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Effect of Mobile Payment Technology on the Financial Performance of Qouted Telecommunication Companies in Nigeria

Sam Sadiq Bulus

Department of Auditing and Forensic Accounting, College of Private Sector Accounting, Anuk University Kwall, Plateau State, Nigeria

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***Corresponding Author:** Sam Sadiq Bulus

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Abstract **Original Research Article**

This study examined the effect of mobile payment technology on the financial performance of quoted telecommunication companies in Nigeria, with specific focus on Mobile Payment Revenue (MPR), Number of Mobile Payment Users (MPU), and Investment in Mobile Payment Technology (MPIN). The study was motivated by the growing integration of digital financial services within the telecommunications sector and the need to understand their implications for profitability, particularly in emerging economies. An ex post facto and quantitative research design was adopted, using secondary data obtained from the audited annual reports of MTN Nigeria and Airtel Africa over a 15-year period (2010–2024). Data were analyzed using descriptive statistics, correlation analysis, and stepwise Ordinary Least Squares (OLS) regression to address multicollinearity among variables.The findings revealed that while mobile payment indicators experienced substantial growth over the study period, their impact on financial performance, measured by Return on Assets (ROA), was mixed. Specifically, Mobile Payment Revenue exhibited a statistically significant negative relationship with ROA, suggesting that increased revenue from mobile payment services may be associated with higher operational and infrastructural costs. The Number of Mobile Payment Users showed a negative but statistically insignificant relationship with ROA, while Investment in Mobile Payment Technology had no significant effect on financial performance.The study concludes that although mobile payment technology contributes to revenue expansion and financial inclusion, its short- to medium-term impact on profitability is constrained by high investment and operational costs. It recommends that telecommunication companies focus on cost efficiency and strategic investment optimization to enhance financial performance.

Keywords: Mobile Payment Technology, Financial Performance, Return on Assets, Mobile Payment Revenue, Active Users, Telecommunication Companies.

1.1 Introduction

Financial performance reflects a firm's ability to balance heavy infrastructural investment with operational efficiency and revenue growth. According to the *Global Telecommunication Outlook* (2026), the financial performance of telecommunication companies reflects their ability to generate stable revenue and profitability while managing high capital investment in network

infrastructure and emerging technologies. Globally, telecommunication operators continue to show broadly stable financial performance, with the sector generating over US$1.1 trillion in revenue in 2023 and maintaining strong profitability (Global Telecommunication Outlook, 2026).

However, this stability is not uniform across regions. In Europe, financial performance of telecommunication companies shows a decline or contraction in the return on capital employed, which decreased from 9.1% in 2017 to about 5.8% in 2022 despite strong infrastructure development. This decline is largely attributed to the fragmented nature of the telecommunications market, characterized by numerous operators and increased competition. Additionally, high capital expenditure, which is typical of the European telecommunications industry, has further exerted pressure on financial performance (Connect Europe, 2024).

In contrast, financial performance of telecommunication companies in Africa continues to improve. These improvements are driven by increased smartphone adoption and the expansion of mobile broadband services. Notably, data services and mobile money have emerged as major drivers of profitability, enabling African telecommunication companies to generate billions of dollars in revenue (GAMA, 2014). This highlights the growing importance of digital financial services as a complementary revenue stream in the telecommunications sector.

Considering the Nigerian context, the telecommunications sector has grown significantly over the years. This growth has enabled telecommunication companies to generate high revenues and expand their market reach. Despite this strong growth rate, the sector faces several challenges, including high operational and infrastructural costs, foreign exchange volatility, regulatory taxation pressure, and security challenges affecting network infrastructure. These issues have adversely impacted the financial performance of telecommunication companies in Nigeria (Samson, 2025).

Financial performance, measured through metrics such as Return on Assets (ROA), remains a critical indicator of a company's ability to generate profit relative to its assets. In the context of telecommunication companies, ROA serves as an essential measure of how effectively firms utilize their resources to generate income (Johnson et al., 2021). In response to existing financial pressures, the introduction of mobile payment services represents a potential avenue for improving financial performance by diversifying revenue streams.

By offering mobile payment solutions, telecommunication companies can tap into a growing market of digital transactions. This not only boosts their income but also enhances their brand image as innovators within the financial services ecosystem (Smith & Johnson, 2021). The integration of mobile payment technology therefore represents both a strategic and operational shift for telecommunication firms.

The relationship between mobile payment technology and financial performance is influenced by several sub-variables or proxies that provide deeper insight into its impact. One such measure is mobile payment revenue, which refers to income generated through mobile payment services, including transaction fees, service charges, and partnerships with financial institutions. Another key factor is investment in mobile payment technology, which includes capital expenditure on infrastructure such as payment systems and mobile money platforms, as well as research and development costs aimed at improving service functionality.

