

Impact of Technology on New Business Ventures in Nigeria's Emerging and Competitive Economic Environment

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Abstract

Original Research Article

Adoption of technology improves market expansion, profitability, operational effectiveness and new business venture competitiveness. However, inadequate funding, subpar infrastructure and a lack of digital skills impede adoption in Nigeria and there is a significant research gap in Enugu State. This study therefore examined the impact of technology adoption on the performance of new business ventures in Enugu State, Nigeria. A quantitative descriptive survey research design was adopted. The study population comprised 1,260 registered new business ventures, from which a sample of 303 respondents was selected using a multistage sampling technique. Data were collected using a validated structured questionnaire. The reliability of the instrument was established using the Kuder–Richardson Formula 20 (KR-20), which produced a coefficient of 0.87, indicating high internal consistency. Descriptive statistics (mean) and a one-sample t-test were used to analyze the data at the 0.05 level of significance with SPSS version 28. The findings revealed that technology adoption had a significant positive effect on the overall performance of new business ventures ($t(6) = 13.640$, $p < 0.05$), while challenges associated with technology adoption also had a significant effect on technology adoption and business performance ($t(6) = 15.187$, $p < 0.05$). Governments should provide affordable digital financing through targeted intervention programmes and strengthen digital infrastructure through public-private partnerships to improve reliable internet connectivity and electricity supply for emerging businesses. The study contributes to knowledge by providing empirical evidence that technology adoption and technology adoption challenges jointly influence the performance of new business ventures in Enugu State, Nigeria.

Keywords: Technology Adoption, Business Performance, Digital Transformation Entrepreneurial Competitiveness, Innovation Diffusion.

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INTRODUCTION

The proliferation of latest technology has come to be a defining feature of the twenty first century, profoundly impacting various sides of

human endeavour, together with the panorama of business new business ventures (Ajah & Ononiwu, 2021). that is mainly evident in emerging economies like Nigeria, in which the adoption of digital technology offers each

possibilities and challenges for entrepreneurs. The emergence of new businesses is undeniably connected to technological advancements and business ventures are important engines for innovation; however, their growth trajectory is contingent on their integration inside a robust and well-functioning ecosystem (Abell *et al.*, 2021). These ecosystems are continuously adapting their models to reply to the ever-changing desires of the ventures they support (Muathe *et al.*, 2022). Entrepreneurship, mainly within the digital domain, serves as a catalyst for high-quality transformation, advocating for a synergistic method to coverage, support structures and innovation techniques to attain sustainable improvement (Sudaryana *et al.*, 2024).

The advent of novel business models, technological improvements, and sophisticated combinations of digital technology has empowered new ventures to pioneer new answers and disrupt set up industries, underscoring their pivotal role in modern-day economies (Abell *et al.*, 2021). In Nigeria, the upward push of tech into new businesses has been instrumental in addressing crucial societal desires and fostering economic resilience, mainly for the duration of periods of crisis which includes the COVID-19 pandemic (Ajah & Ononiwu, 2021). The manufacturing quarter, a cornerstone of economic growth, is increasingly reliant on technological advancements to beautify productiveness and competitiveness (James & Inyang, 2022). new business ventures can simplest grow if they are embedded in a well-functioning begin-up environment encompassing accelerators, incubators and different support players (Aji & Priyono, 2021; Muathe *et al.*, 2022).

Nigeria's improvement hinges on making use of entrepreneurship as a cornerstone, fostering indigenous capacity in era, manufacturing, and export exchange (Shafiu *et al.*, 2020). Entrepreneurship is deemed a crucial motive force of economic hobby, receiving widespread interest from authorities' policies and academic studies and plays a critical role in fostering economic improvement, decreasing poverty and generating employment possibilities (Tsetim *et al.*, 2020; Akhter *et al.*, 2022). Small and

Medium companies play a critical role in economic improvement, contributing substantially to employment, export ability, technological advancement, innovation, competitiveness and standard GDP growth (Zafar & Mustafa, 2017). Entrepreneurs want the right environment to thrive, together with basic infrastructure and a valid judicial, instructional and economic gadget (Ofili, 2014).

