



# Impact of Financial Technology Penetration on Small and Medium Enterprises (SMEs) Growth in Nigeria: 2012Q1-2022Q4

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## Abstract

This study embarked on a comprehensive examination of the impact of Financial Technology (FinTech) Penetration on the growth of Small and Medium Enterprises (SMEs) in Nigeria, addressing a significant gap in the literature regarding the nuanced effects of digital financial services on economic development within the SME sector. The main objective was to dissect the intricate dynamics between FinTech penetration rates—specifically Instant Pay Penetration Rate, Internet Transaction Penetration Rate, and Mobile Payment Penetration Rate—and their impact on SME growth, as measured by SME contributions to GDP. Employing a Dynamic Ordinary Least Squares (DOLS) regression analysis and post-estimation diagnostic tests, the study meticulously analysed time series data sourced from reputable databases such as the Central Bank of Nigeria (CBN) statistical bulletin, the National Bureau of Statistics (NBS), and the World Development Indicators (WDI). This methodological approach ensured a robust examination of the relationship between FinTech services and SME growth over a specified period. Findings revealed a mixed impact of FinTech penetration on SME growth. Specifically, the study found that Instant Pay and Internet Transaction Penetration Rates had a significant positive impact on SME growth, highlighting the role of digital financial services in enhancing operational efficiency and market access for SMEs. Conversely, the Mobile Payment Penetration Rate exhibited a surprising negative but significant impact on SME growth, suggesting existing challenges within the mobile payment ecosystem that may hinder the growth potential of SMEs.

Based on these outcomes, the study recommends several targeted actions. These include enhancing digital infrastructure and internet accessibility to support the adoption of Instant Pay and Internet Transaction services among SMEs. For mobile payments, a re-evaluation of fee structures and transaction costs is advised, alongside efforts to improve network reliability and tailor mobile payment solutions to the specific needs of SME sectors. Additionally, the study advocates for a segmented strategy in policy and FinTech product development to address the diverse needs of the SME landscape effectively.

**Keywords:** Instant Pay Penetration Rate, Internet Transaction Penetration Rate, Mobile Payment Penetration Rate and SME's growth.

## I. Introduction

The advent and proliferation of financial technology (FinTech) over the past decade have dramatically transformed the global financial landscape, introducing a paradigm shift in the way financial services are accessed and delivered. Globally, FinTech has emerged as a pivotal force, driving financial inclusion, enhancing transaction efficiency, and fostering a conducive environment for economic growth. The World Bank (2020) notes that FinTech solutions, including digital payments, peer-to-peer lending, and crowdfunding platforms, have significantly reduced barriers to financial services access, especially in underbanked regions. In particular, the penetration rates of instant pay, internet transactions, and mobile payments serve as critical proxies to gauge the depth of FinTech integration within economies.



Narrowing down to the Nigerian context, the country has witnessed a remarkable FinTech revolution, catalysed by its youthful population, high mobile phone penetration, and supportive government policies. According to the Central Bank of Nigeria (2021), the Instant Pay Penetration Rate and Mobile Payment Penetration Rate have seen exponential growth, with mobile payment transactions increasing by over 200% between 2019 and 2021. This surge underscores the pivotal role of FinTech in enhancing financial accessibility and efficiency in Nigeria. Similarly, countries like Kenya and South Africa have showcased substantial FinTech growth, with Kenya's M-Pesa being a quintessential example of mobile payment success, contributing significantly to financial inclusion and SME growth (Safaricom, 2019).

In an ideal economic landscape, Small and Medium Enterprises (SMEs) are heralded as the bedrock of growth and development, acting as crucial engines for creating employment, fostering innovation, and driving wealth creation. Particularly in developing nations like Nigeria, the SME sector is expected to serve as a catalyst for economic diversification, reducing reliance on oil revenues by expanding into manufacturing, services, and technology-driven industries. The envisioned scenario is one where these enterprises thrive, contributing significantly to Gross Domestic Product (GDP), enhancing export potentials, and elevating the standard of living through substantial job creation.

However, the reality on the ground starkly contrasts with this ideal. Despite the recognized potential of SMEs to spur economic growth, their performance in Nigeria has been underwhelming. Recent statistics reveal a troubling trend: the National Bureau of Statistics (2020) reports that the failure rate of SMEs in Nigeria within their first five years of operation exceeds 75%. This dismal performance is further exacerbated by the fact that SME contribution to Nigeria's GDP remains disproportionately low, hovering around 48% in 2019, a figure that starkly underrepresents their potential when compared to developed economies where SMEs contribute upwards of 60% to GDP.

Acknowledging these challenges, the Nigerian government and various stakeholders have implemented several policy measures aimed at revitalizing the SME sector. These interventions have ranged from financial support initiatives, including grants and low-interest loans, to capacity-building programs designed to enhance entrepreneurial skills and business acumen. Furthermore, efforts to improve the regulatory and

business environment have been prioritized, aiming to ease the challenges of starting and running businesses in Nigeria.

Despite these well-intentioned strategies, the growth and performance of SMEs in Nigeria have not seen the expected turnaround. The persistent barriers to SME growth include access to finance, inadequate infrastructure, and the burden of regulatory compliance, which collectively impede the sector's ability to expand and compete both locally and globally. The World Bank's Ease of Doing Business Report (2019) underscores these challenges, ranking Nigeria 131st out of 190 countries, a position that reflects the tough operational environment for businesses, including SMEs.

The consequence of this underperformance is far-reaching, affecting not only the entrepreneurs and their employees but also the broader economy. The inability of SMEs to expand and operate at their full potential means lost opportunities for job creation, innovation, and wealth generation. This stagnation hinders Nigeria's economic diversification efforts and increases vulnerability to external shocks, such as fluctuations in oil prices.

Given the pivotal role of SMEs in driving economic growth and development, the persistent underperformance of this sector signals a significant threat to Nigeria's economic stability and growth prospects. This situation necessitates a fresh examination of the factors influencing SME growth, with a particular focus on the role of Financial Technology (FinTech) penetration.

The literature reveals a gap in understanding the specific impact of FinTech penetration on SME growth in the Nigerian context. While several studies have explored aspects of SME challenges and FinTech opportunities globally and in Africa, few have delved into the nuanced relationship between FinTech adoption and SME performance in Nigeria. This research proposes to fill this gap by analyzing how the penetration of financial technologies—specifically, the Instant Pay Penetration Rate, Internet Transaction Penetration Rate, and Mobile Payment Penetration Rate—has influenced SME growth in Nigeria from 2012 to 2022.