A higher level of investment in mobile payment technology can lead to improved service quality, increased customer satisfaction, and ultimately higher financial returns. Furthermore, the number of active users on mobile payment platforms represents another critical proxy. Active users are individuals who regularly engage with mobile payment services, and their growth reflects both the popularity and effectiveness of these platforms in meeting user needs (Li et al., 2020).

The interrelationship among these variables is complex but significant. The revenue generated from mobile payments is directly influenced by the number of active users, while investment in technology enhances user experience, thereby

driving adoption and retention. These factors work synergistically to increase transaction volumes and overall revenue generation.

The integration of mobile payment technology into the operations of telecommunication companies in Nigeria presents a significant opportunity to enhance financial performance. By diversifying revenue streams and capitalizing on the increasing demand for digital financial services, these companies can improve their ROA and achieve long-term profitability. The interplay between mobile payment revenue, user adoption, and technological investment underscores the importance of strategic planning and a customer-centric approach in leveraging mobile payment systems for improved financial outcomes.

1.2 Statement of the Problem

The focus of this study is to examine how mobile payment technology specifically mobile payment revenue, number of mobile payment users, and investment in mobile payment technology impacts the financial performance of telecommunication companies in Nigeria.

A key issue identified in existing literature is the under-representation of the telecommunications sector in studies on mobile payment technology and organizational profitability. Previous studies have primarily focused on industries such as banking, small and medium enterprises, and fintech startups, thereby excluding telecommunications firms despite their increasing role in mobile financial services (Efemena et al., 2024; Taofiq et al., 2025).

Another major gap is the tendency of prior studies to treat mobile payment technology as a single construct without disaggregating it into measurable components. Studies by Paul and Benjamin (2024) and Benjamin (2025) have approached mobile payment systems as a unified variable, thereby overlooking the distinct contributions of mobile payment revenue (MPR), mobile payment users (MPU), and mobile payment investment (MPI). This oversimplification limits a comprehensive understanding of the mechanisms through which mobile payment technology influences financial performance.

Furthermore, low mobile payment adoption remains a significant challenge in Nigeria. Despite increasing mobile phone penetration, adoption rates remain relatively low, particularly in rural and underserved areas. This is largely due to limited awareness, lack of trust, and low financial literacy (Adebayo et al., 2020). Consequently, low adoption results in reduced transaction volumes and limited revenue generation, thereby constraining the financial benefits of mobile payment systems.

1.3 Research Objectives, Questions, and Hypotheses

The primary objective of this study is to examine the effect of mobile payment technology on the financial performance of quoted telecommunication companies in Nigeria.

Specifically, the study aims to:

(i) Assess the relationship between mobile payment revenue and financial performance.

(ii) Analyze the role of the number of active users in determining financial performance.

(iii) Evaluate the effect of investment in mobile payment technology on financial performance.

1.4 Research Questions

I. To what extent does mobile payment revenue affect the financial performance (ROA) of quoted telecommunication companies in Nigeria?

II. To what extent does the number of active users affect the financial performance (ROA) of quoted telecommunication companies in Nigeria?

III. To what extent does investment in mobile payment technology contribute to the financial performance (ROA) of quoted telecommunication companies in Nigeria?

1.5 Research Hypotheses

H_{01}: There is no significant relationship between mobile payment revenue and the financial

performance (ROA) of quoted telecommunication companies in Nigeria.

H_{02}: There is no significant relationship between the number of active users of mobile payment technology and the financial performance (ROA) of quoted telecommunication companies in Nigeria.

H_{03}: There is no significant effect of investment in mobile payment technology on the financial performance (ROA) of quoted telecommunication companies in Nigeria.

1.6 Significance of the Study

The significance of this study lies in its potential to provide valuable insights into the relationship between mobile payment technology and financial performance. From a policy perspective, the findings can guide regulators in designing frameworks that encourage mobile payment adoption and financial inclusion.

From a practical standpoint, the study offers telecommunications companies strategic insights on how to leverage mobile payment technology to enhance financial performance and competitiveness. Academically, the study contributes to the existing body of knowledge by providing a more detailed and disaggregated analysis of mobile payment technology in a developing economy context.

1.7 Scope of the Study

The study focuses on the effect of mobile payment technology on financial performance, with mobile payment technology as the independent variable and financial performance (measured by ROA) as the dependent variable. The study examines two quoted telecommunication companies in Nigeria—MTN Nigeria and Airtel Africa—due to their significant involvement in mobile payment services.