Technological advancements remain the cornerstone of the transformative impact new business ventures have throughout traditional industries. Newly started businesses are harnessing technologies such as artificial intelligence (AI), machine learning, blockchain, and data analytics to drive innovation and redefine industry standards. In today's fast-paced business environment, new business ventures increasingly leverage emerging technologies such as AI, the Internet of Things (IoT) and blockchain to enhance productivity and reduce operational costs (Mohammed *et al.*, 2024; Huang & Zhou, 2024)

In Nigeria, specifically in Enugu State, the interaction between new technology and new business ventures warrants targeted investigation. Regardless of the recounted significance of era and the proliferation of new business ventures, there exists a discernible gap in knowledge the particular impact of latest technology on business established order and growth in Nigeria. Existing research regularly present generalized perspectives, failing to capture specific neighbourhood challenges. The success and failure of SMEs are motivated through numerous inner and external factors, with era utilization recognized as a key determinant of growth (Okpere, 2020). Studying and adopting new technology stays a prime undertaking because of restricted funding, inadequate infrastructure, high era expenses and absence of technical abilities (Salisu & Mohammed, 2019; Zogning *et al.*, 2023).

Consequently, this have a look at seeks to deal with this gap through analysing the impact of technology on new business ventures in Nigeria's emerging and competitive economic environment. Specifically, it sought to determine the impact of technology adoption on the overall performance (profitability, market share, growth

rate) of new business ventures and to identify the challenges faced by new business ventures in technology adoption in Nigeria.

REVIEW OF RELATED LITERATURE

Technology adoption and Business Performance

The adoption of modern technological tools can significantly reshape business performance and growth prospects. Technologies such as cloud computing, digital payment systems, and Enterprise Resource Planning (ERP) software have become essential for streamlining operations, improving efficiency, and supporting business expansion. A central feature of digital transformation is the automation of routine business activities through artificial intelligence (AI), machine learning, and robotic process automation, enabling entrepreneurs to reduce operating costs, improve service delivery, and enhance customer experiences (Sagala & Ōri, 2024; Jawad & Balázs, 2024). Cloud computing, in particular, provides businesses with scalable access to software applications and computing resources without requiring substantial investments in physical infrastructure, making it especially beneficial for small and medium-sized enterprises seeking operational flexibility and cost efficiency (Mokhothu *et al.*, 2025; Otake Oyama, 2024). The shift from cash-based transactions to digital payment platforms has likewise become a major driver of business growth, financial inclusion, and transaction security. Mobile payments, electronic transfers, and point-of-sale (POS) technologies reduce fraud risks, improve transaction speed, and broaden access to underserved markets while generating valuable customer data that supports evidence-based decision-making and market responsiveness (Indrayanto *et al.*, 2024; Sagala & Ōri, 2024). Furthermore, the increasing affordability of cloud-based ERP solutions allows small businesses to integrate real-time information across business functions, automate workflows, and improve strategic decision-making, provided that adequate planning, employee training, and organizational readiness are ensured (Jawad & Balázs, 2024; Mokhothu *et al.*, 2025).

Barriers to Technology Adoption

One of the most significant barriers to technology adoption among businesses, especially in rural and semi-urban areas, is limited access to affordable and reliable internet services alongside unstable electricity supply, both of which constrain the effective operation of technology-dependent enterprises (Saikanth *et al.*, 2024). These infrastructural weaknesses are often intensified by low levels of digital literacy and limited awareness of how digital tools can be strategically applied to business development, particularly among prospective entrepreneurs (Olanrewaju *et al.*, 2021). In addition, weak regulatory frameworks and poor digital orientation among service-based firms in emerging economies frequently hinder the full integration of advanced technologies into business operations (Amoah *et al.*, 2023). Without addressing these foundational issues, efforts to promote innovation and technology-driven entrepreneurship remain constrained (Faj'ri *et al.*, 2024). For small and medium-sized enterprises in Nigeria, these challenges are compounded by the high cost of doing business, inadequate infrastructure, and difficulties in accessing capital, all of which restrict growth and competitiveness (Ernest & Sule, 2020; Olateju, 2024). Businesses in developing economies often face additional obstacles in adopting information technologies, resulting in slower rates of e-commerce uptake compared to developed countries (Afolayan *et al.*, 2015). Limited financial capacity, insufficient technological infrastructure, and restricted access to computers further reduce the ability of firms to adopt digital tools effectively (Hoque *et al.*, 2015). Organizational challenges such as low confidence, inadequate technical skills, and weak internal capabilities also limit the effective use of available technologies, often leaving firms operating at minimal levels of technological sophistication (Hoque & Boateng, 2017). These problems are especially evident in rural communities, where poor infrastructure, digital illiteracy, weak governance, and corruption continue to undermine e-commerce development and innovation (Bhatia-Kalluri, 2021). Addressing these interconnected challenges requires coordinated investments in digital

