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Mobile Technology and Performance of Small and Medium Enterprises (SMEs) in Federal Capital Territory, Abuja

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ABSTRACT

Mobile technology adoption among SMEs remains uneven due to high costs, poor networks, limited digital skills, and security concerns, which hinder effective utilization and performance improvement. This study therefore examines the impact of mobile technology on the performance of Small and Medium Enterprises (SMEs) in the Federal Capital Territory (FCT), Abuja. Specifically, it evaluates the roles of mobile data services, mobile payment platforms, and mobile-based marketing systems in enhancing SME performance. A quantitative, cross-sectional survey design was adopted, with primary data collected from SME operators through structured questionnaires distributed both physically and via digital platforms. Out of 470 questionnaires administered, 226 valid responses were analyzed. The instrument demonstrated high reliability (Cronbach's alpha = 0.913). Data analysis involved descriptive statistics and Pearson correlation using SPSS version 27. Findings revealed significant positive relationships between mobile technology dimensions and SME performance ($p < 0.05$), underscoring the importance of mobile technology in improving competitiveness. The study recommends enhanced investment in mobile infrastructure, improved digital literacy, and supportive government policies to foster sustainable SME growth.

Keywords: Digitalization, Mobile Marketing, Mobile Payments, SMEs Performance, Telecommunications

1.0 INTRODUCTION

In today's fast-evolving digital economy, mobile technology has become a key force shaping how businesses operate, especially for small and medium-sized enterprises (SMEs). What were once simple communication devices have now transformed into powerful tools that support financial transactions, digital marketing, data access, and customer relationship management.

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This shift has made SMEs more flexible, responsive, and competitive, particularly in fast-changing and uncertain business environments (Dwivedi et al., 2021).

Mobile technology, in the context of SMEs, can be understood through three major components: mobile data services, mobile payment platforms, and mobile marketing tools. Mobile data services give businesses constant internet access, allowing them to use digital platforms, cloud applications, and real-time customer engagement systems. Mobile payment platforms make transactions quicker, safer, and more convenient, reducing dependence on cash and improving financial efficiency. In the same vein, mobile marketing tools, such as SMS campaigns, social media platforms, and push notifications, help SMEs promote their products, connect with customers, and build lasting relationships at relatively low cost (Kannan & Li, 2021; Shankar et al., 2022). Together, these technologies improve how businesses operate by reducing delays, cutting costs, and enhancing service delivery.

In Africa, mobile technology has played a major role in advancing financial inclusion, expanding e-commerce, and supporting SME growth. Sub-Saharan Africa, in particular, stands out as one of the fastest-growing mobile markets in the world, where mobile connectivity often fills the gap left by limited fixed broadband infrastructure (Achieng & Malatji, 2022). In Nigeria, the rapid increase in mobile usage has opened up new opportunities for SMEs to grow and reach wider markets through digital tools. However, issues such as high data costs, unreliable network services, low digital literacy, and uneven adoption levels still limit the full benefits of digital transformation (Ozili, 2022).

The Federal Capital Territory (FCT), Abuja, offers a unique setting for this study as it serves as both the administrative and commercial center of Nigeria. The area hosts a large number of SMEs across sectors like retail, services, and trade, many of which depend heavily on mobile technologies for daily operations, customer interaction, and payments. Despite this growing dependence, challenges such as unstable networks, limited digital marketing expertise, and concerns about the security of digital payments continue to restrict the effective use of mobile technologies among SMEs in the region.

While previous studies have explored digital transformation and mobile technology adoption in developing economies, there is still limited empirical evidence focusing specifically on how mobile data services, mobile payment platforms, and mobile marketing tools influence SME performance, particularly in terms of operational efficiency. This gap is even more evident in the context of SMEs in Abuja, Nigeria.

Against this backdrop, this study examines the impact of mobile technology on the performance of SMEs in the Federal Capital Territory, Abuja, with a specific focus on operational efficiency as a measure of performance. The study aims to contribute to existing knowledge on digital technology adoption and offer practical insights for business owners, policymakers, and other

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stakeholders seeking to improve SME competitiveness and sustainability in Nigeria's growing digital economy.

