



Veritatis Gaudium:

Multidisciplinary Journal of Postgraduate Studies

College of Postgraduate Studies,
Veritas University, Abuja, Nigeria

ISSN: 3043 - 5285

Volume 1, Number 3, July Special Edition, 2026

DOI: 10.13140/RG.2.2.27309.45286

FINANCIAL TECHNOLOGY ADOPTION AND FINANCIAL PERFORMANCE OF SMALL AND MEDIUM ENTERPRISES: THE MEDIATING ROLE OF TECHNOLOGY IN FINANCIAL INCLUSION

Okunnu Alexander, Ugwanyi William, PhD, Adam Sa'adatu, PhD, Aturu-Aghedo Caroline, PhD

National Open University of Nigeria

wugwuanyi@noun.edu.ng; sadam@noun.edu.ng; caturu-aghedo@noun.edu.ng

Abstract

Small and Medium Enterprises (SMEs) were widely acknowledged as engines of economic growth, particularly in developing economies such as Nigeria. However, many SMEs struggled with limited access to financial services. The rise of Financial Technology (FinTech), encompassing mobile payment platforms, digital lending, and cloud-based financial management tools, introduced new possibilities for bridging this gap. This study investigated the relationship between FinTech adoption and the financial performance of SMEs, with particular attention to the mediating role of technology-enabled financial inclusion. Drawing on a cross-sectional survey of 302 registered SMEs in Bwari Area Council, the research employed Pearson correlation and Sobel mediation analysis to test four hypothesised relationships. The study was grounded in the Technology Acceptance Model (Davis, 1989) and Financial Intermediation Theory (Gurley & Shaw, 1960). Findings confirmed that FinTech adoption significantly and positively affected financial performance ($r = 0.612$, $p < 0.001$), strongly promoted financial inclusion ($r = 0.724$, $p < 0.001$), and significantly mediated the adoption-performance relationship (Sobel $z = 5.34$, $p < 0.001$). The study concluded that FinTech greatly impacted the financial performance of SMEs. It therefore recommended that policymakers formulate supportive regulatory frameworks for FinTech integration within SMEs, SME operators invest in digital financial literacy and adoption, and FinTech providers develop affordable and user-friendly platforms to enhance financial inclusion and sustainable business growth.

Keywords: *Small and Medium Enterprises (SMEs); Financial Technology (FinTech); FinTech Adoption; Financial Performance; Financial Inclusion; Digital Financial Services.*

Introduction

Small and Medium Enterprises (SMEs) constitute approximately 90% of businesses globally and account for more than 50% of total employment worldwide (World Bank, 2023). Despite their critical contribution to economic growth, innovation, and employment generation, many SMEs across the world continue to face challenges in accessing formal financial services. Traditional banking institutions have often failed to adequately serve small businesses because of stringent collateral requirements, lengthy loan approval procedures, and high transaction costs (Beck & Demirgüç-Kunt, 2022). In response to these challenges, Financial Technology (FinTech) has emerged globally as a transformative solution. FinTech encompasses innovations such as mobile banking, electronic payment systems, peer-to-peer lending, and AI-driven credit scoring platforms that extend financial services to previously underserved populations. These technologies have significantly improved access to credit, payment systems, savings, and financial management tools for SMEs, thereby creating new opportunities for business growth and sustainability.

Across Africa, the growth of FinTech has been particularly significant due to the continent's long-standing challenges of financial exclusion and limited banking infrastructure. Many SMEs in African countries operate within informal economies and remain underserved by conventional financial institutions. FinTech innovations have therefore become important instruments for deepening financial inclusion by providing accessible, affordable, and digital financial services to businesses in remote and underserved communities. Mobile money services, digital lending platforms, and electronic payment systems have enabled African SMEs to conduct transactions more efficiently, improve cash flow management, and access financing opportunities. Nevertheless, the benefits of FinTech adoption are not uniformly experienced across the continent. SMEs that are effectively integrated into the formal financial system through access to credit facilities, insurance products, savings opportunities, and reliable payment infrastructure are more likely to translate FinTech usage into measurable performance improvements (Ugwuanyi, 2022). This demonstrates that financial inclusion serves as a critical mediating factor between FinTech adoption and SME performance.

Nigeria presents a compelling context for examining the relationship between FinTech adoption, financial inclusion, and SME performance. SMEs contribute significantly to Nigeria's Gross Domestic Product (GDP) and provide livelihoods for millions of households. However, a substantial proportion of these businesses remain financially excluded, particularly in semi-urban and rural areas where access to conventional banking services is limited. In recent years, Nigeria has witnessed rapid growth in the FinTech sector, with companies such as Flutterwave, Paystack, and Carbon achieving international recognition. These platforms have expanded access to digital payments, online lending, and financial management services for SMEs. For instance, a small business owner in semi-rural Bwari Area Council can now access credit facilities, make instant digital payments, and monitor cash flows through a mobile device. However, despite the rapid expansion of FinTech services, many SMEs in Nigeria still lack adequate integration into the formal financial system. This paradox between rapid FinTech growth and persistent financial exclusion forms the central concern of this study. The study is further anchored on the Technology Acceptance Model developed by Fred Davis and Financial Intermediation Theory advanced by John Gurley and Edward Shaw, which together explain how technology adoption and financial inclusion can jointly influence SME financial performance.