The motivation for this study stems from the transformative potential of FinTech as an enabler for SMEs, offering pathways to overcome traditional barriers to finance, market access, and operational efficiency. By examining the impact of FinTech penetration on SME growth, this research



aims to provide insights that could guide policy formulation, encourage FinTech innovation, and ultimately enhance the performance and contribution of SMEs to Nigeria's economy.

The paper addressed the following research objectives, and they are to:

- i. examine the impact of instant pay penetration rate on SME's growth in Nigeria
- ii. analyse the impact of internet transaction penetration rate on SME's growth in Nigeria
- iii. evaluate the impact of mobile payment penetration rate on SME's growth in Nigeria

Based on the highlighted specific objectives, the following hypotheses were raised and tested:

**H<sub>01</sub>:** instant pay penetration rate has no significant impact on SME's growth in Nigeria

**H<sub>02</sub>:** Internet Transaction Penetration Rate has not significantly enhanced SME's growth in Nigeria

**H<sub>03</sub>:** Mobile Payment Penetration Rate has no significant impact on SME's growth in Nigeria

## II. Literature Review

### Conceptual Review

#### Financial Technology Penetration

Financial Technology, commonly referred to as FinTech, represents the intersection of financial services and technology, aiming to enhance or automate the delivery and use of financial services. This innovative sector has grown exponentially, driven by advancements in technology, changing consumer expectations, and a dynamic regulatory environment. FinTech encompasses a broad range of applications, from digital payments and mobile banking to cryptocurrency and blockchain technologies, reshaping the traditional financial landscape by offering more accessible, efficient, and cost-effective services (Schueffel, 2016).

The concept of FinTech penetration refers to the extent to which these digital financial services have been adopted and integrated into the economy and society. It is a measure of how widespread and deeply embedded FinTech solutions are among consumers, businesses, and financial institutions. Penetration can be assessed through various proxies, including the volume and value of digital transactions, the number of active users of FinTech services, and the ratio of digital payments to GDP. High FinTech penetration is indicative of a robust digital financial ecosystem where traditional barriers to financial access, such as geographical location and socio-economic status, are significantly reduced (Ozili, 2018).

The importance of FinTech penetration cannot be overstated, as it plays a pivotal role in

promoting financial inclusion, especially in underserved and unbanked populations. In developing countries, where traditional banking infrastructure is limited, FinTech offers a lifeline by providing access to financial services through mobile devices and the internet. This has been particularly evident in regions like Sub-Saharan Africa, where mobile money services have revolutionized the financial sector by enabling transactions, savings, and credit facilities via mobile phones, thus contributing to economic empowerment and growth (Demirguc-Kunt, Klapper, Singer, Ansar, & Hess, 2018).

Moreover, FinTech penetration has implications for the efficiency and competitiveness of the financial sector. By leveraging technologies such as artificial intelligence, big data analytics, and blockchain, FinTech firms can offer personalized financial products, reduce transaction costs, and enhance the security of financial transactions. This not only benefits consumers but also challenges traditional financial institutions to innovate and improve their services, thereby enhancing the overall efficiency of the financial system (Philippon, 2016).

The Instant Pay Penetration Rate, Internet Transaction Penetration Rate, and Mobile Payment Penetration Rate are critical metrics for assessing the depth and effectiveness of Financial Technology (FinTech) integration within an economy. These rates not only provide insights into the level of digital financial inclusion but also reflect the changing dynamics of consumer behaviour and the broader digital transformation of financial services.

**Instant Pay Penetration Rate** refers to the proportion of instant payment transactions relative to the total financial transactions within an economy. Instant payments are defined as electronic payments that are processed in real-time, allowing for the immediate transfer of funds between parties. This rate is a key indicator of the efficiency and modernization of a country's payment systems. High levels of Instant Pay Penetration suggest a strong adoption of real-time payment solutions, which can significantly reduce transaction costs, increase transaction speed, and enhance the overall convenience for users. Studies have shown that economies with high Instant Pay Penetration rates experience greater financial inclusion and economic growth due to the seamless integration of various sectors into the formal economy (Ozili, 2018).

**Internet Transaction Penetration Rate** measures the volume of financial transactions



conducted over the internet as a percentage of total financial transactions. This rate highlights the extent to which consumers and businesses are engaging with online platforms for their financial transactions, encompassing activities such as online banking, e-commerce payments, and online investment activities. A higher Internet Transaction Penetration Rate indicates a more digitally literate population and a more robust digital infrastructure supporting financial activities. The proliferation of internet transactions is closely linked with increased accessibility to financial services, especially in underserved areas, thereby promoting economic inclusivity and growth (Philippon, 2016).

**Mobile Payment Penetration Rate**, on the other hand, quantifies the adoption and usage of mobile devices for conducting payment transactions relative to the total payment transactions. This rate is particularly relevant in regions where mobile technology has leapfrogged traditional banking infrastructure, offering a vital gateway to financial services for the unbanked and underbanked populations. The expansion of mobile payment systems has been instrumental in driving financial inclusion, empowering small and medium enterprises, and facilitating small-value transactions in a cost-effective manner. The success stories of mobile payment systems in countries like Kenya with M-Pesa have underscored the transformative potential of mobile financial services in enhancing economic participation and improving the lives of millions (Demirguc-Kunt et al., 2018).

Together, these penetration rates serve as barometers for evaluating the impact of digital financial services on economic activities. They reflect not just the technological advancements in the financial sector but also the policy environment, infrastructure readiness, and societal acceptance towards digital financial solutions. As highlighted in the literature, the synergy between instant pay, internet transactions, and mobile payments is pivotal for achieving comprehensive financial inclusion and spurring economic development in the digital age (Schueffel, 2016; Zetzsche et al., 2017).

#### **Small and Medium Enterprises (SMEs) Growth**

Small and Medium Enterprises (SMEs) play a pivotal role in the economic fabric of countries worldwide, acting as a cornerstone for innovation, employment, and economic growth. The growth of SMEs, particularly measured by their contribution to Gross Domestic Product (GDP), serves as a vital indicator of a nation's

economic health and dynamism. This contribution is multifaceted, encapsulating not only the direct economic output of these enterprises but also their role in stimulating related industries, fostering entrepreneurship, and driving inclusive economic development.

SMEs' contribution to GDP is a critical measure that reflects the extent to which these businesses impact the overall economy. It encompasses the aggregate value of goods and services produced by SMEs, highlighting their importance in diversifying economic activity and reducing vulnerability to economic shocks. According to the World Bank, SMEs represent about 90% of businesses and more than 50% of employment worldwide. In emerging economies, SMEs can contribute up to 40% of national GDP, underscoring their significance in sustaining economic growth (Ayyagari, Demirguc-Kunt, & Maksimovic, 2011).