Objective of the Study

The following objective will guide this research:

i. To investigate the impact of Mobile Technology on the Performance of SMEs in the Federal Capital Territory, Abuja.

Research Hypothesis

i. Ho1: Mobile Technology has no significant impact on Performance of SMEs in the Federal Capital Territory, Abuja

2.0 LITERATURE REVIEW

Mobile Technology

Mobile technology can be understood as the use of portable digital devices and wireless communication systems, such as smartphones, tablets, and other mobile-enabled platforms, that enable individuals and businesses to access information, perform transactions, and communicate instantly from almost anywhere. It brings together mobile networks, applications, and digital services that support communication, data exchange, and everyday business activities (Nambisan et al., 2021; Vial, 2021).

For businesses, particularly small and medium-sized enterprises (SMEs), mobile technology has become an essential driver of digital transformation. It comprises important elements such as mobile data services, which provide reliable internet access for digital operations; mobile payment platforms, which allow quick, secure, and cashless transactions; and mobile marketing tools, which enable firms to connect with customers, advertise their products, and build long-term relationships through mobile channels (Kannan & Li, 2021; Shankar et al., 2022). When effectively combined, these tools help SMEs streamline their processes, enhance decision-making, and deliver better customer experiences.

As the adoption of mobile technology continues to grow, it has been associated with increased flexibility in operations, reduced transaction costs, and improved access to wider markets. Studies indicate that SMEs leveraging mobile technologies are more responsive to changing customer demands, better at utilizing resources efficiently, and more productive overall (Li et al., 2023). In many developing countries, mobile technology also serves as a practical solution to infrastructural limitations, particularly in regions where fixed broadband and conventional banking systems are not easily accessible (Nambisan et al., 2021).

Mobile Data Services

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Mobile data services refer to the use of wireless internet provided through mobile telecommunication networks, allowing users to access digital platforms, applications, and information using devices like smartphones and tablets. These services are powered by advanced cellular technologies such as 3G, 4G LTE, and 5G, which enable fast internet speed, real-time communication, cloud-based activities, and seamless digital transactions (Achieng & Malatji, 2022).

For small and medium-sized enterprises (SMEs), mobile data services have become a key enabler of digital transformation and improved business performance. They support day-to-day operations by facilitating activities such as digital marketing, mobile banking, customer interaction, and even remote management of business processes (Jeza & Lekhanya, 2022). Empirical studies further show that access to reliable digital connectivity helps SMEs boost productivity by lowering transaction costs, expanding market reach, and enhancing their capacity for innovation (Olaitan, 2026; Tiwasing et al., 2024).

In addition, mobile data services play an important role in promoting financial inclusion and supporting entrepreneurial growth, particularly in developing economies. By providing easier access to digital financial services and valuable market information, they strengthen the competitiveness and resilience of SMEs in rapidly changing business environments (Asongu, 2023; Mabula et al., 2023). Across Africa, where fixed broadband infrastructure is still limited in many areas, mobile data services are crucial in closing the digital gap and driving more inclusive economic development (Olaitan, 2026; Achieng & Malatji, 2022).

Mobile Payment Platforms

Mobile payment platforms are digital financial solutions that allow individuals and businesses to carry out transactions using mobile devices, without the need for physical cash or traditional face-to-face banking. These platforms include mobile money services, fintech applications, and digital wallets, all of which support real-time payments, fund transfers, and access to financial services through mobile networks (Ozili, 2022).

For small and medium-sized enterprises (SMEs), mobile payment platforms have become an important tool for improving financial operations. They help businesses manage cash flow more effectively, process transactions faster, and reach a wider customer base. By adopting these systems, SMEs can reduce their reliance on cash handling, increase transparency in their operations, and lower transaction costs, while also offering greater convenience to customers, ultimately enhancing overall business performance (Qamruzzaman & Jianguo, 2023).