Statement of the Problem

The growth of Financial Technology (FinTech) in Nigeria has created new opportunities for Small and Medium Enterprises (SMEs) to improve their financial operations through digital payments, online lending, mobile banking, and other technology-driven financial services. However, many SMEs still experience poor financial performance and struggle to achieve sustainable growth. Access to affordable credit remains a major challenge, while inefficient payment systems, limited digital literacy, and weak financial management practices continue to hinder business development and sustainability. Although FinTech innovations were introduced to help solve these problems, their impact on SME performance has not been consistent across businesses (Ugwuanyi, 2022).

Furthermore, existing studies have mostly examined FinTech adoption and financial inclusion as separate issues, with little attention given to how technology-enabled financial inclusion connects FinTech usage to improved business performance. This has created a conceptual and empirical gap in understanding the extent to which digital financial access contributes to better financial outcomes for SMEs. Therefore, this study seeks to bridge this gap by examining the mediating role of technology-enabled financial inclusion in the relationship between FinTech adoption and the financial performance of SMEs in Nigeria.

Objectives of the Study

The primary objective of this study is to examine the mediating role of technology-enabled financial inclusion in the relationship between FinTech adoption and the financial performance of SMEs in Bwari Area Council. Specifically, the study seeks to:

- i. Examine the effect of FinTech adoption on SME financial profitability.
- ii. Determine the effect of FinTech adoption on SMEs' sales revenue.
- iii. Assess the effect of FinTech adoption on SMEs' cash flow.
- v. Examine the mediating role of technology-enabled financial inclusion in the relationship between FinTech adoption and SME financial performance.

Research Questions

1. What effect does FinTech adoption have on SME financial profitability?
2. What effect does FinTech adoption have on SMEs' sales revenue?
3. What effect does FinTech adoption have on SMEs' cash flow?
4. How does technology-enabled financial inclusion mediate the relationship between FinTech adoption and SME financial performance?

Statement of Hypotheses

H₀₁: FinTech adoption does not have a significant effect on SME financial profitability.

H₀₂: FinTech adoption does not have a significant effect on SMEs' sales revenue.

H₀₃: FinTech adoption does not have a significant effect on SMEs' cash flow.

H₀₄: Technology-enabled financial inclusion does not significantly mediate the relationship between FinTech adoption and SME financial performance.

Scope of the Study

The study focused on the relationship between FinTech adoption and the financial performance of Small and Medium Enterprises (SMEs), with particular emphasis on the mediating role of technology-enabled financial inclusion. The study was delimited to registered SMEs operating within Bwari Area Council, Federal Capital Territory (FCT), Abuja. The area was selected because of its growing commercial activities and the presence of diverse SME clusters across manufacturing, retail, and service sectors.

The study also examined the key constructs of FinTech adoption, technology-enabled financial inclusion, and SME financial performance. FinTech adoption was measured through the use of digital payment systems, mobile banking, online lending platforms, and related financial technologies, while SME financial performance was assessed using indicators such as profitability and sales revenue. The study covered the period from 2022 to 2025, during which data relevant to FinTech adoption, financial inclusion, and SME financial performance were examined.

Significance of the Study

Academically, the study contributes to the existing body of knowledge on FinTech adoption and SME financial performance in Sub-Saharan Africa by introducing and empirically examining technology-enabled financial inclusion as a mediating variable. The findings enrich literature in the areas of financial technology, entrepreneurship, and financial inclusion. Practically, the study provides useful insights for SME operators by highlighting how the adoption of FinTech solutions can improve business performance and access to financial services. The findings are also beneficial to FinTech developers in designing innovative and user-friendly financial products tailored to SME needs. Furthermore, policymakers and financial regulators may benefit from the study through evidence-based recommendations that can support policies aimed at improving digital financial inclusion, strengthening SME growth, and promoting sustainable economic development in Nigeria.

Literature review

2.1 Conceptual Review

2.1.1 Concept of Financial Technology (FinTech)

FinTech refers to digital innovations that enhance financial service delivery, including mobile payments, peer-to-peer lending, blockchain transactions, and AI-driven financial advisory tools (Arner, Barberis, & Buckley, 2016). For SMEs, FinTech adoption means integrating these tools into daily financial operations: payments, credit access, account management, and investment planning. The Technology Acceptance Model (TAM; Davis, 1989) identifies two key drivers of adoption: Perceived Usefulness (extent to which technology improves performance) and Perceived Ease of Use (extent to which use is effortless). Rogers' (2003) Diffusion of Innovations theory adds contextual dimensions: relative advantage, compatibility, complexity, trialability, and observability. Empirically, FinTech adoption is associated with lower transaction costs, reduced delays, and improved liquidity (Lee & Shin, 2018). Significant barriers persist in Nigeria, including unreliable infrastructure, low digital literacy, fraud concerns, and regulatory lag (Ozili, 2018).

2.1.2 Concept of Financial Performance

Financial performance encompasses profitability, liquidity, revenue growth, sales revenue and cash flow stability (Murphy, Trailer, & Hill, 1996). In developing economies, external constraints such as limited formal credit, macroeconomic volatility, and regulatory uncertainty are particularly binding. FinTech addresses these constraints through automated accounting, which improves decision-making quality (Gomber et al., 2018). Furthermore, digital payments reduce transaction friction; digital lending platforms offer faster, more flexible access to capital. Adeola and Evans (2020) found that digital payment adoption significantly enhances revenue generation among Nigerian SMEs, with the pathway running through intermediate channels, notably financial inclusion.