The time frame of the study spans from 2010 to 2024, capturing the period during which mobile payment systems gained prominence in Nigeria. The study is geographically limited to Nigeria, given its importance as a leading market for mobile financial services in Africa.

1.8 Operational Definitions

Key concepts are defined to ensure clarity. Financial performance is measured using ROA, representing the firm's ability to generate profit relative to its assets.

Mobile payment technology refers to digital systems enabling financial transactions via mobile devices.

Mobile payment revenue denotes income generated from such services.

Active users represent individuals who regularly use these platforms.

Investment in mobile payment technology refers to financial resources allocated toward infrastructure development, system enhancement, and service improvement.

LITERATURE REVIEW

2.1 Conceptual Framework

The conceptual framework of this study focuses on the relationship between financial performance and mobile payment technology, emphasizing key constructs such as Return on Assets (ROA), mobile payment revenue, number of active users, and investment in mobile payment technology. These concepts provide the foundation for understanding how technological innovation in financial services influences firm performance, particularly within the telecommunications sector.

2.1.1 Financial Performance (ROA)

Financial performance is a key aspect of organizational success, and it is typically measured using a variety of financial indicators. One of the most commonly used indicators is Return on Assets (ROA). ROA is a measure of a company's profitability relative to its total assets, which reflects how efficiently a company uses its assets to generate earnings. According to Johnson et al. (2021), ROA is calculated by dividing a company's net income by its total assets, thereby providing a clear picture of the effectiveness of asset utilization.

This ratio is crucial for stakeholders such as investors, analysts, and managers, who rely on it to assess how well a company is performing in relation to its asset base. Several authors have explored the definition of financial performance and the role of ROA within it. For instance, Miller et al. (2020) argue that financial performance is a broad concept that encompasses various profitability ratios, including ROA, which serves as a vital indicator of how efficiently resources are managed. According to their perspective, companies with high ROA are seen as utilizing their resources effectively, generating more profit from fewer assets, while low ROA may signal inefficiencies in resource allocation.

Thus, ROA remains a central metric for evaluating firm performance, particularly in capital-intensive industries such as telecommunications, where efficient asset utilization is critical for profitability and sustainability.

2.1.2 Mobile Payment Technology

Mobile Payment Technology (MPT) has emerged as a significant innovation in the financial sector, reshaping how consumers conduct transactions and manage their finances. At its core, MPT allows users to make payments using mobile devices such as smartphones or tablets through various platforms and technologies. According to Johnson et al. (2022), mobile payment technology facilitates transactions via near-field communication (NFC), QR codes, or dedicated payment applications, offering a more convenient, secure, and efficient alternative to traditional payment methods.

The rapid advancement of smartphone technology, combined with increased access to mobile networks, has accelerated the adoption of mobile payment systems across global markets. This trend is particularly evident in regions with limited access to traditional banking infrastructure, where mobile payment technology serves as an important tool for financial inclusion.

From a broader perspective, mobile payment technology encompasses more than just transaction methods. It includes the underlying infrastructure, security frameworks, and user experience that enable seamless financial interactions. Mukunzi (2019) emphasizes that mobile payment technology represents a convergence of various technological components, including wireless communication systems, cryptographic security mechanisms, and cloud-based platforms. These integrated technologies have revolutionized financial transactions by enabling users to perform secure and efficient transactions without the need for physical cash or payment cards.

2.1.2.1 Mobile Payment Revenue

Mobile payment revenue refers to the financial income generated through the use of mobile payment systems, which has become an increasingly important component of the digital economy. As more consumers and businesses transition toward mobile-based transactions, this revenue stream continues to expand.

According to Williams et al. (2021), mobile payment revenue is not limited to transaction fees alone but also includes income derived from value-added services, subscription models, and data analytics offerings. Mobile payment providers, such as global platforms like PayPal, Apple Pay, and Alipay, generate revenue from both service fees charged to users and transaction charges imposed on merchants.

Similarly, Taylor et al. (2021) describe mobile payment revenue as a multi-dimensional income source that includes platform usage fees, commission-based earnings from financial services, and advertising revenue generated through mobile applications. These platforms often utilize user data to deliver targeted advertising, thereby creating additional revenue streams. As a result, mobile payment systems have evolved into comprehensive business models that integrate financial services, marketing, and data analytics, significantly contributing to overall revenue generation.

2.1.2.2 Number of Active Users

The number of active users is a critical metric in the context of digital platforms, mobile applications, and online services. It refers to the number of users who

engage with a product or service within a specified period. According to Li et al. (2020), an active user is one who interacts meaningfully with a system, such as logging into an application or conducting a transaction.