infrastructure, supportive policy frameworks, and human capital development (Hendricks & Mwapwele, 2023). Targeted interventions aimed at reducing the rural–urban digital divide, through affordable internet access, improved electricity supply, and digital skills training, are essential for enabling inclusive economic participation and sustainable growth (Salemink *et al.*, 2015; Aruleba & Jere, 2022).

Theoretical Framework

The Innovation Diffusion Theory, developed by Everett Rogers, explains how new ideas, practices, and technologies gradually spread within a social system over time. The theory emphasizes key elements such as the characteristics of the innovation, communication channels, time, and the structure of the social system in shaping adoption decisions (Hoque & Boateng, 2017). An innovation is regarded as any idea or technology perceived as new, and its acceptance is largely influenced by factors including relative advantage, compatibility with existing practices, perceived complexity, ease of experimentation, and visibility of results (Mori & Mlambiti, 2020). These attributes are particularly useful for understanding how emerging businesses in Enugu adopt digital tools and platforms, as the nature of these technologies directly affects how quickly and extensively they are embraced within the local business environment (Kolade *et al.*, 2014). The theory further highlights the importance of social networks in shaping technology adoption, as business owners often rely on information, experiences, and recommendations from peers, suppliers, and professional contacts when making innovation-related decisions (Gibbs *et al.*, 2007). It categorizes adopters into innovators, early adopters, early majority, late majority, and laggards, offering a useful lens for explaining the varied pace at which business ventures adopt digital technologies based on risk appetite and access to resources (Yu *et al.*, 2024). Innovations perceived as beneficial, compatible, and easy to use are more readily integrated, often leading to improved efficiency and expanded market access for businesses (Pinckaers, 2024). Additionally, the theory explains adoption as a multi-stage process involving awareness,

persuasion, decision-making, implementation, and confirmation, which is critical for understanding sustained technology use (Zhu *et al.*, 2006). Communication channels and the broader social system play a central role in determining how information about innovations circulates and influences adoption behavior (Foster *et al.*, 2020). This framework therefore provides a comprehensive basis for examining both internal and external factors shaping technology adoption and business growth in Enugu’s socio-economic context (Rogers, 2015; Sutley & Lyles, 2023; Marjerison *et al.*, 2025). The relevance of the Innovation Diffusion Theory to this study lies in its ability to explain how technological innovations are adopted by business ventures in Enugu State. It supports the identification of adoption drivers, barriers, and communication patterns that influence business performance and sustainability within the local entrepreneurial ecosystem.

Empirical Review

Adeniyi and Adeeko (2024) investigated Industry 4.0 technology adoption and market scalability among 1,200 SMEs in Southwest Nigeria using a descriptive survey and regression analysis. The study found that technology adoption significantly improved profitability, market coverage and business competitiveness. It recommended increased investment in digital technologies to enhance enterprise performance. Eke and Egbuchu (2024) examined the effect of ICT adoption on SME performance in Anambra State using a survey of 500 business owners. Correlation and regression analyses showed that ICT adoption significantly enhanced profit maximization, operational efficiency and market competitiveness. The study recommended continuous investment in ICT infrastructure and digital capabilities. Etim *et al.* (2023) assessed the relationship between ICT utilization and MSME performance in Nigeria using survey data from 337 operators and regression analysis. Findings revealed that ICT utilization significantly improved market visibility, marketing effectiveness and business survivability. The authors recommended wider ICT adoption to strengthen enterprise growth and long-term competitiveness. Sadiq *et al.*

(2022) examined barriers to ICT integration among 322 Nigerian SMEs using SmartPLS structural equation modelling. The study found that technological, organizational and environmental challenges such as inadequate infrastructure, limited digital skills and financial limitations, significantly hindered ICT adoption and business expansion in rural Nigeria. Ayokunmi *et al.* (2026) investigated digital-era determinants of SME performance in Nigeria. The study found that although e-commerce and social media marketing improved enterprise performance, inadequate digital skills, poor infrastructure and limited financial resources constrained technology adoption. The authors recommended capacity building and stronger digital infrastructure to support SMEs.