Beyond business efficiency, mobile payment platforms have also played a major role in promoting financial inclusion, especially in developing economies. They provide access to formal financial services for individuals and businesses that were previously unbanked or

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underserved. Research shows that these systems help break down financial barriers, encourage wider economic participation, and improve the security of transactions through encrypted digital channels (Demir et al., 2022). In countries like Nigeria and other emerging markets, mobile wallets and fintech solutions have strengthened SME competitiveness by enabling quicker payment processes and better liquidity management.

Empirical studies further indicate that the use of mobile payment systems is linked to higher productivity, improved customer satisfaction, and business growth among SMEs. By integrating mobile financial technologies into their operations, businesses are better positioned to meet customer needs, reduce transaction delays, and deliver services more efficiently (Suri & Jack, 2021)..

Mobile Marketing Tools

Mobile marketing tools are digital technologies and strategies that use mobile devices, such as smartphones and feature phones, to deliver promotional messages, engage customers, and improve business performance. These tools include SMS and MMS campaigns, mobile apps, social media platforms, push notifications, and location-based advertising, all of which allow businesses to connect with customers instantly and in real time (Shankar et al., 2022).

For small and medium-sized enterprises (SMEs), mobile marketing tools offer a practical and affordable way to reach target audiences, build brand awareness, and strengthen customer engagement. Research shows that mobile-based marketing improves how customers respond to businesses and helps create stronger relationships through personalized messages and targeted promotions (Kannan & Li, 2021).

In addition, strategies such as SMS campaigns, social media integration, and app-based notifications have been found to boost sales performance and increase conversion rates among SMEs. These tools make it easier for businesses to tailor their marketing messages to suit customer preferences and behaviors, which in turn enhances effectiveness and fosters customer loyalty (Tajvidi & Karami, 2021). Features like location-based marketing and real-time personalization further enable SMEs to deliver relevant and timely offers, giving them a competitive edge in fast-changing markets.

Moreover, mobile marketing has become a major driver of digital customer engagement, particularly in emerging economies where mobile usage is widespread and traditional marketing channels are less developed. As a result, SMEs increasingly depend on mobile platforms to stay connected with customers, promote their products, and build lasting brand relationships (Dwivedi et al., 2021).

Performance of Small Medium Enterprises

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The performance of Small and Medium Enterprises (SMEs) refers to the extent to which these businesses achieve their financial and non-financial objectives, including profitability, growth, market share, customer satisfaction, and long-term sustainability. SME performance is widely recognized as a multidimensional construct that incorporates both objective financial indicators such as sales growth, return on investment, and productivity, as well as subjective measures such as innovation capability, adaptability, and customer loyalty (Mikalef et al., 2020).

From a broader perspective, SME performance reflects how effectively firms utilize their resources and capabilities to generate value in competitive and uncertain environments. Contemporary research emphasizes that performance is increasingly influenced by digital capability, technological integration, and the ability of firms to leverage information systems to improve decision-making and operational responsiveness (Tambe et al., 2023).

In Nigeria, SME performance plays a central role in economic development, particularly in areas of employment generation, poverty reduction, and industrial growth. However, SME outcomes are shaped by several structural and operational factors, including access to finance, managerial competence, regulatory conditions, and the extent of technology adoption. Recent empirical studies indicate that digital transformation, especially through mobile and internet-based technologies, significantly enhances SME competitiveness, productivity, and overall performance outcomes (Awa et al., 2021; Li et al., 2023).

Furthermore, the integration of digital technologies enables SMEs to improve efficiency, expand market access, and strengthen customer relationships, thereby improving both financial and non-financial performance indicators. In emerging economies, firms that adopt digital tools tend to outperform those that rely on traditional business models due to improved agility and reduced operational inefficiencies (Kurnia et al., 2022).

Operational Efficiency

Operational efficiency refers to how well an organization is able to deliver its goods and services in a timely and cost-effective manner by making the best use of available resources while minimizing waste and delays. It reflects the extent to which inputs such as labour, capital, and technology are effectively transformed into outputs that meet customer needs and organizational objectives (Puspita et al., 2021).