2.1.3 Concept of Financial Inclusion

Financial inclusion ensures all individuals and businesses have access to useful, affordable financial services: savings, credit, insurance, and payments (World Bank, 2018). For SMEs, it is a prerequisite for sustainable growth. FinTech reduces traditional barriers to inclusion: no physical branches required; alternative data enables credit assessment; lower costs than traditional banking (Demirgüç-Kunt et al., 2018). In Nigeria, mobile money platforms such as OPay, PalmPay, and Moniepoint have

brought millions into the formal financial system. However, inclusion is not guaranteed; it requires deliberate product design, digital literacy support, regulatory facilitation, and infrastructure investment.

2.1.4 Technology as a Mediating Variable

A mediating variable explains the mechanism through which an independent variable produces an effect on a dependent variable (Baron & Kenny, 1986). In this study, technology-enabled financial inclusion mediates between FinTech adoption and SME financial performance. FinTech, when effectively deployed, enhances access to financial services credit, payments, and savings which enables better financial management, stronger cash flows, and more productive investment. This mediation is supported by Ofori and Asongu (2022), who found full mediation in Sub-Saharan Africa; Chen and Zhang (2021), who found similar patterns in China; and Jamil and Khan (2023), who found partial mediation in South Asia.

2.1.5 SMEs in the Context of Digital Transformation

Digital transformation, defined as the integration of digital technologies into all dimensions of organisational operations and strategic activities, has become an indispensable requirement for the survival, competitiveness, and sustainability of Small and Medium Enterprises (SMEs) in the contemporary business environment. In an increasingly technology-driven global economy, SMEs are under pressure to improve operational efficiency, customer engagement, financial management, and market responsiveness through the adoption of digital solutions. According to the Organisation for Economic Co-operation and Development (OECD, 2017), SMEs that actively embrace digital technologies tend to experience higher growth rates, improved productivity, enhanced innovation capacity, and stronger resilience during periods of economic uncertainty and market disruption.

Among the various dimensions of digital transformation, Financial Technology (FinTech) represents one of the most practical and accessible entry points for SMEs, particularly in developing economies. FinTech solutions such as mobile payment systems, digital banking platforms, online lending applications, and cloud-based accounting tools provide affordable and user-friendly alternatives to traditional financial services. These technologies require minimal infrastructure and can often be operated using basic smartphones and internet connectivity. Consequently, FinTech has significantly democratised access to financial services for small-scale entrepreneurs, including market traders, artisans, and small manufacturers, enabling them to participate more effectively in formal economic activities, improve financial inclusion, and enhance overall business performance.

2.2 Empirical Review

Ozili (2025) conducted a study titled *FinTech, Financial Inclusion and SME Development Challenges* in Nigeria. The study examined the challenges associated with FinTech adoption and financial inclusion among SMEs. The research adopted a qualitative and descriptive analytical approach using secondary data sources. Findings highlighted persistent challenges such as poor infrastructure, regulatory uncertainty, low digital literacy, and unequal access to financial technologies. The study concluded that although FinTech possesses significant potential to improve SME performance, its effectiveness depends largely on enabling environmental and institutional conditions. The study recommended stronger regulatory frameworks, improved digital infrastructure, and financial literacy programmes for SME owners. However, the study was largely conceptual and did not empirically test the mediating role of technology-enabled financial inclusion on SME financial performance, which the current study seeks to investigate empirically within Bwari Area Council, Abuja.

Muthiora (2024) conducted a study titled *Mobile Money Usage and Working Capital Management among Kenyan SMEs* in Kenya. The study examined 250 SMEs to determine the effect of mobile money usage on working capital improvement. Data were analyzed using regression analysis. The findings showed a significant positive relationship between mobile money usage and improvements

in working capital management among SMEs. The study concluded that mobile money services enhance liquidity management and business continuity for small enterprises. It was recommended that policymakers should improve mobile financial service accessibility and digital literacy among SME operators. However, the study concentrated mainly on mobile money usage and working capital management without considering broader dimensions of FinTech adoption and financial inclusion as mediating variables, which constitutes a gap addressed by the current study.

Jamil and Khan (2023) carried out a study titled *FinTech Adoption, Financial Inclusion and SME Performance in South Asia*. The study involved 300 SMEs and investigated the mediating role of financial inclusion in the FinTech-performance relationship. Data were analyzed using path analysis techniques. The findings showed a partial mediating effect of financial inclusion between FinTech adoption and SME performance. The study concluded that while FinTech directly contributes to business performance, financial inclusion further strengthens this relationship. The authors recommended increased investment in digital financial education and technological infrastructure for SMEs. However, the study focused on South Asian economies whose institutional and economic realities differ from those of Nigeria. This contextual limitation provides a gap for the present study.

Ofori and Asongu (2022) conducted a study titled *Financial Inclusion as a Mediator between FinTech Adoption and SME Performance in Sub-Saharan Africa* across Sub-Saharan Africa. The study surveyed 420 SMEs to examine the mediating role of financial inclusion in the relationship between FinTech adoption and SME performance. The researchers used Structural Equation Modelling (SEM) for data analysis. The findings revealed a full mediating effect of financial inclusion on the relationship between FinTech adoption and firm performance. The study concluded that FinTech alone may not directly improve SME outcomes unless it facilitates greater financial inclusion. The authors recommended that governments and financial institutions should expand inclusive digital financial ecosystems to support SME growth. Despite its relevance, the study adopted a broad regional scope without focusing specifically on SMEs within Nigeria or Bwari Area Council, Abuja, thus leaving a geographical gap that the current study intends to address.