The concept of active users extends beyond mere registration or downloads. Zhou et al. (2019) emphasize that active users are those who consistently engage with the features of a platform, deriving value from its services. This includes activities such as making payments, participating in transactions, or utilizing various functionalities that contribute to the platform's value proposition.

Measuring the number of active users is essential for evaluating user engagement and retention. Huang et al. (2021) note that active user metrics are widely used as key performance indicators (KPIs) by organizations, as they provide insights into user behavior, platform effectiveness, and growth potential. This is particularly important in mobile payment systems, where increased user engagement directly correlates with higher transaction volumes and revenue generation.

2.1.2.3 Investment in Mobile Payment Technology

Investment in mobile payment technology has gained significant attention due to the rapid expansion of digital financial services. Such investments are considered essential for both financial institutions and technology firms seeking to meet the growing demand for fast, secure, and convenient payment solutions.

According to Smith et al. (2020), investment in mobile payment technology involves not only the development of infrastructure but also ensuring scalability, user-friendliness, and integration with existing financial systems. These investments are critical for enhancing transaction efficiency, improving customer satisfaction, and maintaining competitiveness in the financial technology landscape.

Furthermore, Chen et al. (2019) highlight the role of mobile payment technology in promoting financial inclusion, particularly in developing economies where access to traditional banking services is limited. Investments in mobile payment systems enable underserved populations to participate in formal financial activities, thereby contributing to economic development.

Brown et al. (2021) observe that financial institutions have made substantial investments in mobile payment infrastructure to respond to increasing consumer demand for digital transactions. Similarly, Lee et al. (2021) note that technology companies and start-ups play a significant role in driving innovation in mobile payment systems through continuous investment in applications, platforms, and secure payment gateways.

Zhang et al. (2021) further emphasize that the widespread use of smartphones has created a dynamic ecosystem for mobile payments, allowing businesses to offer seamless transaction experiences. Additionally, the COVID-19 pandemic accelerated investment in mobile payment technologies, as highlighted by Zhang (2021), who argues that the pandemic underscored the importance of contactless payment solutions in ensuring business continuity and consumer safety.

2.2 Theoretical Review

The theoretical foundation of this study is anchored on two dominant frameworks: the Resource-Based View (RBV) theory and the Technology Acceptance Model (TAM). These theories provide complementary perspectives for understanding how mobile payment technology influences the financial performance of telecommunication companies.

The Resource-Based View (RBV) theory, originally developed by Penrose (1959) and further refined by Wernerfelt (1984) and Barney (1991), emphasizes that a firm's internal resources and capabilities are the primary determinants of its competitive advantage and financial performance. RBV posits that resources—whether tangible or intangible—must be valuable, rare, inimitable, and non-substitutable (VRIN) to generate sustained superior performance. In line with this perspective, financial success is not merely a function of market positioning but rather the effective deployment and

management of firm-specific resources. As highlighted by Mailani et al. (2024), critical resources such as technology, intellectual property, and human capital play a central role in sustaining competitive advantage.

Applying RBV to the context of mobile payment technology, telecommunication firms that invest in advanced mobile payment systems, proprietary platforms, and innovative service delivery mechanisms are more likely to achieve enhanced financial performance. Such firms can leverage these unique capabilities to increase market share, improve customer retention, and generate higher revenue streams (Barney et al., 2021). Thus, variables such as mobile payment revenue, number of active users, and investment in mobile payment technology can be conceptualized as strategic resources that drive value creation and profitability.

However, despite its strengths, RBV has been subject to several criticisms. One major limitation lies in its assumption of resource immobility, which is often unrealistic in dynamic and technology-driven industries. As argued by Zahra (2021), RBV tends to underemphasize the role of external environmental factors such as market competition, regulatory policies, and technological disruption. In the telecommunications sector, where innovations like mobile payment systems can be rapidly imitated or surpassed, the sustainability of competitive advantage becomes questionable. Furthermore, measuring the true value and contribution of intangible resources—such as digital platforms and user networks—poses empirical challenges. These criticisms suggest that while RBV offers a strong internal perspective, it should be complemented with external considerations to provide a more holistic understanding of firm performance.

Complementing RBV, the Technology Acceptance Model (TAM), developed by Davis (1989), provides a behavioral perspective on technology adoption. TAM explains how users come to accept and use new technologies based on two key determinants: perceived usefulness and perceived ease of use. The model suggests that individuals are more likely to adopt a technology if they believe it enhances their performance and is easy to operate. This framework is particularly relevant in analyzing mobile payment technology, where user adoption is critical to the success and financial viability of such systems.