For small and medium-sized enterprises (SMEs), operational efficiency is a key factor that determines their competitiveness and long-term survival. It involves improving business processes, ensuring smooth workflow coordination, and leveraging digital technologies to boost productivity, cut costs, and speed up service delivery (Kurnia et al., 2022). Empirical studies show that SMEs that adopt digital tools, such as mobile platforms, cloud-based systems, and

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integrated management technologies, tend to achieve higher levels of efficiency and respond more effectively to market demands (Li et al., 2023).

In developing economies like Nigeria, the importance of operational efficiency is even more pronounced due to limited resources, infrastructural challenges, and unstable market conditions. Digital and mobile technologies have been identified as essential tools that help SMEs streamline supply chain activities, make faster and better decisions, and improve customer service delivery (Awa et al., 2021). These technologies also enable real-time coordination and help reduce delays in transactions, ultimately enhancing overall business performance.

In this study, operational efficiency is viewed as the extent to which SMEs effectively utilize their resources and digital technologies to reduce costs, improve productivity, and deliver services promptly in a competitive business environment.

Theoretical Review

This study is anchored on the Technology-Organization-Environment (TOE) Theory (Tornatzky & Fleischer, 1990) and the Innovation Diffusion Theory (IDT) (Rogers, 2003), both of which provide a useful explanation of how mobile technology shapes SME performance. The TOE framework suggests that the adoption of technology is influenced by a combination of technological readiness, organizational capacity, and environmental conditions. In this context, the effectiveness of mobile data services, mobile payment platforms, and mobile marketing tools is determined not only by internal capabilities of SMEs but also by external factors such as infrastructure quality and regulatory support.

In a similar vein, the Innovation Diffusion Theory (IDT) explains that the decision to adopt an innovation depends largely on how users perceive its usefulness, ease of use, compatibility with existing systems, and relative advantage over traditional methods. Accordingly, SMEs are more inclined to embrace mobile technologies when they are seen as practical, easy to operate, and well-suited to their current business processes.

When combined, these two theories offer a clear understanding that effective adoption and integration of mobile technology can significantly improve operational efficiency, strengthen customer engagement, and enhance the overall competitiveness of SMEs in Nigeria. This theoretical framework is further contextualized to reflect the operational realities of SMEs within the Federal Capital Territory (FCT), Abuja.

Empirical Review

Li et al. (2023) examined how digital transformation affects SME performance in emerging economies. Using a quantitative survey approach, the study established that adopting digital technologies significantly enhances operational efficiency, strengthens innovation capacity, and

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improves responsiveness to market changes. The application of structural equation modeling also added credibility and robustness to their results. However, because the study covered multiple countries, it offers limited insight into country-specific realities such as those of Nigerian SMEs. Even so, it provides solid empirical support that digital technologies contribute to better firm performance by streamlining processes and optimizing resource use.

Kurnia et al. (2022) investigated how digital technologies influence the operational performance of SMEs. Their findings showed that adopting such technologies improves coordination among business activities, lowers transaction costs, and boosts productivity levels. The study adopted a mixed-method design, combining survey responses with interviews from SME owners, which enriched the depth of analysis. However, its broader focus on general digital transformation rather than specifically on mobile-based technologies creates a conceptual gap that this present study seeks to fill.

Awa et al. (2021) focused on ICT adoption among SMEs in developing economies by integrating three theoretical models, TAM, TPB, and TOE. Their results indicated that factors such as perceived usefulness, organizational readiness, and environmental pressure play a significant role in technology adoption, which ultimately enhances operational efficiency. The use of survey data and partial least squares structural equation modeling (PLS-SEM) strengthened the reliability of their findings. Nevertheless, the study did not specifically isolate mobile data services as a separate construct, which leaves an important area open for further investigation.

3.0 METHODOLOGY

Research Design

This study employed a quantitative cross-sectional survey design, which is well-suited for exploring relationships among variables at a single point in time without altering or controlling the research environment. The design was particularly appropriate because the study aimed to examine how different aspects of mobile technology, such as mobile data services, mobile payment platforms, and mobile-based marketing tools, influence the performance of Small and Medium Enterprises (SMEs) in the Federal Capital Territory (FCT), Abuja.

Using this approach made it possible to gather standardized responses from SME operators, allowing for a systematic and empirical assessment of their experiences, perceptions, and practical engagement with mobile technology in real-world business operations.