SME growth is also often measured through various indicators, including but not limited to, increases in sales revenue, expansion of workforce size, and the ability to enter new markets or increase the product range. A thriving SME sector is indicative of a healthy, dynamic economy with a conducive environment for entrepreneurial activity, innovation, and competitiveness. According to Ayyagari, Demirguc-Kunt, and Maksimovic (2011), SMEs contribute up to 60% of total employment and up to 40% of national income (GDP) in emerging economies. These contributions underscore the pivotal role of SMEs in fostering economic resilience, reducing poverty, and enhancing social cohesion.

#### **Theoretical Review**

**Diffusion of Innovations theory:** One relevant theory that intersects with the domain of Financial Technology (FinTech) Penetration and its impact on SME growth is the Diffusion of Innovations theory, propounded by Everett Rogers in 1962. The theory seeks to explain how, why, and at what rate new ideas and technology spread through cultures. Rogers' theory categorizes adopters of innovations into five groups: innovators, early adopters, early majority, late majority, and laggards, based on their willingness to adopt new technologies. The theory posits that the adoption process is influenced by factors such as the innovation's perceived advantage over existing solutions, its compatibility with the existing values and needs of potential adopters, its complexity, trialability, and observability.



The strength of the Diffusion of Innovations theory lies in its broad applicability across various fields, including technology adoption, healthcare, and social change. It provides a robust framework for understanding the mechanisms through which new technologies gain traction and become integrated into everyday practices. The theory has been instrumental in guiding the development and implementation of technology adoption strategies in both the private and public sectors.

However, the theory has faced criticism for oversimplifying the adoption process by not sufficiently accounting for the social, cultural, and institutional contexts that can affect the diffusion of innovations. Critics argue that it places excessive emphasis on individual choice and rational decision-making, overlooking the influence of social networks and the broader socio-economic environment. Additionally, the linear perspective of the theory has been challenged for not adequately capturing the complex, iterative nature of how innovations evolve and are adopted in real-world settings.

In the context of the present study on the impact of Financial Technology Penetration on SME growth in Nigeria, Rogers' Diffusion of Innovations theory offers valuable insights into understanding the adoption and utilization of FinTech services among Nigerian SMEs. The theory can help elucidate the factors driving FinTech adoption among SMEs, such as the perceived benefits of FinTech solutions in overcoming traditional barriers to financial access, efficiency, and growth. By examining the characteristics of FinTech innovations that influence adoption rates among SMEs, policymakers and practitioners can better tailor FinTech solutions and interventions to meet the specific needs and preferences of Nigerian SMEs. Moreover, recognizing the role of social networks and the broader institutional and regulatory environment in shaping FinTech adoption can inform more holistic approaches to promoting FinTech penetration and leveraging it to support SME growth in Nigeria.

The application of Rogers' theory in the Nigerian context underscores the importance of developing FinTech ecosystems that are not only technologically advanced but also accessible, user-friendly, and aligned with the cultural and operational realities of Nigerian SMEs. This approach can enhance the penetration of FinTech services, driving innovation, financial inclusion, and ultimately, SME growth in Nigeria.

### **Technology Acceptance Model (TAM):**

Another theoretical perspective that offers insight into the dynamics of Financial Technology (FinTech) Penetration and its implications for SME growth is the Technology Acceptance Model (TAM), developed by Fred Davis in 1989. The TAM is designed to predict and explain computer usage behavior with two primary determinants: perceived usefulness and perceived ease of use. According to the model, the likelihood of technology adoption increases if potential users believe the technology will enhance their job performance (perceived usefulness) and if they believe it will be free of effort (perceived ease of use). The model has been extensively applied and validated across various technological innovations and user contexts, making it a cornerstone in the field of information systems research.

The strength of the TAM lies in its simplicity and empirical support, providing a clear and concise framework that can be easily applied to understand the adoption of new technologies, including FinTech services. Its focus on the psychological attitudes of users towards technology use offers valuable insights into designing and implementing technologies that meet user expectations and preferences, thereby increasing the likelihood of adoption.

Critics of the TAM, however, argue that the model is too simplistic and ignores the social, cultural, and organizational contexts that can significantly influence technology adoption decisions. Furthermore, it has been suggested that the model's focus on individual attitudes may not fully capture the complexities of technology use within organizations, where decisions about technology adoption and use are often influenced by factors beyond individual control, such as organizational policies, peer influence, and external pressures.

In the context of studying the impact of FinTech Penetration on SME growth in Nigeria, the Technology Acceptance Model provides a useful lens through which to analyze the adoption of FinTech solutions by Nigerian SMEs. By evaluating FinTech services in terms of their perceived usefulness and ease of use, stakeholders can gain insights into the factors that encourage or hinder FinTech adoption among SMEs. Understanding these dynamics is crucial for designing FinTech products that meet the needs of SMEs, thereby facilitating their growth. For instance, if FinTech services are perceived as useful in improving financial management, access to credit, or market reach, and are also perceived as



easy to use, then their adoption among SMEs is likely to be higher. This, in turn, can have a positive impact on the growth and sustainability of SMEs by improving their operational efficiency, financial inclusion, and competitiveness.

Moreover, applying the TAM in the Nigerian SME context highlights the importance of considering the usability and functionality of FinTech services from the perspective of SME owners and managers. Tailoring FinTech solutions to the specific needs and technological capabilities of SMEs can enhance their acceptance and integration into SME financial practices, contributing to the overall growth and development of the SME sector in Nigeria.

**Resource-Based View (RBV):** One pertinent theory that sheds light on the dynamics of SME growth is the Resource-Based View (RBV) of the firm, which was initially developed by Wernerfelt in 1984 and later expanded by Barney in 1991. The core premise of the RBV is that the competitive advantage and, consequently, the growth of firms are fundamentally determined by the uniqueness of their internal resources and capabilities. According to this theory, for a resource to provide a firm with the potential for sustained competitive advantage, it must be valuable, rare, inimitable, and non-substitutable (VRIN attributes). The RBV emphasizes the strategic management of organizational resources as the foundation for achieving superior performance and growth.

The strength of the RBV lies in its focus on the internal factors within firms that drive competitive advantage and growth, offering a counterbalance to external factors emphasized by other theories such as Porter's Five Forces. It provides a detailed framework for understanding how unique resources and capabilities enable firms to achieve and sustain competitive advantages in their respective markets. This theory has been widely applied across various contexts to explain differences in firm performance, including the growth trajectories of SMEs.

However, the RBV is not without its criticisms. One significant criticism is its somewhat tautological nature, where the value of a resource is determined by its ability to provide competitive advantage, which, in turn, is evidenced by the firm's performance. Additionally, the RBV has been criticized for its lack of specificity in identifying the processes by which firms can develop or acquire valuable resources, and for underestimating the role of the external environment in shaping firm strategies and opportunities for growth.