Empirical support for TAM has been widely documented. Studies by Binyamin et al. (2020) and Gupta et al. (2020) confirm that perceived usefulness and ease of use are consistent predictors of technology adoption across various contexts, including mobile financial services. In the telecommunications industry, higher adoption of mobile payment platforms translates into increased transaction volumes, greater customer engagement, and ultimately higher revenue generation. This, in turn, positively influences financial performance indicators such as Return on Assets (ROA). Therefore, TAM provides a robust framework for understanding how user behavior and acceptance drive the effectiveness of mobile payment technology.

Nevertheless, TAM is not without limitations. Critics argue that the model oversimplifies the complex nature of technology adoption by focusing primarily on individual perceptions. Bagozzi (2007) contends that TAM neglects broader contextual factors such as social influence, cultural dynamics, and organizational structures. Similarly, Chung et al. (2020) highlight that external variables—including regulatory environments, economic conditions, and competitive pressures—play a significant role in shaping technology adoption but are not adequately captured within TAM. These limitations are particularly relevant in developing economies like Nigeria, where infrastructural challenges and institutional factors significantly influence the adoption of mobile payment systems.

Despite these criticisms, TAM remains highly relevant to this study. It provides a clear explanation of how user acceptance of mobile payment technology can lead to increased usage, which subsequently enhances mobile payment revenue and overall financial performance. When users perceive mobile payment systems as useful and easy to use, adoption rates increase, leading to a higher number of active users and improved financial outcomes for telecommunication firms.

In summary, the integration of RBV and TAM offers a comprehensive theoretical framework for this

study. While RBV explains how internal resources such as mobile payment infrastructure and investment contribute to financial performance, TAM elucidates how user acceptance drives the utilization and success of these technologies. Together, these theories provide a balanced perspective that captures both firm-level capabilities and user-driven dynamics. This combined framework is particularly suitable for examining the relationship between mobile payment technology and the financial performance of telecommunication companies in Nigeria, as it accounts for both strategic resource deployment and behavioral adoption factors.

2.3. Empirical Review

The empirical literature on mobile payment technology and financial performance provides extensive evidence on the mechanisms through which mobile payment systems influence firm outcomes, particularly in the telecommunications and financial services sectors. The reviewed studies collectively highlight the importance of mobile payment revenue, user adoption, and investment in technology as critical drivers of financial performance, while also identifying contextual and structural factors that shape these relationships.

Empirical evidence on mobile payment revenue and financial performance underscores the strategic and organizational determinants of success in the mobile payments ecosystem. Kawamoto et al. (2023) conducted an exploratory study aimed at identifying the main determinants of success for firms in the mobile payments segment, focusing on globally recognized platforms such as M-Pesa, Alipay, and Nubank. Using a triangulation approach that combined literature review, case studies, and expert opinions, the study found that companies with organic and flexible organizational structures, open communication systems, and decentralized decision-making processes tend to achieve superior performance. Importantly, the study emphasized that achieving a critical mass of users, operating within supportive regulatory environments, and diversifying service offerings beyond basic payment functions are essential for enhancing revenue generation and long-term sustainability. These findings suggest that mobile payment revenue is not solely dependent on transaction fees but also on broader strategic and institutional factors that influence firm competitiveness.

Similarly, Pelletier et al. (2020) provided cross-country evidence on the growth and impact of mobile money in emerging markets. Examining 90 developing countries over a 15-year period, the study revealed that telecommunications companies are more likely to introduce mobile money services in environments characterized by weak legal systems and limited credit information. However, the study also found that mobile money services delivered through banking channels tend to generate greater economic benefits. This duality highlights the importance of institutional collaboration in maximizing the financial performance of mobile payment systems. The findings further indicate that mobile payment revenue is closely tied to the ability of firms to integrate informal economic activities into formal financial systems, thereby expanding their customer base and increasing transaction volumes.

Kang (2018) extended the discussion by focusing on the operational and security dimensions of mobile payment systems. Through a comparative analysis of traditional and fintech-based payment systems, the study identified critical security challenges, including authentication, authorization, privacy, integrity, and system availability. These challenges have direct implications for financial performance, as security vulnerabilities can undermine user trust and reduce transaction volumes. The study concluded that continuous investment in security infrastructure is essential for sustaining revenue growth in mobile payment systems. In a related vein, Lu (2019) examined the drivers of mobile payment success across global markets, particularly in China and India. The study found that successful mobile payment platforms are characterized by profitable and adaptable business models that respond effectively to changing consumer preferences and merchant needs. The evolution of mobile payments toward diversification and cross-border integration further enhances revenue potential, reinforcing the

role of innovation and strategic flexibility in driving financial performance.

