

Financial Inclusion and Small Business Performance: Mediating Role of POS Technology in Ekiti State, Nigeria

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Abstract-

Background: Financial inclusion and technological adoption are key enablers for small business growth in developing countries. To our knowledge, the synergies between these factors and financial literacy have been rarely examined. This study investigates the impact of financial inclusion on SME performance via Point-of-Sale (POS) adoption and tests whether financial literacy moderates the indirect effect.

Design: Anchored in the Resource-Based View (RBV), the study conceptualizes financial literacy and digital adaptability as the strategic assets that contribute to the firm competitive advantage.

Methods: Drawing on a sample of 392 small businesses in Ekiti State, Nigeria, the study employs PROCESS Macro Model 4 and 14 to analyze data examining the mediation and moderated mediation effects, applying 5,000 bootstrapped samples for robustness.

Findings: Financial inclusion positively influenced the performance of SMEs ($B = 0.326, p < 0.001$). POS adoption mediated this association partially (Indirect effect = 0.087, 95% CI [0.042, 0.146]), revealing that integration of digital payment enhances performance output. Financial literacy also moderated the indirect path (Interaction = 0.112, SE = 0.039, $p < 0.01$), suggesting that literate entrepreneurs obtain higher performance benefits towards POS adoption.

Conclusions: Financial inclusion, POS adoption, and literacy may function as cumulative resources that enhance SME resilience and growth. With progress on the expansion of digital infrastructure and financial literacy, the findings suggest that there will be more conversions of inclusion policy into actual business performance in Nigeria.

Keywords: Financial inclusion; POS adoption; Financial literacy; SME performance; Nigeria

I. INTRODUCTION

Around the world, the activity of small businesses keeps local economies moving — they are lively, responsive to change, and closely connected to the communities they serve. From a corner café in Nairobi to a boutique in Ado Ekiti, these businesses are the pillars of a region's economic resilience. On a global scale a small business is typically characterized by a small staff and a small amount of capital. OECD (2023) states that an enterprise with less than 50 employees is a small enterprise and according to SMEDAN and NBS (2022) in Nigeria, small businesses are those having between 11 and 50 employees or with asset base that does not exceed N50 million.

Small businesses are not just economic units—they are powerful engines of employment, ingenuity, and social inclusion. Small firms make up about 90% of all businesses and provide more than 50% of employment worldwide (World Bank 2024), they are also the largest employer in most non-farm economies in Sub-Saharan Africa, and are critical to the livelihoods of millions of people therein. In Nigeria, SMEs account for approximately 48% of the national GDP, 96% of total business establishments (Business Post, 2024; SMEDAN & NBS, 2022), and employs almost 84% of the labour force. However, Nigerian small firms are perennially constrained, with limited access to credit, poor infrastructure, volatile

policies, and low financial and digital literacy, all of which impede sustainability and performance.

A significant constraint to small business growth in Nigeria is poor access to finance. Financial inclusion is defined as the ease of access, availability, and use of formal financial services by individuals and business entities. The report on financial inclusion of the Central Bank of Nigeria (CBN) 2023 highlighted that despite inclusion rates being at 74%, there are still millions of small business holders that are financially excluded or under-served especially in the semi-urban states like Ekiti (CBN, 2023). They have limited access to credit and depend on informal mechanisms for finance, which constrain their ability to grow the business, manage liquidity or use financial products designed for them.

The spread of Point-of-Sale (POS) technology is becoming a very useful tool for promoting financial inclusion. POS devices allow small merchants to accept electronic payments, monitor transactions, and reduce cash dependence, which helps bring them closer to formal financial systems. According to the Nigeria Inter-Bank Settlement System (NIBSS), the total value of POS transactions increased from ₦10.7 trillion in 2023 to ₦18 trillion in 2024, indicating a 69% surge, and the number of registered terminals has almost doubled within the same period from 3.5 million to 7.8 million (Fintech Magazine Africa, 2025). Such numbers show the potential of POS technology in the transformation of financial behaviour and in the formalisation of micro commerce. Nevertheless, uptake is slow in different parts of Nigeria due to cost, connectivity and the very low levels of digital literacy of many small business owners.

This is where financial literacy becomes important. Financial literacy, being the capacity to process financial information to make informed decisions, determines the manner in which SMEs interact with financial products and services. According to recent reports by Enhancing Financial Innovation & Access (EFInA, 2023), only 33% of Nigerian adults practice budgeting and less than 42% read the terms of loan or savings agreements. As a result, numerous small business owners don't take full advantage of the potential benefits of financial inclusion and digital tools such as point-of-sale (POS) systems. Findings from research suggests that the relationship between technology adoption and performance is moderated

by financial literacy, since entrepreneurs with deeper knowledge on the matter are more likely to strategically use digital finance (Erhomosele & Obi, 2022; Sakanko et al., 2024).