In the context of the present study on the impact of Financial Technology (FinTech) Penetration on SME's Growth in Nigeria, the RBV can provide a compelling framework for analyzing how FinTech acts as a strategic resource that can contribute to the competitive advantage and growth of SMEs. FinTech tools and services can be seen as valuable and rare resources that enable SMEs to perform more efficiently, reach wider markets, and manage finances more effectively. The unique capabilities provided by FinTech, such as enhanced access to finance, market insights, and operational efficiencies, align with the RBV's criteria for resources that can offer a sustained competitive advantage.

Moreover, the adoption and effective utilization of FinTech by SMEs in Nigeria can be conceptualized as a critical capability that differentiates successful SMEs from their peers. This perspective highlights the strategic importance of FinTech adoption in the contemporary business landscape, where digital technologies are increasingly becoming a determinant of competitive success. Through the lens of the RBV, the penetration of FinTech in the SME sector can be viewed as a means of augmenting internal resources and capabilities, thereby facilitating SME growth in a competitive and rapidly evolving market environment.

### Empirical Review

In exploring the impact of Financial Technology (FinTech) penetration on the growth of Small and Medium Enterprises (SMEs) in Nigeria, several empirical studies offer insightful analyses. One such study conducted by Oluwatoyin, Matthews, and Adebisi (2018) delves into the domain of FinTech services' influence on SMEs' operational efficiency and expansion. The study, covering the period from 2012 to 2017, employs a mixed-method approach, integrating both quantitative and qualitative data to enrich the analysis. The researchers use the ratio of mobile payment transactions to total financial transactions as a proxy for FinTech penetration, while SME growth is measured through changes in annual revenue and employment figures. Their findings suggest a significant positive relationship between FinTech penetration and SME growth, indicating that the adoption of mobile payment solutions correlates with increased revenue and employment opportunities within the SME sector. A notable criticism of this study lies in its reliance on self-reported data from SME owners, which may



introduce bias or inaccuracies in the measurement of business growth.

Another study that sheds light on this subject is by Ademola, Chinaza, and Folajimi (2019), which examines the broader implications of digital financial services on SME competitiveness in Sub-Saharan Africa, with a specific focus on Nigeria and Kenya. This research spans from 2013 to 2018 and utilizes econometric modeling to assess the impact of digital financial services penetration, measured by the number of digital financial accounts and the volume of digital transactions, on SME competitiveness, defined by market share and profit margins. The study's findings reveal that increased access to and use of digital financial services significantly enhance the competitiveness of SMEs, primarily through lowered transaction costs and improved access to capital. However, the study faces criticism for its broad generalization across countries with varying economic and regulatory environments, potentially obscuring country-specific dynamics and challenges associated with FinTech adoption.

A study by Eze, Chinedu, and Bello (2020) specifically focuses on the Nigerian market, examining how FinTech adoption influences the operational capabilities and market reach of SMEs. This research, spanning from 2015 to 2019, adopts a survey methodology to collect data from over 200 SMEs across different sectors in Nigeria. The independent variable, FinTech penetration, is measured through the adoption rate of digital payment systems, online banking services, and mobile money, while the dependent variable, SME growth, is assessed via revenue growth, market expansion, and job creation metrics. The study's findings suggest a robust positive correlation between FinTech adoption and SME growth indicators, emphasizing the critical role of digital financial services in enabling SMEs to overcome traditional barriers to finance and market access. However, the study is critiqued for its limited geographical scope, focusing predominantly on urban areas and potentially overlooking the unique challenges and opportunities for SMEs in rural settings.

In contrast, a comparative study by Singh and Kumari (2021) extends the investigation to include both Nigeria and India, offering a cross-country analysis of the effects of FinTech on SME growth. Covering the years 2014 to 2020, this research utilizes a panel data analysis approach to examine the impact of several FinTech proxies, including mobile banking penetration, internet banking usage, and digital loan platforms, on SME

performance indicators such as profitability, employment growth, and innovation capacity. The study uncovers significant positive impacts of FinTech penetration on SME growth in both countries, highlighting the universal benefits of digital financial inclusion. However, the authors note the variance in the magnitude of impact, attributing differences to variations in regulatory environments, digital infrastructure, and SMEs' digital literacy levels across the countries. This study is occasionally criticized for its broad scope, which might mask the nuanced impacts of specific FinTech services on different SME sectors.

In a recent study by Kabir and Saidin (2020), the focus shifts to examining the specific aspects of FinTech services that influence SME financing in Nigeria. Conducted over the period from 2016 to 2020, this research employs structural equation modeling to analyze responses from over 300 SME owners and managers across Nigeria. The study meticulously measures FinTech penetration through variables such as the utilization of digital lending platforms, mobile payment services, and blockchain technology adoption. The dependent variable, SME growth, is quantified through financial performance metrics, including profit margins and revenue growth, as well as non-financial metrics such as business expansion and innovation capability. Kabir and Saidin's findings underscore the significant positive impact of FinTech on enhancing SMEs' access to finance, which in turn, facilitates their growth and expansion. A critique of this study revolves around its primary focus on quantitative data, potentially overlooking the qualitative aspects of SME experiences with FinTech services and the challenges faced in adopting these technologies.

Another insightful piece of research by Thompson and Garba (2021) delves into the comparative effects of different FinTech services on SME growth in the West African context, with a keen focus on Nigeria and Ghana. This longitudinal study, covering the years from 2015 to 2020, utilizes a combination of econometric analysis and case study methodologies to offer a comprehensive view of the FinTech landscape. Independent variables include a range of FinTech services, from mobile payments and digital banking to crowdfunding platforms, while SME growth is analyzed through several lenses, including job creation, revenue enhancement, and market diversification. The study reveals that while all FinTech services positively impact SME growth, the degree of impact varies by service type, with mobile payment solutions and digital banking



showing the most significant effects. Thompson and Garba (2021) also highlight the critical role of regulatory frameworks and digital infrastructure in maximizing the benefits of FinTech for SMEs. The research, however, is critiqued for its broad categorization of FinTech services, which may obscure the specific mechanisms through which these services affect SME growth.