Chen and Zhang (2021) carried out a study titled *FinTech and SME Performance: The Mediating Role of Financial Inclusion* in China. The study involved 512 SMEs and investigated how FinTech adoption influences firm performance through access to formal credit facilities. The researchers employed Structural Equation Modelling (SEM) for data analysis. The findings indicated that FinTech significantly enhances SME performance by improving access to formal financial services, especially credit. The study concluded that financial inclusion serves as a major transmission mechanism linking FinTech adoption to business growth and profitability. The researchers recommended that governments and financial institutions should strengthen digital financial infrastructures and promote inclusive financial policies for SMEs. Nevertheless, the study was conducted in China, whose financial and technological environment differs considerably from Nigeria, thereby leaving a contextual gap that the present study intends to fill.

Adeola and Evans (2020) conducted a study titled *Digital Payment Systems and Financial Performance of SMEs in Nigeria*. The study surveyed 384 SMEs to examine the relationship between digital payment adoption and SME financial performance. Data were analyzed using Partial Least Squares Structural Equation Modelling (PLS-SEM). The findings revealed that digital payment adoption significantly improved revenue generation among SMEs, although its effect on profitability was indirect. The study concluded that FinTech tools enhance business transactions and operational efficiency. The authors recommended that SMEs should intensify the adoption of digital financial technologies to improve competitiveness and sustainability. However, the study focused mainly on digital payment systems without examining the mediating role of technology-enabled financial inclusion, thereby creating a gap that the current study seeks to address within SMEs in Bwari Area Council, Abuja.

Theoretical Review

This study draws on two complementary theoretical frameworks, namely the Technology Acceptance Model (TAM) and Financial Intermediation Theory. Together, these frameworks provide a coherent and empirically tested basis for the central argument that FinTech adoption improves SME financial performance through the mechanism of technology-enabled financial inclusion.

3.2 Technology Acceptance Model (Davis, 1989)

TAM proposes that two primary beliefs shape technology adoption: Perceived Usefulness (the degree to which a technology enhances performance) and Perceived Ease of Use (the belief that using it requires minimal effort). These perceptions shape attitudes, which drive behavioural intentions, and ultimately determine actual adoption. In this study, TAM explains why SME operators choose to adopt FinTech platforms. Nigerian SME owners operating under real resource constraints will adopt mobile banking, digital lending platforms, or electronic payments primarily when they believe these tools will genuinely help their businesses and that they can use them without excessive difficulty. Contextual factors digital infrastructure, literacy levels, peer influence, and customer support quality shape these perceptions (Venkatesh & Davis, 2000). TAM's limitation is that it explains adoption decisions without explaining outcomes. It tells us why SME owners adopt FinTech but not how that usage translates into improved financial performance. For this, Financial Intermediation Theory is required.

3.3 Financial Intermediation Theory (Gurley & Shaw, 1960)

Financial Intermediation Theory addresses how financial systems channel resources from savers to borrowers, overcoming market imperfections, particularly information asymmetry and transaction costs. Information asymmetry creates adverse selection and moral hazard, problems that financial intermediaries address by gathering and processing information about borrowers, monitoring their behaviour, and enforcing repayment. Diamond (1984) extended this by conceptualising banks as “delegated monitors” that reduce aggregate oversight costs. FinTech platforms function as digital financial intermediaries performing these same fundamental functions more efficiently, more cheaply, and in environments where traditional intermediaries have been absent. Digital credit scoring algorithms assess SME creditworthiness using mobile transaction histories without requiring collateral or face-to-face meetings. This dramatically reduces information asymmetry and expands financial inclusion, connecting previously excluded SMEs with the capital and tools needed to improve performance.

3.4 Integrated Theoretical Framework

The integration of TAM and Financial Intermediation Theory produces a two-stage explanatory model. In the first stage, TAM explains why SME operators adopt FinTech; perceived usefulness and ease of use drive adoption behaviour. In the second stage, Financial Intermediation Theory explains how adopted FinTech platforms produce financial inclusion by reducing transaction costs and connecting SMEs with alternative sources of capital. Expanded inclusion, manifested through access to credit, savings, insurance, and payment services, is the mechanism through which adoption ultimately improves performance.

The resulting causal pathway is: Perceived Usefulness and Ease of Use → FinTech Adoption → Digital Financial Intermediation → Financial Inclusion → SME Financial Performance.

FinTech Adoption → Financial Inclusion (Mediator) → SME Financial Performance

Figure 3.1: Integrated Theoretical Framework

Methodology

4.1 Research Design

This study adopts a cross-sectional survey design, enabling systematic examination of relationships among FinTech adoption, financial inclusion, and SME financial performance without experimental

manipulation. Partial Least Squares Structural Equation Modelling (PLS-SEM) is the primary analytical method, appropriate for complex multi-path models with mediating variables, particularly where data may not conform to normality assumptions (Hair et al., 2019).

4.2 Population, Sample Size, and Sampling Technique

The target population consists of registered SMEs in Bwari Area Council (FCT), Abuja, across the manufacturing, retail, and service sectors, estimated at approximately 1,400 (Bwari Area Council Enterprise, 2024) enterprises. Using the Krejcie and Morgan (1970) table, the minimum sample size for this population is 302; adjusted upward to 305 for enhanced representativeness and to allow for non-response. A stratified random sampling technique divides the population by sector and randomly selects respondents from each stratum in proportion to its representation, reducing sampling bias and capturing sectoral heterogeneity. Respondents, including business employees, managers and financial officers, were identified from records maintained by local business associations. They were contacted through direct on-site visits. Participation was voluntary, with full informed consent and guaranteed confidentiality.

$$S = \frac{[X^2NP(1-P)]}{[d^2(N-1) + X^2P(1-P)]}$$

Where:

S = required sample size

X^2 = table value of chi-square for 1 degree of freedom at 95% confidence level = 3.841

N = population size

P = population proportion = 0.50

d = degree of accuracy expressed as a proportion = 0.05

Substituting the population size of 1400 into the formula:

$$S = \frac{[3.841 \times 1400 \times 0.5(1-0.5)]}{[0.05^2(1400-1) + 3.841 \times 0.5(1-0.5)]}$$

P(1-P)

$$0.5(1-0.5) = 0.5 \times 0.5 = 0.25$$

$$3.841 \times 1400 \times 0.25$$

$$3.841 \times 350 = 1344.35$$

$$0.05^2 = 0.0025$$

$$1400 - 1 = 1399$$

$$0.0025 \times 1399 = 3.4975$$

$$3.841 \times 0.25 = 0.96025$$

$$3.4975 + 0.96025 = 4.45775$$

$$S = 1344.35 / 4.45775$$

$$S \approx 301.57$$

$$S \approx 302$$

4.3 Data Collection Instrument

Primary data were collected using a structured questionnaire organised into four sections: (i) demographic and organisational information; (ii) FinTech adoption (items 1–5); (iii) financial inclusion (items 6–10); and (iv) financial performance (items 11–15), with a supplementary section on variable relationships (items 16–20). All items use a 5-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree). The instrument was pilot-tested with 30 SMEs and validated by academic experts for content validity. Among 302 respondents, only 300 were returned and that indicate a very good participation by the respondents.

4.4 Method of Data Analysis

Data are analysed using SmartPLS 4.0. The analysis proceeds in three stages:

Measurement Model Assessment examines Cronbach's Alpha ($\alpha \geq 0.70$) for internal consistency; Composite Reliability ($CR \geq 0.70$); Average Variance Extracted ($AVE \geq 0.50$) for convergent validity; and Discriminant Validity via the Fornell–Larcker criterion and HTMT ratio. Structural Model Assessment tests hypothesised relationships through path coefficients (β), p-values ($p < 0.05$), R^2 values, effect size (f^2), and predictive relevance (Q^2).

4.5 Ethical Considerations

All participation was voluntary with informed consent. No personally identifying information was collected. Data are reported only in aggregate form and used exclusively for academic purposes, stored securely in accordance with data protection principles.

4.6 Data Presentation and Analysis

4.6.1 Demographic Profile of Respondents

This section presents demographic characteristics of the 300 SME owners/managers, accountants, and financial officers who participated in the study.

Table 4.6.1a: Distribution of Respondents by Sector of Operation

Category	Frequency	Percentage (%)
Manufacturing	90	30.0
Retail/Wholesale	135	45.0
Services	75	25.0
Total	300	100.0

The majority of respondents (45.0%) operate in Retail/Wholesale, followed by Manufacturing (30.0%) and Services (25.0%), reflecting the dominance of trading businesses in the study area.

Table 4.6.1b: Distribution of Respondents by Years in Operation

Category	Frequency	Percentage (%)
Under 3 years	45	15.0
3–5 years	90	30.0
6–10 years	105	35.0
Above 10 years	60	20.0
Total	300	100.0

Most respondents (35.0%) have operated 6–10 years; 30.0% operated 3–5 years. This indicates sufficient business experience for informed responses

Table 4.6.1c: Distribution of Respondents by Number of Employees

Category	Frequency	Percentage (%)
1–10 (Micro)	120	40.0
11–50 (Small)	135	45.0
51–250 (Medium)	45	15.0
Total	300	100.0

45.0% are small enterprises (11–50 employees); 40.0% are micro enterprises; 15.0% are medium enterprises.

Table 4.6.1d: Distribution of Respondents by Position

Category	Frequency	Percentage (%)
Manager	20	7.0
Employee	250	83.0
Financial Officer	30	10.0
Total	300	100.0

7.0% are manager, ensuring responses on FinTech adoption decisions are sourced from the most informed decision-makers.

4.6.2 Analysis of Research Questions

Responses are based on a five-point Likert scale (1 = Strongly Disagree; 5 = Strongly Agree). The benchmark mean is 3.00; items at or above 3.00 are classified as “Agreed.”

Research Question One: FinTech Adoption and SME Financial Profitability

Table 4.6.2: Respondents’ Perceptions on FinTech Adoption and Profitability (Items 1–5)

S/N	Questionnaire Item	SA (5)	A (4)	N (3)	D (2)	SD (1)	Mean	Std Dev	Decision
1	My business uses FinTech applications for daily transactions.	105	120	45	18	12	3.96	0.98	Agreed
2	FinTech tools have simplified financial transactions.	114	120	42	15	9	4.05	0.94	Agreed
3	My business relies on digital platforms for payments.	105	120	45	18	12	3.96	0.98	Agreed
4	FinTech services have reduced cash handling.	90	123	54	21	12	3.86	0.96	Agreed
5	My business has integrated FinTech into financial management.	84	123	57	24	12	3.81	0.96	Agreed
Cluster Mean		498	606	243	96	57	3.93	0.96	

All five items recorded means above 3.00. The cluster mean of 3.93 (SD = 0.96) indicates strong FinTech adoption across the sample. Respondents broadly affirm that FinTech tools simplify transactions, reduce cash handling, and have been integrated into core financial management, all of which positively influence profitability. Items on daily transaction use and transaction simplification recorded the highest means, while integration into financial management recorded the lowest, suggesting room for deeper operational embedding.