In view of these developments, the present study considers financial inclusion as the first step antecedent to POS adoption, which itself leads to small business performance and suggests that financial literacy weak/strength the extent to which POS adoption converts inclusion into sustainable performance. Based on this theoretical triad, the research work is poised to determine the level of financial inclusion among small scale businesses in Ekiti State; to ascertain their level of adoption of POS technology; assess the influence of financial inclusion on performance; and to analyze the mediatory effect of POS on the relationship- this helps to view whether/how financial literacy can strengthen/weaken this mechanism.

In light of these objectives, the study investigates the following questions: how financially included are small businesses in Ekiti? To what degree are they using POS? What is its impact on their performance? And to what extent does POS adoption moderate the relationship between inclusion and performance at different levels of financial literacy? Responding to these is more than intellectual: it helps inform whether policy should emphasize boosting inclusion, strengthening POS infrastructure and take-up, or raising financial literacy (or some combination of the three), in terms of what best supports small business owners in Ekiti to thrive in Nigeria's growing digital economy.

To anchor these investigations, the research draws upon three overlapping theoretical perspectives. The Technology Acceptance Model (TAM) (Davis, 1989) demonstrates how small business owners make choices on the acceptance and usage of technologies such as POS based on two criteria, Perceived Usefulness and Perceived Ease of Use. The Financial Intermediation Theory (Gurley & Shaw, 1960) emphasizes that formal financial systems have the ability to facilitate the mobilization of savings and the efficient allocation of these resources, which implies that financial inclusion is positively linked to enterprise performance. The Resource-Based View (RBV) (Barney, 1991) highlights the importance of internal resources such as financial literacy as strategic resources that enable firms in superior

resource application. By combining these theoretical constructs, the research conceptualizes POS adoption as the mediating mechanism through which inclusion affects performance and financial literacy as a moderator that influences the strength of the impact of this mediation.

Although financial inclusion, digital payments and performance of small businesses have been studied in Nigeria and in the larger scope as well, some gaps are notable. Many of the studies are on micro or mixed MSME groups, on urban populations, or direct (non-mediated) relations; few examine POS adoption as a mediator, or financial literacy as a moderator—particularly in semiurban or less researched states such as Ekiti. Therefore, this research contributes to the existing literature and praxis on a theoretical level through a focus on small-scale enterprises by modelling the inclusion → POS → performance linkage, and by exploring the influence of financial literacy on that chain. In that process, it serves as both a source of theoretical generation and pragmatic implications for policy makers, fintech firms, and small business support actors wishing to support sustainable growth particularly in under-scrutinized subregions of Nigeria.

II. LITERATURE REVIEW

Financial inclusion, financial literacy, and digital payment technologies have emerged as a global focus for how small firms grow and sustain themselves. Researchers have noted that availability of finance and access to digital financial services, e.g. Point-of-Sale (POS) services can have positive impact on business performance and its competitiveness (Odeh & Ezekiel, 2024; Sajuyigbe, Odetayo & Adeyemi, 2023). Small businesses constitute the majority of enterprises in Nigeria and sub-Saharan Africa in general, but their right to formal finance is still largely restricted and so financial inclusion and technology adoption determine largely whether they thrive or not.

The beneficial effect of fintech instruments and financial inclusion on small businesses performance is corroborated by evidence-based research. For example, Odeh and Ezekiel (2024) examined the Effect of Fintech Adoption on Financial Inclusion: A Study of SMEs in Abuja using Regression Analysis and 385 SMEs. Their findings revealed that access to financial services was significantly improved with

POS service and operational efficiency was also significantly improved. The result of Sajuyigbe, Odetayo and Adeyemi (2023), who examined the effect of financial literacy on the profitability and sustainability of small businesses through a survey of 240 small-scale business operators in the six states of Southwest Nigeria, revealed that financial literacy and financial inclusion are significantly related to increased profitability and sustainability of small businesses. These results are consistent with the study at the national level by Impact of Fintech Adoption on Financial Inclusion in Nigeria (2025), which had shown that POS terminals have positive exertion on financial inclusion ($\beta = 0.365$, $p < 0.001$) and that it accounts for over 83 % of the variation in inclusion. These studies collectively highlight that increased access to and usage of fintech channels, such as POS terminals, contributes to advancing financial inclusion as well as business performance.

Also Abubakar (2020) investigated the effect of financial literacy on profitability with 148 small scale businesses in Karu, Abuja, and using ANOVA, found that entrepreneurs with more financial literacy maintained better records and had higher profit margins. In the same vein, Shittu and Pam (2025) empirically examined the influence of microfinance services on business growth of 346 micro and small enterprises operators in Plateau State in consideration of financial literacy as a moderator. The results from their study indicated that although access to micro-finance services positively influences growth, the effect is higher when business owners are financially literate. In addition, this finding strengthens the view that financial literacy is not only a facilitator (Huston, 2010) to inclusion but also acts as a critical moderator that further strengthens the beneficial impacts of financial inclusion and technology usage on firm outcomes.