Nature and Sources of Data

The study relied on primary data collected through a structured questionnaire administered to SME owners and managers within Abuja. The questionnaire comprised closed-ended questions designed to capture respondents' perceptions of mobile technology usage, including mobile payments, mobile marketing, and data services, as well as their impact on business performance. A total number of questionnaires were distributed to selected SMEs, out of which a substantial number of valid responses were retrieved and used for analysis. Respondents were assured of

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confidentiality and anonymity, and the data collection process adhered strictly to ethical research standards.

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Methods of Data Analysis

Data collected for the study were analysed using both descriptive and inferential statistical techniques. Descriptive statistics such as mean, standard deviation, frequency, and percentage distributions were used to summarise respondents' demographic characteristics and trends in mobile technology adoption among SMEs. Pearson correlation analysis was used to test the study hypotheses and determine the nature and strength of relationships between variables. All analyses were conducted using Statistical Package for Social Sciences (SPSS) version 27, with results presented in tables for clarity and ease of interpretation.

4.0 DATA PRESENTATION AND ANALYSES

Data Presentation

Table 4.1 provides the descriptive statistics for the main variables in the study, namely Mobile Data Services (MDS), Mobile Payment Platforms (MPP), Mobile Marketing Methods (MMM), and SME Performance (SMEP). The analysis of the valid responses shows that there were no missing values, which indicates that the dataset is complete and reliable for further analysis.

The mean scores across all variables are closely aligned, suggesting that respondents held relatively similar views on mobile technology usage and its influence on SME performance. This points to a generally balanced perception of mobile data usage, payment systems, and marketing practices among SMEs in the Federal Capital Territory (FCT), Abuja. In the same way, the median values are also closely related, indicating a fairly symmetrical distribution of responses, where opinions are evenly distributed around the central values.

Furthermore, the standard deviation values are moderate and fairly consistent across all variables, showing that the level of variation in responses is not wide. This implies that SME operators largely share comparable experiences and perspectives regarding the adoption and impact of mobile technologies.

The minimum and maximum values also reveal some degree of variation, as a few respondents reported lower levels of adoption or performance while others recorded very high ratings. However, this variation is not extreme and does not distort the overall pattern of responses.

Overall, the descriptive results suggest strong consistency in both central tendency and dispersion across the variables, indicating that mobile technology adoption and SME performance are perceived in a relatively uniform manner among respondents in the study area.

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Descriptive Statistics					
		Mobile Data Services	**Mobile Payment Platforms**	**Mobile Marketing Tools**	**Performance**
N	Valid	226	226	226	226
	Missing	0	0	0	0
Mean		20.92	20.02	21.96	20.73
Median		21.00	21.00	22.00	22.00
Std. Deviation		2.177	2.823	2.009	2.459
Minimum		15	15	15	15
Maximum		25	25	25	25

Source: Software Package for the Social Science (SPSS) Version 25

Table 4.2 reveals that all components of mobile technology, Mobile Data Services (MDS), Mobile Payment Platforms (MPP), and Mobile Marketing Methods (MMM), exhibit strong positive and statistically significant relationships with SME Performance (SMEP) ($p < 0.01$). Among these variables, Mobile Payment Platforms (MPP) and Mobile Marketing Methods (MMM) demonstrate the strongest correlations with SME performance, indicating that efficient payment systems and digital marketing tools play a critical role in enhancing business outcomes. Mobile Data Services (MDS) also show a strong positive correlation with SME performance, although slightly lower compared to MPP and MMM. These findings suggest that increased adoption and effective utilization of mobile technologies significantly improve SME performance in terms of operational efficiency, customer reach, and revenue generation. Overall, the results emphasize that mobile technology integration is a key driver of business success among SMEs in the Federal Capital Territory (FCT), Abuja.