Research Question Two: FinTech Adoption and SME Sales Revenue

Table 4.6.3: Respondents’ Perceptions on FinTech Adoption and Sales Revenue (Items 6–10)

S/N	Questionnaire Item	SA (5)	A (4)	N (3)	D (2)	SD (1)	Mean	Std Dev	Decision
6	FinTech adoption has improved my business's access to financial services.	99	120	51	18	12	3.92	0.97	Agreed
7	My business can easily access credit through digital platforms.	81	123	57	27	12	3.78	0.98	Agreed

8	FinTech services have increased participation in formal financial systems.	90	126	51	21	12	3.87	0.96	Agreed
9	Digital financial tools have made saving and investment easier.	90	120	57	21	12	3.85	0.96	Agreed
10	FinTech usage has reduced financial exclusion challenges.	81	123	57	27	12	3.78	0.98	Agreed
Cluster Mean		441	612	273	114	60	3.84	0.97	

All items recorded means above 3.00. The cluster mean of 3.84 (SD = 0.97) indicates that FinTech adoption positively impacts sales revenue through broadened market access and digital payment acceptance. Respondents confirm that FinTech platforms have improved access to financial services, increased formal financial participation, and facilitated saving and investment activities. Digital credit access recorded the lowest mean (3.78), indicating that while general platform adoption boosts revenue, credit access remains the weakest FinTech-enabled dimension.

Research Question Three: FinTech Adoption and SME Cash Flow

Table 4.6.4: Respondents' Perceptions on FinTech Adoption and Cash Flow (Items 11–15)

S/N	Questionnaire Item	SA (5)	A (4)	N (3)	D (2)	SD (1)	Mean	Std Dev	Decision
11	My business has experienced increased profitability since FinTech adoption.	75	123	60	30	12	3.73	0.98	Agreed
12	FinTech adoption has contributed to higher sales revenue.	84	123	57	24	12	3.81	0.96	Agreed
13	My business operates more efficiently due to digital financial tools.	90	126	51	21	12	3.87	0.96	Agreed
14	The financial stability of my business has improved.	81	123	57	27	12	3.78	0.98	Agreed
15	My business has reduced operational costs through FinTech.	81	120	60	27	12	3.77	0.97	Agreed
Cluster Mean		411	615	285	129	60	3.79	0.97	

All items recorded means above 3.00 (cluster mean = 3.79; SD = 0.97), indicating respondent agreement that FinTech adoption contributes to improved cash flow management. Operational efficiency (item 13) recorded the highest mean (3.87), reflecting the greatest perceived cash flow benefit, while increased profitability (item 11) recorded the lowest mean (3.73), consistent with the sequential pattern where efficiency gains precede direct profitability improvements.

Research Question Four: Mediating Role of Technology-Enabled Financial Inclusion

Table 4.6.5: Respondents' Perceptions on Technology-Enabled Financial Inclusion as Mediator (Items 16–20)

S/N	Questionnaire Item	SA (5)	A (4)	N (3)	D (2)	SD (1)	Mean	Std Dev	Decision
16	FinTech adoption positively influences business financial performance.	99	120	51	18	12	3.92	0.97	Agreed
17	Improved financial inclusion through FinTech leads to better performance.	90	126	51	21	12	3.87	0.96	Agreed
18	The benefits of FinTech depend on the level of financial inclusion achieved.	84	123	57	24	12	3.81	0.96	Agreed
19	Technology-enabled financial inclusion enhances FinTech's impact on performance.	90	120	57	21	12	3.85	0.96	Agreed
20	FinTech improves performance mainly through better access to financial services.	99	120	51	18	12	3.92	0.97	Agreed
Cluster Mean		462	609	267	102	60	3.87	0.96	

Cluster mean of 3.87 (SD = 0.96) strongly supports the mediating role of technology-enabled financial inclusion in the FinTech adoption–performance relationship. Respondents agree that FinTech's benefits on overall performance are substantially channelled through improved access to financial services, and that the depth of financial inclusion achieved determines the magnitude of performance outcomes.

4.7 Test of Hypotheses

Four null hypotheses were tested at a 0.05 significance level using Pearson Product-Moment Correlation and Sobel mediation analysis.

Hypothesis One: FinTech Adoption and SME Financial Profitability (H_{01})

Table 4.7: Pearson Correlation — FinTech Adoption and SME Financial Profitability (H_{01})

Variables	N	R	t-value	p-value	Decision
FinTech Adoption → SME Financial Profitability	300	0.612	13.34	0.000	H_{01} Rejected

A significant positive correlation ($r = 0.612$, $t = 13.34$, $p = 0.000$) confirms that FinTech adoption significantly and positively affects SME financial profitability. H_{01} is rejected. This indicates that SMEs that adopt FinTech tools are likely to experience measurable improvements in profitability, supporting the central argument of this study.

Hypothesis Two: FinTech Adoption and SME Sales Revenue (H₀₂)

Table 4.8: Pearson Correlation — FinTech Adoption and SME Sales Revenue (H₀₂)

Variables	N	R	t-value	p-value	Decision
FinTech Adoption → SME Sales Revenue	300	0.648	14.68	0.000	H ₀₂ Rejected

A significant positive correlation ($r = 0.648$, $t = 14.68$, $p = 0.000$) confirms that FinTech adoption significantly and positively affects SME sales revenue. H₀₂ is rejected. Digital payment adoption and market reach expansion through FinTech platforms create new revenue streams and reduce transaction friction, directly contributing to higher sales volumes.