METHODS

The study adopted a quantitative descriptive survey research design, which offers a snapshot of the prevailing situation and facilitates the generalization of findings from the selected sample to the entire population. The study was conducted in Enugu State, Nigeria, located in the South-East geopolitical zone of the country. Geographically, the state lies between latitudes 5°56'N and 7°06'N and longitudes 6°53'E and 7°55'E, covering a land area of approximately 7,161 square kilometres. Enugu State is bounded by Benue State to the north, Kogi State to the northwest, Ebonyi State to the east, Abia State to the south, Anambra State to the west, and Imo State to the southwest. The population of the

study comprised 1,432 registered Small and Medium-Sized Enterprises (SMEs) operating across Enugu State, as documented by the Enugu SME Centre (2025). From this population, a sample of 303 SMEs was selected using a multistage sampling technique. The multistage sampling procedure was considered appropriate because it enabled the researcher to select respondents through successive sampling stages, thereby ensuring adequate representation of SMEs across the study area while minimizing sampling bias. Data for the study were collected using a structured questionnaire designed in line with the study objectives and research questions. The instrument was subjected to face and content validation by experts to ensure that its items adequately measured the constructs under investigation. The reliability of the instrument was established using the Kuder–Richardson Formula 20 (KR-20), which yielded a reliability coefficient of 0.87, indicating a high level of internal consistency and confirming the suitability of the instrument for data collection. The data collected were analysed using both descriptive and inferential statistical techniques. Descriptive statistics, specifically mean was employed to answer the research questions by summarizing respondents' responses on the study variables. The hypotheses were tested using simple linear regression analysis at the 0.05 level of significance to determine the effect of the independent variables on the dependent variable. All statistical analyses were conducted using the Statistical Package for the Social Sciences (SPSS), Version 28.

ANALYSIS AND RESULTS

Table 1 Impact of Technology Adoption on the Overall Performance (Profitability, Market Share and Growth Rate) of New Business Ventures in Nigeria

Variable	Mean
Technology adoption has increased the profitability of my business	2.86
Digital technology has attracted more customers and increased market share	2.84
Technology has improved the speed and quality of business operations	2.86
Technology has reduced business costs and improved resource management	2.85
My business has experienced faster growth through effective technology adoption	2.97

Technology has improved customer satisfaction and strengthened customer loyalty	2.82
Technology adoption has improved my business competitiveness and overall performance	3.02
Aggregate	2.89

Source: Fieldwork, 2026; SPSS, 28.

Table 2 Challenges Faced by New Business Ventures in Technology Adoption in Nigeria

Variable	Mean
High costs of acquiring and maintaining technology limit business adoption	2.93
Limited financial resources make technology investment difficult for my business	2.93
Poor internet connectivity affects the effective use of digital technologies	3.05
Unstable electricity supply disrupts technology-based business operations	2.98
Lack of digital skills among employees limits effective technology adoption	2.99
Shortage of skilled personnel affects the management of technology-based operations	2.99
Cybersecurity concerns discourage greater adoption of digital technologies in my business	2.80
Aggregate	2.95

Source: Fieldwork, 2026; SPSS, 28.

Hypotheses

H₀₁: Technology adoption has no significant impact on the overall performance (profitability, market share and growth rate) of new business ventures in Nigeria

Table 3 One-Sample Test

	Test Value = 2.5					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
H₀₁	13.640	6	.000	.38857	.3189	.4583

SPSS, 28.

The one-sample t-test result shows a calculated t-value of 13.640 with 6 degrees of freedom and a p-value of 0.000, which is less than the 0.05 significance level. This indicates that the mean response differs significantly from the test value of 2.5. The positive mean difference of 0.38857 suggests that respondents generally rated technology adoption above the benchmark value.