Beyond revenue generation, the number of active users has been identified as a critical determinant of financial performance. Empirical studies in the telecommunications sector demonstrate that user engagement and adoption significantly influence profitability. Jauzaa and Hirawati (2021) analyzed the financial performance of telecommunications companies in Indonesia before and during the COVID-19 pandemic. Using profitability ratios such as ROA, ROE, and NPM, the study found that financial performance improved during the pandemic despite global economic disruptions. This improvement was attributed to increased demand for digital services, including mobile payments, which led to higher user engagement and transaction volumes. The findings highlight the resilience of the telecommunications sector and underscore the importance of active users in driving financial outcomes.

Trihastuti and Adiati (2022) further examined financial performance variations among Indonesian telecommunications firms using financial ratio analysis. The study revealed that companies with stronger operational efficiency and better resource management achieved superior financial performance. Although the study did not explicitly focus on mobile payment users, its findings imply that firms with higher levels of customer engagement and service utilization are better positioned to enhance profitability. Similarly, Yahaya et al. (2024) investigated the determinants of financial performance in Nigerian telecommunication firms, focusing on borrowing costs and human capital development. The study found that while borrowing costs negatively affect financial performance, investment in human capital has a positive impact. These results suggest that user growth and engagement, which often depend on effective workforce capabilities and service delivery, play a crucial role in improving financial outcomes.

Zuliansyah et al. (2024) provided additional insights by examining the financial performance of telecommunications companies before and during the COVID-19 pandemic. Using a paired sample t-test, the study found no significant differences in key financial indicators such as the current ratio and net profit margin. Despite increased demand for internet services, the expected improvements in financial performance were not fully realized. This finding suggests that increased user activity alone may not automatically translate into improved financial performance, highlighting the importance of complementary factors such as cost management and operational efficiency.

The role of investment in mobile payment technology is another critical area explored in the empirical literature. Bateman et al. (2020) critically examined the widely held assumption that mobile money services significantly contribute to poverty alleviation and economic development. By reassessing the impact of M-Pesa in sub-Saharan Africa, the study argued that the benefits of mobile money are often overstated and that technological solutions alone are insufficient to address structural economic challenges. This critique is important for understanding the limitations of investment in mobile payment technology, as it suggests that financial performance gains may depend on broader socio-economic conditions rather than technology adoption alone.

In contrast, Demirgüç-Kunt et al. (2017) provided strong empirical support for the positive impact of mobile payment technologies on financial inclusion and economic growth. Through a comprehensive review of global data, the study found that mobile payment systems enhance access to financial services, promote entrepreneurship, and improve economic opportunities, particularly in developing economies. These outcomes have indirect but significant implications for financial performance, as increased financial inclusion expands the customer base and stimulates transaction activity. The study concluded that investment in mobile payment technology is a key driver of inclusive growth and recommended policy interventions to support its adoption.

Overall, the empirical literature reveals a complex and multifaceted relationship between mobile payment technology and financial performance. Mobile payment revenue is influenced by organizational strategies, regulatory environments, and the ability to achieve scale through user adoption.

The number of active users serves as a critical link between technology adoption and revenue generation, as higher user engagement leads to increased transaction volumes and improved profitability. Investment in mobile payment technology, while essential, must be complemented by supportive institutional frameworks and effective management practices to yield optimal financial outcomes.

Furthermore, the reviewed studies highlight several gaps that justify the current research. First, there is limited empirical focus on the telecommunications sector in Nigeria, despite its growing role in mobile financial services. Second, many studies treat mobile payment technology as a single construct, failing to disaggregate its components into measurable proxies such as revenue, users, and investment. Third, the interaction between these variables and their combined effect on financial performance remains underexplored. Addressing these gaps, this study adopts a more nuanced approach by examining the individual and collective effects of mobile payment revenue, number of active users, and investment in mobile payment technology on the financial performance of telecommunication companies in Nigeria.

In conclusion, the empirical review provides strong evidence that mobile payment technology has the potential to enhance financial performance, but its impact is contingent on a range of internal and external factors. The integration of strategic management practices, user adoption dynamics, and technological investment is essential for maximizing the benefits of mobile payment systems. This synthesis of empirical findings forms the basis for the study's model specification and reinforces the need for a comprehensive analysis of mobile payment technology within the Nigerian telecommunications context.