A study by Okeke and Eze (2019) specifically targets the Nigerian FinTech ecosystem and its influence on SMEs' operational efficiencies and market accessibility. This study, conducted between the years 2014 and 2018, employs a combination of regression analysis and qualitative interviews to dissect the effects of FinTech adoption among SMEs. FinTech penetration is quantified through metrics such as the adoption rate of electronic payment systems, usage of mobile banking apps, and engagement with online financial management tools. SME growth is measured by examining revenue growth, market expansion, and the creation of employment opportunities. Okeke and Eze's findings reveal a significant positive impact of FinTech penetration on SME growth, highlighting the pivotal role of digital financial services in overcoming conventional barriers to finance and market entry. The study, however, faces criticism for its limited consideration of external factors such as macroeconomic conditions and regulatory changes that could also influence SME growth.

In another compelling study, Adeyanju and Olaniyi (2022) explore the role of FinTech in facilitating access to finance for SMEs and its subsequent impact on their growth within the Sub-Saharan African context, with a particular focus on Nigeria. Spanning from 2016 to 2021, this research utilizes a mixed-methods approach, incorporating both quantitative analysis of financial data and qualitative interviews with SME owners and FinTech providers. The independent variable, FinTech penetration, is assessed through indicators such as the number of active users of digital financial services and the volume of transactions processed through FinTech platforms. In contrast, SME growth is evaluated in terms of revenue increases, profitability, and business expansion. Adeyanju and Olaniyi's study corroborates the positive correlation between FinTech penetration and SME growth, suggesting that FinTech not only enhances SMEs' financial inclusivity but also contributes to their operational and strategic development. Critique of this study revolves around its potential overreliance on self-reported

measures of growth, which might not fully capture the economic impact of FinTech on SMEs.

These empirical reviews contribute to the understanding of FinTech's role in enhancing the operational and competitive landscape for SMEs in Nigeria and beyond. They highlight the transformative potential of digital financial services in supporting SME growth but also underscore the need for cautious interpretation of findings, considering the diversity of SME contexts and the evolving nature of FinTech ecosystems.

### III. Materials and Method

The study investigating the impact of Financial Technology (FinTech) Penetration on SME's Growth in Nigeria from 2012Q1 to 2022Q4 utilizes a time series research design. This approach is adept at analysing how changes in FinTech penetration, measured through Instant Pay Penetration Rate, Internet Transaction Penetration Rate, and Mobile Payment Penetration Rate, influence SME growth, defined as SMEs' contribution to GDP over a decade. By systematically collecting and examining data over successive periods, the time series design enables the identification of trends, patterns, and potential causal relationships. This method is particularly valuable for observing the long-term effects of FinTech penetration on the economic performance of SMEs, providing insights into the evolving dynamics of digital financial services and their impact on the broader economic landscape in Nigeria.

In exploring the impact of Financial Technology (FinTech) Penetration on SME's Growth in Nigeria, the study primarily relies on secondary data sourced from authoritative and reputable institutions. Data on FinTech penetration indicators such as Instant Pay Penetration Rate, Internet Transaction Penetration Rate, and Mobile Payment Penetration Rate, alongside SME growth metrics captured as SMEs' contribution to GDP, are meticulously gathered from the Central Bank of Nigeria (CBN) statistical bulletin, the National Bureau of Statistics (NBS), and the World Development Indicators (WDI). These sources provide a robust and comprehensive dataset, ensuring the reliability and validity of the analysis in understanding the evolving landscape of FinTech and its implications for SME growth in Nigeria.

Given the context of the discussion on the impact of Financial Technology (FinTech) Penetration on SME's Growth in Nigeria, we can develop a model specification and variable descriptions by adapting the framework proposed



by Patel and Patel (2019). Their work, which estimates the relationship between electronic fraudulent transactions and electronic payment systems, provides a solid foundation for analysing similar interdependencies within the FinTech

ecosystem. However, our current study focuses on a different aspect of FinTech's impact, specifically the penetration of FinTech services and its influence on SME growth in Nigeria.

$$SMO = f(IPP, ITP, MPP) \quad (1)$$

Setting up equation (1, 2 and 3) in a linear stochastic form (or econometric form) is expressed as:

$$SMO_t = \alpha_o + \alpha_1 IPP_t + \alpha_2 ITP_t + \alpha_3 MPP_t + \mu_t \quad (2)$$

Where:

- SMO = Electronic fraudulent transactions (Naira Billion)
- IPP = Instant Pay Penetration Rate
- ITP = Internet Transaction Penetration Rate
- MPP = Mobile Payment Penetration Rate

$\alpha_o$  = Intercept or autonomous parameter estimates of Financial Technology Penetration

$\alpha_1 - \alpha_3$  = Coefficients of Financial Technology Penetration

$\mu_t$  = The error term.

Building equations (6) into a DOLS model, we have:

$$SMO_t = \lambda_0 + \lambda_1 IPP + \lambda_2 ITP + \lambda_3 MPP + \sum_{i=1}^m \lambda_4^i \Delta IPP_t + \sum_{i=1}^n \lambda_5^i \Delta IPP_{t+i} + \sum_{i=1}^o \lambda_6^i \Delta IPP_{t-i} + \sum_{i=1}^p \lambda_7^i \Delta ITP_t + \sum_{i=1}^q \lambda_8^i \Delta ITP_{t+i} + \sum_{i=1}^r \lambda_9^i \Delta ITP_{t-i} + \sum_{i=1}^s \lambda_{10}^i \Delta MPP_t + \sum_{i=1}^t \lambda_{11}^i \Delta MPP_{t+i} + \sum_{i=1}^u \lambda_{12}^i \Delta MPP_{t-i} + \mu_t \quad (3)$$

Equations (3) were formulated utilizing the general-to-specific modeling approach, producing models that align with data, are consistent with theoretical expectations, and can be easily understood. To finalize the parsimonious dynamic equation, it's essential to progressively eliminate independent variables that don't have statistical significance while setting suitable constraints on the parameters.

The Dynamic Ordinary Least Squares (DOLS) method was chosen for this study to address potential issues of endogeneity and autocorrelation that are common in time series data, especially in studies examining the impact of Financial Technology Penetration on SME Growth. DOLS is particularly adept at providing unbiased and efficient estimators in the presence of cointegrated variables, ensuring that the long-term relationship between FinTech penetration rates and SME growth is accurately captured. By

incorporating leads and lags of the independent variables, DOLS corrects for serial correlation, making it an ideal choice for estimating the true impact of FinTech services on SME development over time.

#### IV Empirical Results and Discussions Descriptive Statistics Results

Descriptive statistics offer a foundational understanding of data by summarizing its central tendency, dispersion, and distribution shape. Through measures such as mean, standard deviation, skewness, and kurtosis, researchers can glean insights into the nature and behaviour of variables within their study. This approach is particularly valuable in analyzing the impact of Financial Technology (FinTech) Penetration on SME Growth in Nigeria, as it lays the groundwork for deeper statistical analysis.