CORRELATIONS				
	Mobile Data Services	**Mobile Payment Platforms**	**Mobile Marketing Tools**	**Performance**

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Mobile Data Services	Pearson Correlation	1	.576**	.304**	.591**
	Sig. (2-tailed)		0	0	0
	N	226	226	226	226
Mobile Payment Platforms	Pearson Correlation	.576**	1	.572**	.929**
	Sig. (2-tailed)	0		0	0
	N	226	226	226	226
Mobile Marketing Tools	Pearson Correlation	.304**	.572**	1	.667**
	Sig. (2-tailed)	0	0		0
	N	226	226	226	226
Performance	Pearson Correlation	.591**	.929**	.667**	1
	Sig. (2-tailed)	0	0	0	
	N	226	226	226	226
**. Correlation is significant at the 0.01 level (2-tailed).					

Source: Software Package for the Social Science (SPSS) Version 25

Test for Hypotheses

To assess whether mobile technology has a significant effect on the performance of Small and Medium Enterprises (SMEs) in the Federal Capital Territory (FCT), Abuja, a Pearson correlation analysis was carried out using responses from 226 valid participants. The analysis focused on the relationships between Mobile Data Services (MDS), Mobile Payment Platforms (MPP), Mobile Marketing Methods (MMM), and SME Performance (SMEP).

The findings showed that Mobile Data Services have a strong, positive, and statistically significant relationship with SME Performance ($r = 0.591$, $p = 0.000$). This suggests that better access to mobile internet and data connectivity plays an important role in improving communication, operational efficiency, and overall business effectiveness among SMEs.

In the same direction, Mobile Payment Platforms recorded a very strong, positive, and statistically significant correlation with SME Performance ($r = 0.929$, $p = 0.000$). This indicates

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that the use of mobile payment systems greatly enhances transaction efficiency, improves financial management, and increases customer satisfaction.

Likewise, Mobile Marketing Methods also showed a strong, positive, and statistically significant relationship with SME Performance ($r = 0.667$, $p = 0.000$). This means that mobile-based marketing tools such as SMS campaigns, social media advertising, and mobile promotions significantly contribute to expanding customer reach and supporting business growth.

Since all the examined dimensions of mobile technology demonstrated strong, positive, and statistically significant relationships with SME Performance, the null hypotheses are therefore rejected. This provides clear empirical evidence that mobile technology has a meaningful and significant impact on the performance of SMEs in the Federal Capital Territory (FCT), Abuja.

5.0 SUMMARY OF FINDINGS, CONCLUSION, AND RECOMMENDATIONS

Summary of Findings

The findings of this study reveal that mobile technology significantly enhances the performance of Small and Medium Enterprises (SMEs) in Nigeria. Specifically, mobile payment platforms emerged as the most influential factor, followed by mobile marketing tools and mobile data services. Collectively, these technologies improve business efficiency, facilitate faster transactions, enhance customer engagement, and support overall operational performance among SMEs in the Federal Capital Territory (FCT), Abuja.

Conclusion

The study concludes that the adoption and effective utilization of mobile technologies play a critical role in improving SME performance in Nigeria. Among the components examined, mobile payment platforms have the greatest impact, although mobile marketing tools and mobile data services also contribute meaningfully to business growth and competitiveness. However, the study is limited by its reliance on self-reported data and its focus on SMEs within Abuja, which may restrict generalizability. Expanding future research to other regions and incorporating objective performance indicators would provide more comprehensive insights.

Recommendations

It is recommended that SME owners and managers prioritize the adoption of mobile payment platforms to enhance transaction efficiency and financial transparency. Additionally, businesses should invest in mobile marketing tools to strengthen customer engagement and expand market reach, while ensuring consistent access to reliable mobile data services. Policymakers should also improve digital infrastructure, reduce data costs, and establish supportive regulatory frameworks to encourage wider adoption of mobile technologies. Future studies should explore broader samples and examine the long-term effects of mobile technology adoption on SME performance across different sectors.

Contribution to Knowledge

This study contributes to existing literature by providing empirical evidence that mobile data services, mobile payment platforms, and mobile marketing tools significantly improve SME

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performance in Nigeria. It also extends the Technology-Organization-Environment (TOE) framework by demonstrating how technological adoption, supported by organizational readiness and environmental factors, drives business efficiency and competitiveness in a developing economy context.

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