METHODOLOGY

The methodology of this study is structured to provide a rigorous empirical investigation into the effect of mobile payment technology on the financial performance of telecommunication companies in Nigeria. The study adopts an ex post facto and quantitative research design, which is appropriate because the research relies on existing financial and operational data that cannot be manipulated. As noted by Creswell and Creswell (2018), ex post facto research is suitable where variables have already occurred, while the quantitative approach enables systematic analysis of relationships using measurable numerical indicators. In this context, variables such as mobile payment revenue, transaction volume, investment in mobile payment technology, and number of active users are analyzed using statistical techniques to establish empirical relationships and determine their significance (Saunders et al., 2019). This design ensures objectivity and enhances the reliability of findings by grounding conclusions in observable financial data.

The population of the study consists of the two publicly quoted telecommunication companies in Nigeria, namely MTN Nigeria and Airtel Africa. These firms are selected because they are listed on the Nigerian Exchange Group (NGX), ensuring the availability of consistent and credible financial data. The study covers the period from 2010 to 2024, which is considered appropriate for capturing the evolution and increasing relevance of mobile payment technology within the Nigerian telecommunications sector. Given the small and well-defined population, the study adopts a census sampling technique, meaning that the entire population is included in the analysis. This approach eliminates sampling bias and allows for a comprehensive assessment of the impact of mobile payment variables on financial performance across all relevant firms within the industry.

Data for the study are collected from secondary sources, specifically the audited annual reports of MTN Nigeria and Airtel Africa over the selected period. The use of audited financial statements enhances the validity and reliability of the data, as these reports are independently verified and prepared using standardized accounting practices. Validity is ensured because the data accurately represent the financial performance of the firms, while reliability is achieved through consistency in reporting across multiple years. Furthermore, reliance on secondary data minimizes the risk of respondent bias and

measurement errors, thereby improving the overall credibility of the study.

For data analysis, the study employs the Ordinary Least Squares (OLS) regression technique using EViews statistical software. OLS is considered appropriate because it estimates the relationship between dependent and independent variables by minimizing the sum of squared residuals, resulting in unbiased and efficient parameter estimates.

The model specification adopted in the study is a multiple linear regression model expressed

as $FP = \beta0 + \beta1MPR + \beta2MPU + \beta3INV + \epsilon$,

Where financial performance (FP), measured using Return on Assets (ROA), serves as the dependent variable, while mobile payment revenue (MPR), mobile payment users (MPU), and investment in mobile payment technology (INV) are the independent variables. The coefficients (β1, β2, β3) capture the magnitude and direction of the relationship between each explanatory variable and financial performance, while the error term (ϵ) accounts for unexplained variations.

The measurement of variables is clearly defined to ensure consistency and replicability. Financial performance is proxied by Return on Assets (ROA), calculated as net income divided by total assets, reflecting the efficiency with which firms utilize their resources to generate profit.

Mobile payment revenue is measured as the total income generated from mobile payment services, expressed in monetary terms.

The number of active users represents the total count of individuals actively engaging with mobile payment platforms within a given period, serving as an indicator of adoption and usage intensity.

Investment in mobile payment technology is measured as the total capital expenditure on mobile payment infrastructure and related technological development.

All variables are derived from audited annual reports spanning 2010 to 2024, ensuring data consistency and comparability.

Data Analysis, Results and Discussion of Findings

The results presented in Chapters Four and Five provide a comprehensive empirical evaluation of the relationship between mobile payment technology and the financial performance of telecommunication companies in Nigeria, drawing on data from MTN Nigeria and Airtel Africa over the period 2010 to 2024. The analysis begins with data presentation, where a pooled dataset of 30 firm-year observations was compiled from audited annual reports. The variables include Mobile Payment Revenue (MPR), Number of Mobile Payment Users (MPU), Investment in Mobile Payment Technology (MPIN), and financial performance measured by Return on Assets (ROA). The pooling of data enhanced the statistical power of the analysis and allowed for a broader understanding of trends across firms and time. The dataset reveals clear growth patterns in mobile payment activities, particularly in revenue and user base, alongside fluctuations in ROA, indicating that increased operational scale does not necessarily translate into improved profitability.

The descriptive statistics provide insight into the distribution and variability of the variables. The mean ROA of 8.43% suggests moderate profitability across the study period, although the wide range from -9.50% to 30.30% and a high standard deviation of 10.57% indicate substantial volatility in financial performance. This volatility reflects the dynamic and capital-intensive nature of the telecommunications sector. Mobile Payment Revenue averaged ₦124.7 billion but exhibited extreme dispersion, with values ranging from ₦692.37 million to ₦1.28 trillion, highlighting exponential growth in mobile financial services. Similarly, the average number of mobile payment users stood at 24.2 million, demonstrating significant adoption, while investment in mobile payment technology averaged ₦196.3 billion, confirming sustained capital commitment to infrastructure development. These findings align with the assertions of Smith et al. (2021) and Lee et al. (2021) that investment in digital infrastructure is central to technological expansion, although it may initially increase cost pressures.