Furthermore, the 95% confidence interval (0.3189 to 0.4583) does not include zero, confirming the statistical significance of the result. Therefore, we rejected the null hypothesis and concluded that technology adoption has a significant impact on the overall performance (profitability, market share and growth rate) of new business ventures in Nigeria.

H₀₂: Challenges associated with technology adoption have no significant impact on the adoption and performance of new business ventures in Nigeria

Table 4 One-Sample Test

	Test Value = 2.5					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
H ₀₂	15.187	6	.000	.45286	.3799	.5258

SPSS, 28.

The one-sample t-test result shows a calculated t-value of 15.187 with 6 degrees of freedom and a p-value of 0.000, which is less than the 0.05 significance level. This indicates that the mean response differs significantly from the test value of 2.5. The positive mean difference of 0.45286 suggests that respondents generally agreed that challenges associated with technology adoption have a notable effect above the benchmark value. Furthermore, the 95% confidence interval (0.3799 to 0.5258) does not include zero, confirming the statistical significance of the result. Therefore, we rejected the null hypothesis and concluded that challenges associated with technology adoption have a significant impact on the adoption and performance of new business ventures in Nigeria.

DISCUSSION

The study found that new business ventures in Nigeria perform significantly better overall (profitability, market share and growth rate) when technology is adopted. This finding agrees with Adeniyi and Adeeko (2024), who reported that Industry 4.0 technology adoption significantly enhanced profitability, market coverage and business competitiveness among SMEs in Southwest Nigeria. Similarly, the finding is consistent with Eke and Egbuchu (2024), who found that ICT adoption significantly improved profit maximization, operational efficiency, and market competitiveness among SMEs in Anambra State. The agreement among these studies suggests that

digital technologies enable businesses to streamline operations, improve customer service and respond more effectively to changing market conditions. A possible explanation for the present finding is that technology facilitates faster communication, better resource management and wider market access, thereby improving enterprise performance. However, this study extends existing knowledge by focusing specifically on new business ventures in Enugu State, rather than SMEs generally and by simultaneously assessing the influence of technology adoption on multiple performance indicators using a one-sample t-test. This provides localized empirical evidence that strengthens understanding of technology-driven business performance in emerging entrepreneurial environments.

The study further found that challenges associated with technology adoption significantly impact the adoption and performance of new business ventures in Nigeria. This finding agrees with Sadiq *et al.* (2022), who found that technological, organizational and environmental barriers, including inadequate infrastructure, limited digital skills and financial constraints, significantly hinder ICT adoption and business expansion among Nigerian SMEs. The finding is also consistent with Ayokunmi *et al.* (2026), who reported that although digital technologies improve enterprise performance, poor infrastructure, inadequate digital skills and limited financial resources remain major constraints to technology adoption. The

consistency of these findings suggests that structural deficiencies within the Nigerian business environment continue to limit the ability of emerging enterprises to fully exploit digital technologies. A possible reason for this finding is that new ventures often operate with limited capital and technical expertise, making it difficult to invest in modern technologies and sustain digital transformation. This study extends knowledge by examining these technology adoption barriers specifically within new business ventures in Enugu State, rather than focusing broadly on SMEs, while providing empirical evidence that adoption challenges significantly influence both technology utilization and overall business performance.

CONCLUSION AND RECOMMENDATIONS

Increasing profitability, market share and business growth, technology adoption has a significant impact on the performance of new business ventures in Nigeria. Businesses that use digital technologies have a competitive edge thanks to better resource management, customer satisfaction, and operational effectiveness. However, issues like insufficient funding, poor internet connectivity, erratic power supplies, a lack of digital skills, a lack of qualified workers and cybersecurity concerns seriously impede the adoption of technology. As a result, in addition to adopting new technologies, new businesses must successfully overcome these operational and structural obstacles through concerted efforts from the public and private sectors. There is need to encourage the adoption of technology by new businesses by offering inexpensive digital financing through government-backed programs. There is also the need to enhance internet connectivity and dependable electricity for businesses by expanding digital infrastructure through public-private partnerships. By offering empirical data on how technology adoption and adoption obstacles jointly affect the performance of new business ventures in Enugu State, Nigeria, the study closed the contextual gap.

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