**Table 1: Descriptive Statistics**

	SMO	IPP	ITP	MPP
Mean	47.09958	11.68518	0.054094	0.497280
Std. Dev.	22.12302	6.824368	0.039688	0.492003
Skewness	-0.1152	-0.09749	0.713815	0.568223
Kurtosis	2.075863	1.523312	2.651189	1.513855
Jarque-Bera	1.663033	4.067471	3.959630	6.416921
Probability	0.435388	0.130846	0.138095	0.040419
Observations	44	44	44	44

*Source: Researcher's Computation Using EViews-13 (2024)*

The mean values for SME Growth (SMO), Instant Pay Penetration Rate (IPP), Internet Transaction Penetration Rate (ITP), and Mobile Payment Penetration Rate (MPP) are 47.09958%, 11.68518%, 0.054094%, and 0.497280% respectively. These mean values indicate the average level of each variable, suggesting a relatively high average growth rate for SMEs and significant penetration rates for various FinTech services, with mobile payments showing the highest average penetration.

Standard deviation measures the dispersion around the mean, with values of 22.12302 for SMO, 6.824368 for IPP, 0.039688 for ITP, and 0.492003 for MPP. The wide standard deviation for SMO indicates a considerable variance in SME growth rates, reflecting the diverse outcomes of SME performance in Nigeria. Conversely, the lower standard deviations for FinTech penetration rates suggest more uniformity in the adoption and use of these services among the population studied.

Skewness and kurtosis provide insights into the data's distribution shape. Skewness values close to zero for IPP and slightly positive for ITP and MPP indicate a fairly symmetrical distribution around the mean for these variables. However, the positive skewness for ITP and MPP suggests a longer tail to the right, indicating a small number of extremely high penetration rates. Kurtosis values closer to 3 would indicate a normal distribution; values for all variables are lower, suggesting a platykurtic distribution, with flatter peaks than a normal distribution.

The Jarque-Bera test is used to determine whether the data follows a normal distribution. The probability values for SMO, IPP, and ITP are greater than 0.05 (0.435388, 0.130846, and 0.138095, respectively), indicating that the null hypothesis of normality cannot be rejected at the 5% significance level. However, MPP has a probability value of 0.040419, which is less than 0.05, suggesting that the data for MPP does not follow a normal distribution.

#### Unit Root Test

The unit root test is a statistical procedure used to determine whether a time series data set is non-stationary and possesses a unit root. This test is crucial for time series analysis, especially in econometrics, as non-stationary data can lead to spurious regression results. Essentially, identifying the order of integration of a variable helps in applying appropriate differencing to achieve stationarity, a prerequisite for many time series forecasting and causality analysis methods.

In this case, the ADF test is applied to four variables: SME's growth (SMO), Instant Pay Penetration Rate (IPP), Internet Transaction Penetration Rate (ITP), and Mobile Payment Penetration Rate (MPP). The test statistics are compared to the critical values at different significance levels to determine the order of integration, which indicates the number of times a variable needs to be differenced to achieve stationarity.



**Table 2: Unit Root Test Result**

Variable	ADF Test Statistics		
	ADF	Critical Value	Order of Integration
SMO	-3.834953	-3.520787**	I(1)
IPP	-4.973341	-4.192337*	I(1)
ITP	-7.463705	-4.198503*	I(1)
MPP	-3.941519	-3.523623**	I(1)

Note: \*, \*\*, \*\*\* significant at 1%, 5% and 10%

Source: Authors Computation, 2023 (Eviews-12)

For SMO, the ADF test statistic is -3.834953, which is more negative than the critical value of -3.520787 at the 5% significance level. This suggests that SMO is stationary after taking the first difference, denoted as I(1).

Similarly, IPP and ITP have ADF test statistics of -4.973341 and -7.463705, respectively, which are more negative than their corresponding critical values at the 1% significance level (-4.192337 and -4.198503). This indicates that both IPP and ITP are stationary after taking the first difference, I(1).

Lastly, MPP has an ADF test statistic of -3.941519, which is more negative than the critical value of -3.523623 at the 5% significance level. This suggests that MPP is also stationary after taking the first difference, I(1).

The results of the unit root tests for all variables indicate that they are non-stationary in their level form but become stationary after a single differencing. This is significant for the current study as it validates the use of techniques suitable for I(1) series in analyzing the relationship between

FinTech penetration (measured by IPP, ITP, MPP) and SME growth in Nigeria. It underscores the necessity of employing methods like cointegration analysis in subsequent analyses to accurately capture the long-term equilibrium relationship between these variables.

#### Cointegration Test

The Engle-Granger cointegration test, also known as the residual-based cointegration test is a fundamental econometric technique used to determine whether a long-term equilibrium relationship exists between two or more non-stationary time series variables that are integrated of the same order. The essence of this test is to first regress one variable on others to obtain the residuals and then test these residuals for stationarity using the Augmented Dickey-Fuller (ADF) test. If the residuals are found to be stationary, it implies that the variables under consideration are cointegrated, indicating a stable, long-term relationship among them despite their individual non-stationarity.

**Table 3: Results of Engle and Granger (Residual Based) Cointegration Test**

Variable	ADF Test Statistic	95% Critical ADF Value	Remarks
Residual	-3.669176	-2.621185*	Co-integrated

Note: \* significant at 1%

Source: Author's Computation, 2024 (Eviews-13)

The results from Table 3 reveal the application of the Engle and Granger method to assess the cointegration between variables related to Financial Technology Penetration and SME's Growth in Nigeria. The ADF test statistic for the residuals obtained from regressing these variables against each other is -3.669176, which is significantly lower than the 95% critical value of -2.621185, marked with an asterisk to denote significance at the 1% level.

The finding that the residual series is stationary (as indicated by the ADF test statistic being lower than the critical value) leads to the conclusion that the variables are cointegrated. This

implies the existence of a long-term equilibrium relationship between FinTech penetration rates (Instant Pay Penetration Rate, Internet Transaction Penetration Rate, and Mobile Payment Penetration Rate) and SME growth in Nigeria. The significance of this cointegration result lies in its confirmation that changes in FinTech penetration have a lasting impact on SME growth, underlining the importance of digital financial services as a lever for economic development in the SME sector.

#### DOLS Regression Results and Post-Estimation Tests



By employing a general-to-specific modelling approach, the study meticulously explored the dynamic effects of Financial Technology (FinTech) Penetration on Small and Medium Enterprises (SMEs) Growth in Nigeria. By utilizing the Dynamic Ordinary Least Squares (DOLS) technique and conducting post-estimation tests, the study not only captures the direct effects of FinTech penetration on SME growth but also ensures the robustness and reliability of its findings, offering a deep dive into the pivotal role

of FinTech in fostering SME development in Nigeria. This methodological framework initiates with an expansive model encompassing a wide array of variables and interactions that might potentially affect the dynamics between FinTech penetration and SME growth. This approach not only enhances the model's explanatory power but also ensures a rigorous and comprehensive analysis of the critical factors that drive SME growth through FinTech penetration in Nigeria.