Hypothesis Three: FinTech Adoption and SME Cash Flow (H₀₃)

Table 4.9: Pearson Correlation — FinTech Adoption and SME Cash Flow (H₀₃)

Variables	N	R	t-value	p-value	Decision
FinTech Adoption → SME Cash Flow	300	0.571	12.00	0.000	H ₀₃ Rejected

A significant positive correlation ($r = 0.571$, $t = 12.00$, $p = 0.000$) confirms that FinTech adoption significantly and positively affects SME cash flow. H₀₃ is rejected. FinTech tools reduce transaction delays, automate cash management, and provide faster access to credit, all of which directly improve liquidity and working capital management.

Hypothesis Four: Mediating Role of Technology-Enabled Financial Inclusion (H₀₄)

Table 4.10: Mediation Analysis (Sobel Test) — Technology-Enabled Financial Inclusion as Mediator (H₀₄)

Path	N	β	z-value	p-value	Decision
FinTech Adoption → Financial Inclusion (Path a)	300	0.55	11.23	0.000	Significant
Financial Inclusion → Financial Performance (Path b)	300	0.39	7.82	0.000	Significant
Indirect Effect (Sobel Test: $a \times b$)	300	0.21	5.34	0.000	H ₀₄ Rejected

Both direct paths and the indirect effect are significant. Technology-enabled financial inclusion significantly mediates the FinTech adoption–performance relationship (Sobel $z = 5.34$, $p = 0.000$). H₀₄ is rejected. FinTech’s contribution to overall SME financial performance is substantially channelled through the mechanism of enhanced financial inclusion — expanded access to credit, formal savings, insurance, and payment infrastructure.

Result and Discussion

5.1 Result

The study was anchored on four research questions and four null hypotheses tested at a 0.05 significance level. The principal findings are as follows:

- FinTech adoption was significantly high among SMEs (cluster mean = 3.93, SD = 0.96). Pearson correlation confirmed a significant positive effect on SME financial profitability ($r = 0.612$, $p < 0.001$), leading to rejection of H₀₁. Among the 300 respondents, 225 strongly agreed or agreed that FinTech simplifies transactions, affirming widespread adoption.
- FinTech adoption significantly and positively affects SME sales revenue ($r = 0.648$, $p < 0.001$), leading to rejection of H₀₂. The cluster mean for sales revenue-related items was 3.84 (SD = 0.97). Respondents confirm that FinTech broadens market reach and enables digital payment acceptance, directly driving revenue growth. Among these, 219 respondents agreed or strongly agreed that FinTech improved their access to financial services.
- FinTech adoption significantly and positively affects SME cash flow ($r = 0.571$, $p < 0.001$), leading to rejection of H₀₃. The cluster mean for cash-flow-related performance items was 3.79

(SD = 0.97). Operational efficiency recorded the highest mean (3.87), while direct profitability gains recorded the lowest (3.73), consistent with the sequential pattern where liquidity improvements precede profit margin enhancement.

- iv. Mediation analysis confirmed that technology-enabled financial inclusion significantly mediates the FinTech adoption–performance relationship (Sobel $z = 5.34$, $p < 0.001$), rejecting H_{04} . FinTech’s contribution to profitability, revenue, and cash flow is substantially channelled through improved financial inclusion, access to credit, formal financial participation, and investment instruments. The cluster mean for mediator items was 3.87 (SD = 0.96).

Discussion

5.2.1 FinTech Adoption and SME Financial Profitability (H_{01})

The finding that FinTech adoption significantly and positively affects SME financial profitability ($r = 0.612$, $p < 0.001$) aligns with the growing literature affirming the positive role of digital financial technologies in SME growth. Respondents across manufacturing, retail, and service sectors reported that mobile banking, digital payments, and integrated FinTech platforms have simplified transactions, reduced cash handling risks, and improved operational decision-making, all of which translate into better profit margins over time. Among the 300 respondents, 225 agreed or strongly agreed that FinTech is used for daily transactions, reflecting the depth of adoption. This is consistent with Adeola and Evans (2020) and Ozili (2018), who noted correlations between digital payment adoption, improved revenue streams, and business sustainability.

5.2.2 FinTech Adoption and SME Sales Revenue (H_{02})

The finding that FinTech adoption significantly and positively affects SME sales revenue ($r = 0.648$, $p < 0.001$) extends the literature on digital finance and revenue generation. FinTech platforms enable SMEs to accept digital payments from a wider customer base, participate in e-commerce channels, and leverage data analytics for targeted marketing. With 207 respondents agreeing that FinTech contributed to higher sales revenue, the evidence confirms that digital financial tools directly expand market reach. This is consistent with Chen and Zhang (2021), who found that FinTech improves firm performance primarily by facilitating access to larger financial ecosystems. The lower mean for digital credit access ($\bar{x} = 3.78$) suggests that while revenue benefits are broadly felt, credit-driven growth remains an underdeveloped pathway.

5.2.3 FinTech Adoption and SME Cash Flow (H_{03})

The finding that FinTech adoption significantly and positively affects SME cash flow ($r = 0.571$, $p < 0.001$) reflects the operational efficiency gains reported by respondents. Operational efficiency recorded the highest item mean (3.87), indicating that FinTech’s immediate impact is felt most strongly through reduced transaction costs and faster payment cycles. Profitability recorded the lowest item mean (3.73), consistent with the sequential pattern documented by Asongu and Nwachukwu (2018), where liquidity improvements and cost savings manifest before reflecting in net profit margins. Among 300 respondents, 201 agreed that FinTech reduced operational costs, directly affirming the cash flow improvement pathway.

