily, the findings align with the theoretical postulation that digital transformation is multi-dimensional with mixed effects on sustainability outcomes (Bindeeba, *et al*, 2025). The evidence also validates the requirement to contextualise digital transformation within emerging economies such as Nigeria where infrastructural gaps, institutional deficits, and skill mismatches could alter anticipated relationships and outcomes.

Implications for Nigerian SMEs

SME sustainability through Digital transformation cannot be achieved in isolation. The Lagos SMEs require a holistic ecosystem that includes infrastructure, financial incentives, alignment of digital skills, and innovation-friendly policies for facilitation of the sustainability outcome. Consequently, the Lagos SMEs ought to consider the following

- i. Prioritize digital infrastructure and organisational readiness as the basis for achieving the benefits of other digital transformation initiatives.
- ii. Reintegrate digital skills training into problem-solving-based. industry-specific training that can be directly applied to day-to-day operations, customer service, and decision-making.
- iii. Implement strategic integration of digital skills into processes with relevance in key areas such as greater business strategy, marketing, customer engagement, and operations rather than considering them as stand-alone skills.
- iv. Adopt ecosystem approach in dealing with barriers to innovation adoption through information sharing, access to affordable financing, mentorship, and innovation-support platforms
- v. Leverage their association (SMEDAN) to mitigate the impact of weak external support structures by driving effective advocacy and functional public-private partnerships. While low impact of external support (such as policy incentives) requires more intentional approach to policy implementation and ease of doing business to create more adaptable environment.
- vi. Contextualise digital strategies by adapting digital transformation models from advanced economies (such as Singapore) strategies to local situation while factoring infrastructural gaps, institutional weaknesses, and workforce mismatches.

5. CONCLUSION AND RECOMMENDATION

Conclusively, the regression results provide strong evidence that digital transformation significantly affects the sustainability of SMEs in Lagos, Nigeria. Despite its drivers having differential effects, digital infrastructure and organisational readiness are key enablers, whereas digital skills, adoption of innovations, and external support have weak or unstable effects. These accentuate the critical nature of a holistic approach that strengthens technological infrastructure and enhances organisational readiness while reviewing digital skill development strategies among SMEs in Lagos State, Nigeria. The result emphasizes importance of integrated interventions for policymakers underscores the need to combine infrastructural investment, capacity-building, and supportive institutional frameworks. While for Lagos SME leaders, the results affirm the necessity of aligning internal processes and readiness with external digital opportunities to secure long-term sustainability. The study recommended for policymakers that there is need to combine infrastructural investment, capacity-building, and supportive institutional frameworks. While for Lagos SME leaders, the results affirm the necessity of aligning internal processes and readiness with external digital opportunities to secure long-term sustainability.

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