**Table 4: Dynamic Least Squares (DOLS) Result**

**Dependent Variable: SMO (%)**

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	4.9098	0.9052	5.4243	0.0033
IPP	2.9601	0.8951	3.3069	0.0062
ITP	3.0241	0.9929	3.0457	0.0459
MPP	-54.2795	0.7279	-74.5675	0.0007
D(IPP(1))	9.2644	0.7665	12.0865	0.0019
D(IPP(2))	2.1500	0.1921	11.1949	0.0095
D(IPP(-1))	9.1831	0.7030	13.0636	0.0098
D(IPP(-2))	14.3821	1.0711	13.4270	0.0047
D(ITP)	-36.2183	0.4454	-81.3210	0.0006
D(ITP(1))	84.4589	1.9240	43.8982	0.0029
D(ITP(2))	27.3214	0.8662	31.5433	0.0062
D(ITP(-1))	-41.7194	0.7045	-59.2217	0.0089
D(ITP(-2))	-31.8194	0.6873	-46.2934	0.0004
D(MPP)	74.7417	1.4436	51.7742	0.0019
D(MPP(1))	-96.4686	1.4329	-67.3249	0.0005
D(MPP(2))	-19.2443	0.8299	-23.1890	0.0059
D(MPP(-1))	-11.8177	0.7119	-16.6011	0.0044
D(MPP(-2))	-36.8592	1.2563	-29.3394	0.0062
R-squared	0.6226			
Adjusted R-squared	0.5258			
F-statistic	5.5883			
Prob(F-statistic)	0.0047			
Durbin-Watson stat	1.9080			

**Source: Author's Computation, 2024 (Eviews-13)**

The Instant Pay Penetration Rate (IPP) shows a coefficient of 2.9601, with a t-statistic of 3.3069 and a probability of 0.0062, suggesting a significant positive impact on SME growth. This implies that as the penetration rate of instant pay services increases, SME growth in terms of contribution to GDP also rises. The positive coefficient highlights the efficiency and convenience offered by instant pay services, which

can improve business operations and financial management for SMEs.

The Internet Transaction Penetration Rate (ITP) has a coefficient of 3.0241 with a t-statistic of 3.0457 and a probability of 0.0459. This also indicates a positive relationship with SME growth, albeit with a probability close to the conventional significance threshold of 0.05, suggesting a marginally significant impact. This finding reflects



the role of internet-based transactions in enabling SMEs to access broader markets and streamline operations, thereby contributing to growth.

Conversely, the Mobile Payment Penetration Rate (MPP) displays a coefficient of -54.2795 with a highly significant t-statistic of -74.5675 and a probability of 0.0007. This negative coefficient suggests that, contrary to expectations, an increase in mobile payment penetration is associated with a decrease in SME growth, measured as a percentage of GDP. This surprising result could indicate potential challenges or inefficiencies in the mobile payment ecosystem, such as high transaction costs, limited reach in certain SME sectors, or integration issues with SME business models, necessitating further investigation.

The R-squared value of 0.6226 indicates that approximately 62.26% of the variance in SME growth, measured as a percentage of GDP (SMO), can be explained by the model's independent variables (IPP, ITP, MPP). This relatively high R-squared value suggests a substantial explanatory power of the model, indicating that FinTech penetration significantly impacts SME growth.

The Adjusted R-squared, which adjusts the R-squared value for the number of predictors in the model, is 0.5258. This decrease from the R-squared value reflects the model's complexity and the inclusion of multiple variables but still denotes a relatively strong fit, suggesting that the model

reliably explains SME growth after accounting for the number of variables.

The F-statistic of 5.5883, with a Prob(F-statistic) of 0.0047, tests the overall significance of the regression model. The low probability associated with the F-statistic indicates that the model is statistically significant at conventional significance levels. This means that there is a very low chance that these results could have occurred if the independent variables had no impact on SME growth, affirming the collective effect of FinTech penetration rates on SME development.

The Durbin-Watson statistic of 1.9080 approaches the value of 2, suggesting there is no substantial autocorrelation in the residuals of the regression model. This indicates that the model's errors are independent of each other, which is a desirable property in time series analysis, ensuring the reliability of the regression coefficients.

#### Diagnostic Checks

The Dynamic Ordinary Least Squares (DOLS) regression model's post-estimation results, including diagnostic checks and stability tests, provide essential insights into the model's validity and the robustness of its findings on the impact of Financial Technology (FinTech) Penetration on SME Growth in Nigeria. These diagnostics are critical for ensuring that the model's assumptions hold and that its predictions are reliable for policy-making and strategic business decisions.

**Table 5: Results of Diagnostic Checks**

Tests		Outcomes	
		Coefficient	Probability
Breusch-Godfrey-Serial-Correlation Test	F-stat.	1.96130	0.1201
Heteroscedasticity-Breusch-Pagan-Godfrey Test	F-stat.	1.042158	0.4583
Normality Test	Jarque-Bera	3.405480	0.1822
Linearity Test	F-stat	0.617404	0.4412

*Source: Researcher's Computation Using EViews-13 (2024)*

The Breusch-Godfrey Serial Correlation Test, with an F-statistic of 1.96130 and a probability of 0.1201, indicates no significant serial correlation in the model residuals at the conventional 5% significance level. This outcome suggests that the model adequately captures the time series properties of the data, ensuring that the estimated coefficients are not biased due to autocorrelation.

Similarly, the Heteroscedasticity Breusch-Pagan-Godfrey Test yields an F-statistic of

1.042158 with a probability of 0.4583, indicating that there is no significant heteroscedasticity present. This means the variance of the residuals is constant across all levels of the independent variables, affirming the efficiency of the regression coefficients.