5.2.4 Mediating Role of Technology-Enabled Financial Inclusion (H_{04})

The confirmed mediating role of technology-enabled financial inclusion (Sobel $z = 5.34$, $p < 0.001$) is the most theoretically significant finding of this study. FinTech adoption does not improve profitability, sales revenue, or cash flow in isolation; its impact on each performance dimension is substantially transmitted through enhanced financial inclusion — specifically, better access to credit, formal savings instruments, insurance products, and integrated payment infrastructure. With 219 respondents agreeing that FinTech positively influences financial performance through financial services access, the mediating pathway is empirically robust. This aligns with Ofori and Asongu (2022) and validates the integrated theoretical framework of TAM and Financial Intermediation Theory. SMEs should therefore not only adopt FinTech tools but deliberately leverage them for

deeper financial inclusion to maximise performance benefits across all three dimensions: profitability, revenue, and cash flow.

Conclusion

The study conclusively establishes that FinTech adoption exerts a significant positive influence on SME financial performance. Businesses that have embraced digital financial tools demonstrate measurably better outcomes in operational efficiency, revenue generation, cost management, and financial stability. FinTech adoption is also a powerful driver of financial inclusion, reducing structural barriers that historically excluded small businesses from formal financial systems. Most significantly, technology-enabled financial inclusion actively mediates the adoption–performance relationship: a substantial portion of performance improvements attributable to FinTech flows through the mechanism of enhanced inclusion. It is not sufficient for SMEs to adopt FinTech passively; they must actively leverage these tools to deepen formal financial participation to unlock digital finance's full performance potential. The study concludes that FinTech adoption is not a luxury but a strategic imperative requiring deliberate adoption, enabling regulatory frameworks, targeted capacity-building, and inclusively designed financial products.

Recommendations

6.2.1 For SME Operators

SME owners and managers should treat FinTech adoption as a core business strategy. They should transition from informal, cash-dependent financial management to integrated digital platforms offering payment, credit, savings, and investment functionalities. Investing in digital financial literacy is critical, as competence in navigating FinTech platforms amplifies performance benefits. SMEs should also actively utilise FinTech to access digital credit, maintain business savings accounts, and participate in formal financial systems.

6.2.2 For Policymakers and Regulatory Agencies

The Central Bank of Nigeria (CBN) and SMEDAN should prioritise an SME-friendly FinTech regulatory environment: simplified digital KYC requirements, tax incentives for FinTech-integrated SMEs, formalised digital credit frameworks, and expanded regulatory sandboxes. Investment in national digital infrastructure, particularly internet access and mobile coverage in underserved areas, is equally critical.

6.2.3 For Financial Institutions and FinTech Providers

Banks, microfinance institutions, and FinTech companies should collaborate to deploy digital credit products tailored to SME cash flow patterns, using algorithmic credit scoring based on digital transaction data rather than traditional collateral requirements. Given that digital credit access recorded the lowest inclusion mean, this represents a clear and addressable market gap. FinTech providers should also prioritise user experience design for low-bandwidth and low-digital-literacy contexts.

6.2.4 For Training and Capacity-Building Bodies

Industry associations, NGOs, and government-sponsored programmes should integrate digital financial literacy as a compulsory component of SME capacity-building, covering both practical platform use and strategic deployment of digital tools for credit management and investment planning.

6.2.5 For Future Researchers

Future researchers should conduct longitudinal studies to establish causality beyond correlation, and comparative studies across geopolitical zones in Nigeria or across West African nations to enrich generalisability. Qualitative research on SME operator experiences with FinTech adoption barriers would complement these quantitative findings. Mixed-methods approaches are recommended for

investigating the specific pathways through which digital credit access the weakest inclusion dimension can be improved.

Table 6.1: Summary of Recommendations by Target Group and Priority Level

S/N	Recommendation	Target Group	Priority
1	Intensify FinTech adoption (mobile banking, digital payments, integrated platforms) as a core operational strategy.	SME Owners/Managers	High
2	Leverage FinTech for digital credit, investment, and savings not just basic payments.	SME Owners/Managers	High
3	Create enabling policy environment: simplified KYC, SME-friendly FinTech regulations.	Government/Regulators	High
4	Develop SME-tailored digital credit products accessible via mobile platforms.	FinTech Providers/Banks	High
5	Institutionalise digital financial literacy in SME capacity-building curricula.	Training Bodies/NGOs	Medium
6	Design user-friendly, low-data platforms for SMEs in low-connectivity areas.	FinTech Providers	Medium
7	Conduct longitudinal studies tracking long-term FinTech impact on SME performance.	Researchers/Academics	Medium
8	Facilitate peer-learning networks where FinTech-adept SMEs share experiences.	Industry Associations	Low

6.4 Contribution to Knowledge

This study makes four key contributions: (i) empirical evidence from a Nigerian SME context that technology-enabled financial inclusion significantly mediates the FinTech adoption–performance relationship, extending literature dominated by developed economy contexts; (ii) validation of the simultaneous application of Financial Intermediation Theory and TAM as complementary lenses for understanding digital finance–performance dynamics; (iii) identification of digital credit access as a specific under-developed dimension of FinTech-driven financial inclusion; and (iv) a replicable multi-variable quantitative research framework for future comparative studies.

6.5 Limitations of the Study

Three limitations merit acknowledgement. First, the study was limited to SMEs in the FCT, which may not represent all Nigerian regions. Second, the self-administered questionnaire introduces potential social desirability bias. Third, the cross-sectional design limits causal inference over time. Despite these limitations, the breadth of the sample (300 respondents across three sectors and four enterprise sizes) and rigour of statistical analyses provide sufficient confidence in the findings.

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