The correlation analysis reveals important preliminary relationships among the variables. Contrary to theoretical expectations, all mobile

payment proxies (MPR, MPU, MPIN) exhibit weak and negative correlations with ROA, and these relationships are not statistically significant. This suggests that, in isolation, mobile payment activities do not directly enhance financial performance. However, strong positive correlations exist among the independent variables themselves, particularly between MPR and MPU (0.851) and between MPR and MPIN (0.797), indicating multicollinearity. This implies that these variables tend to move together, reflecting the interconnected nature of revenue growth, user expansion, and technological investment. The presence of multicollinearity necessitated the adoption of stepwise regression to isolate the individual effects of each predictor.

The regression analysis provides deeper insight into the causal relationships. Model 1, which examines the effect of MPR on ROA, shows a statistically significant negative relationship (β = -3.19E-11, $p < 0.05$). Although the explanatory power is modest ($R^2 = 0.142$), the result indicates that increases in mobile payment revenue are associated with declines in asset efficiency. This counterintuitive finding suggests that the costs associated with generating such revenue—such as infrastructure investment, regulatory compliance, and customer acquisition—may outweigh the immediate financial benefits. Model 2, focusing on MPU, reveals a negative but marginally insignificant relationship ($p = 0.052$), indicating that user growth alone does not significantly improve financial performance. Model 3 shows that investment in mobile payment technology (MPIN) has no statistically significant effect on ROA, with negligible explanatory power ($R^2 = 0.003$). Collectively, these results demonstrate that while mobile payment activities are expanding rapidly, their financial benefits are not yet fully realized in terms of profitability.

The hypothesis testing confirms these observations. The null hypothesis regarding mobile payment revenue is rejected, indicating a significant but negative relationship with ROA. In contrast, the hypotheses for MPU and MPIN are accepted, as their effects are not statistically significant. These findings highlight a critical disconnect between technological expansion and financial performance, suggesting that the sector is still in a developmental phase characterized by high costs and delayed returns.

The discussion of findings provides a nuanced interpretation of these results. The negative relationship between MPR and ROA challenges the conventional assumption that revenue growth directly enhances profitability. Instead, it supports the argument by Johnson et al. (2021) that revenue must be accompanied by efficient cost management to translate into financial gains. The findings also align with Bateman et al. (2020), who caution against overly optimistic expectations of mobile payment benefits, emphasizing that structural and cost-related challenges may limit immediate financial impact. Similarly, the non-significant effect of MPU suggests that mere expansion in user base is insufficient for profitability, echoing the views of Lee et al. (2018) that the quality of user engagement is more critical than quantity. The insignificance of MPIN further underscores the long-term nature of returns on technological investments, as suggested by Zhang et al. (2021), indicating that benefits may materialize only after a lag period.

Chapter Five synthesizes these findings into a coherent conclusion. The study concludes that the relationship between mobile payment technology and financial performance is complex and not immediately beneficial in terms of ROA. Despite significant growth in mobile payment revenue, user base, and investment, these factors do not translate into improved asset efficiency in the short run. This suggests that the Nigerian telecommunications sector is in a transitional phase, where heavy investments and operational costs dominate, delaying the realization of financial benefits. The findings reinforce the perspective of Demirgüç-Kunt et al. (2018) that while mobile financial services enhance financial inclusion, their profitability impact may depend on broader structural and economic conditions.

The study's recommendations emphasize the need for strategic adjustments. Telecommunication companies are advised to focus on cost optimization and operational efficiency rather than solely pursuing revenue growth. This includes adopting more targeted marketing strategies, improving cost management, and utilizing performance metrics such

as customer lifetime value. Policymakers are encouraged to create supportive regulatory frameworks that promote both adoption and sustainability, including incentives for infrastructure development and policies that enhance financial inclusion. From an academic perspective, the study highlights the need for further research into cost structures, alternative performance measures such as Return on Equity (ROE), and long-term effects of mobile payment investments.

In summary, the combined evidence from Chapters Four and Five demonstrates that while mobile payment technology is expanding rapidly within Nigeria's telecommunications sector, its contribution to financial performance, as measured by ROA, remains limited or even negative in the short term. This underscores the importance of strategic cost management, long-term investment planning, and supportive policy frameworks in realizing the full financial potential of mobile payment systems (Creswell & Creswell, 2018; Saunders et al., 2019; Demirgüç-Kunt et al., 2018).

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