The Normality Test, based on the Jarque-Bera statistic of 3.405480 with a probability of 0.1822, does not reject the null hypothesis of normality in the residuals. This finding suggests that the error terms are normally distributed,

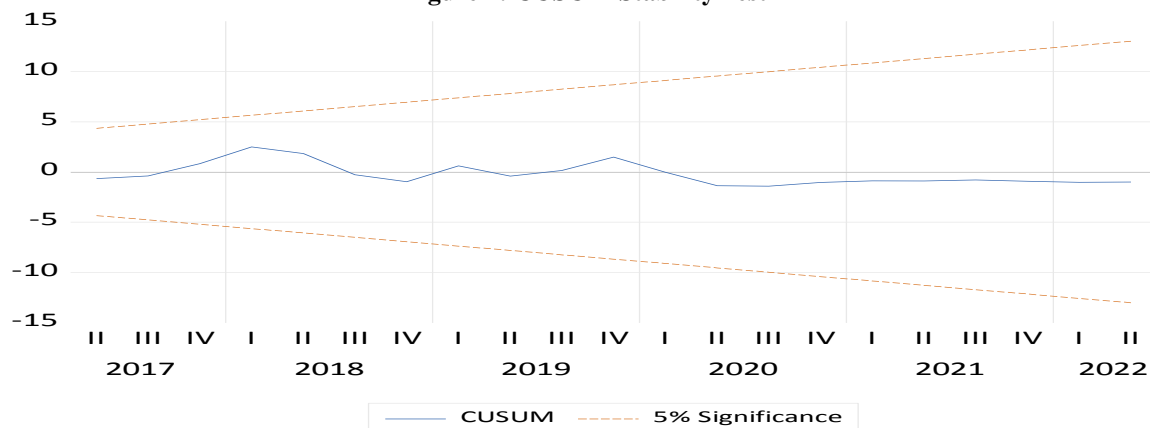


fulfilling an essential assumption of the OLS methodology that underpins the DOLS approach.

The Linearity Test, with an F-statistic of 0.617404 and a probability of 0.4412, indicates no significant evidence against the model's linearity assumption. This result suggests that the relationship between the independent variables and the dependent variable is linear, as assumed in the model specification.

Furthermore, the CUSUM plot lying within the critical bounds at the 5 percent significance level confirms the stability of the coefficients over the sample period. This stability is crucial for the reliability of the model's predictions about the impact of FinTech Penetration on SME growth, ensuring that the model's findings are not a result of structural breaks or instability in the underlying economic relationships.

Figure 1: CUSUM Stability Test



Source: Researcher's Computation Using Eviews-13 (2024)

## V. Discussion of Findings

Findings from the study which revealed that the Instant Pay Penetration Rate has a positive and significant impact on SME growth in Nigeria aligns with the broader discourse on financial inclusion and its role in economic development. The positive correlation suggests that instant payment systems, by facilitating immediate and secure transactions, significantly enhance the operational efficiency of SMEs. This efficiency, in turn, contributes to SME growth by improving cash flow management, reducing transaction costs, and enabling real-time financial decisions. This finding echoes the conclusions of Oluwatoyin, Matthews, and Adebisi (2018), who highlighted the transformative potential of mobile payment solutions in boosting SME performance in Nigeria. The implication here is that SMEs' integration into the digital financial ecosystem through instant payments can significantly leverage their growth potential, a sentiment supported by broader financial inclusion research (Demirgüç-Kunt, Klapper, Singer, Ansar, & Hess, 2018).

Secondly, the study's finding that the Internet Transaction Penetration Rate positively and significantly enhances SME growth in Nigeria adds another layer to the understanding of FinTech's impact. The internet's role in facilitating

transactions extends beyond mere payments to include access to broader markets, financial services, and information, all of which are crucial for SME growth. This result is consistent with the work of Singh and Kumari (2021), who found digital financial services to be instrumental in improving SME competitiveness in emerging markets. The significant positive impact of internet transactions on SME growth underscores the importance of digital connectivity and the online economy in fostering business development, supporting theories that advocate for digital inclusivity as a catalyst for economic growth.

Lastly, the hypothesis concerning the Mobile Payment Penetration Rate's negative but significant impact on SME growth in Nigeria presents a counterintuitive yet insightful finding. Despite the widespread acknowledgment of mobile payments as a driver of financial inclusion, this result suggests potential challenges or inefficiencies within the mobile payment ecosystem that may hinder SME growth. This could reflect issues such as high transaction fees, network unreliability, or the inadequacy of mobile payment solutions to meet specific SME needs. This finding diverges from the optimistic narrative presented by studies like that of Mbiti and Weil (2011) on the positive impact of mobile money services like M-Pesa in



Kenya. It highlights the need for a nuanced understanding of FinTech's impact, suggesting that not all digital financial services uniformly foster economic development. The implication here is a call for targeted policies and FinTech innovations that address the specific barriers faced by SMEs in leveraging mobile payment systems for growth.

## VI. Conclusion and Recommendations

The study on the impact of Financial Technology (FinTech) Penetration on the growth of Small and Medium Enterprises (SMEs) in Nigeria offers crucial insights into how digital financial services contribute to economic development. Key findings indicate that Instant Pay and Internet Transaction Penetration Rates significantly enhance SME growth by improving operational efficiency, expanding market access, and fostering financial inclusivity. These positive impacts suggest the importance of policies that further integrate SMEs into the digital economy, potentially accelerating their growth and broader economic development. However, the study also reveals a surprising negative effect of Mobile Payment Penetration Rate on SME growth, highlighting challenges within the mobile payment ecosystem, such as high transaction costs and network reliability issues. Based on the above findings, the following recommendations were suggested:

- i. Firstly, the positive influence of Instant Pay and Internet Transaction Penetration Rates on SME growth highlights the importance of enhancing digital infrastructure. Specifically, there is a need for government and private sector collaboration to improve internet connectivity and reliability across the country. This effort should focus on reducing internet service costs and expanding coverage to underserved areas, ensuring that SMEs nationwide can leverage online platforms for business operations. Furthermore, regulatory bodies should streamline procedures and reduce barriers for SMEs to adopt digital payment solutions, encouraging more businesses to integrate these technologies into their operations.
- ii. In addressing the unexpected negative impact of Mobile Payment Penetration on SME growth, a multifaceted approach is necessary. Regulators and FinTech providers should work together to reassess the fee structures associated with mobile payment services, aiming to reduce transaction costs for SMEs. Additionally, efforts should be made to enhance the usability and reliability of mobile payment systems, including improving network stability and expanding financial literacy programs to educate SME owners

on optimizing these services for business growth. Tailoring mobile payment solutions to the specific needs of various SME sectors can also ensure that these services effectively support business expansion.

- iii. Lastly, the diverse impact of different FinTech services on SME growth underscores the need for a segmented strategy in policy and product development. Policymakers should consider incentives for FinTech innovations that address the unique challenges faced by different SME categories, such as micro-enterprises versus more established small businesses. This could include tax incentives for FinTech startups focusing on niche markets or government-backed funding programs for SMEs willing to adopt new digital solutions. Additionally, ongoing dialogue between SMEs, FinTech providers, and regulators is crucial to ensure that new digital financial services are designed and regulated in ways that best support SME growth.

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