On the other hand, there are a few studies presenting more nuanced results. Busari and Jayeoba (2024) also considered panel data of ten deposit money banks from 2013 to 2022 and observed that mobile banking had a positive effect on banks' return on assets, while POS transactions exerted a negative and significant impact on profitability. They ascribed this to the high transactions processing, frauds and maintenance cost of POS transactions in Nigerian financial system. Among other things, Alabi and Olaoye (2022) performed a cross-country analysis China/Nigeria using pooled OLS and Feasible GLS methods in a

related research. Their results showed that technological development indicators such as using the Internet and using ATMs increased financial inclusion in China, but the result was not statistically significant in Nigeria. This also indicates that technology usage, by itself, without adequate literacy and institutional support, may not necessarily translate into observable financial inclusion gains.

In sharp contrast to much earlier optimism, Okereke, Kyarem and Iyoboyi (2023) also found a mixed effect when they investigated the moderating role of institutional quality on the influence of financial inclusion on the living standards of people in across 45 Sub-Saharan African countries. Poor governance: They also found that while regulatory quality did enhance the inclusion effect, governance indicators being poor inclusive of corruption and weak institution mitigated this effect. This illustrates the need to context when interpreting inclusion–performance relationships.

Further, Adewumi and Cele (2023) investigated the financial literacy competencies among small and medium scale enterprises in Lagos State using the instrument of quantitative questionnaire. Their results showed that financial literacy was associated with improved decision-making and risk management for a few entrepreneurs; however, not all of the financial literacy components (e.g., budgeting/forecasting) had the same impact. Similarly, The Joint Impact of FinTech Innovations and Financial Literacy on Sustainable Financial Inclusion in Nigeria (2025) revealed that a good number of small scale businesses owners there possesses POS machines but only a handful make good use of the device owing to low level of financial literacy and inadequate trust on digital platform, as these two factors continues to hamper their plugs to the full in terms of usage. This underscores the fact adoption with ignorance renders shallow financial inclusion.

These various studies taken together are painting an empirically dynamic but uneven picture. The majority of results are in favor of financial inclusion and point of sales device adoption as positive factors in small business performance, especially when moderated by financial literacy. Yet a handful of mixed or conditional results point to the fact that the simple existence of technology or inclusion is not enough: entrepreneurial competence, digital awareness, and contextual factors such as institutional quality appear

to be equally important. While there has been proliferating interest in researching into fintech and inclusion studies in Nigeria, the findings have arguably been focused on micro or medium enterprises and urban centers like Lagos and Abuja, paying little or no consideration to the distinct characteristics of small businesses located in semi urban areas such as Ekiti State.

Based on the reviewed evidences, it is apparent that financial inclusion and POS adoption have significant impact on small business performance; however the effect depends on the financial literacy level of the entrepreneur. Research has established digital technologies such as POS terminals facilitate greater access to financial services, but lacking sufficient financial information, small business owners might not be able to make the best use of these instruments to generate higher profits and expand their companies. Hence, financial literacy is considered as a significant enabler for enhancing the effect of digitally driven financial inclusion on firm performance.

Hence, this research addresses an important gap in the literature and contributes to the research in the developing country context for the business success of financial inclusion and POS technology by also considering the role of financial literacy as a moderating variable. In doing so, it offers fresh insights into how small scale business in Ekiti State could effectively utilize digital financial services and knowledge-based capabilities to improve their performance in the context of an emerging economy with a transitional cashless system in the making. The proposed conceptual model of the study (Figure 1) presents this hypothesized relationship in which POS adoption mediates the relationship between financial inclusion and small business performance, while financial literacy moderates the relationship between POS adoption and business performance.

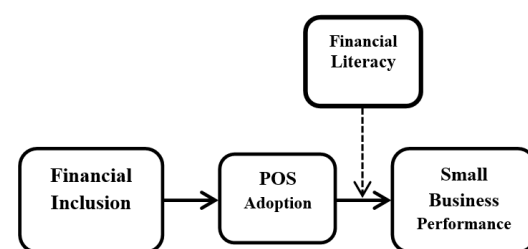


Figure 1. Conceptual Framework

Building on the high-level model depicted in Figure 1, the hypothesized relationships are derived from theoretical and empirical sources discussed

previously. The TAM suggests that perceived usefulness and perceived ease of use are determinants of technology adoption and this may imply that small business owners, who perceive the use of POS systems as time-saving and easy to use, will have higher intention to use POS systems for business transactions. Financial Intermediation Theory also highlights the importance of financial inclusion in mobilizing funds and channeling them into productive ventures to enhance firm performance. In the same vein, the RBV subscribes that non-financial resources like financial literacy improve the capacity of a firm to utilise technological and financial resources for achieving sustainable competitive advantage.

Based on theories, this paper considers that there is a direct positive influence of financial inclusion on the performance of MSMEs and that the adoption of POS is a mediation mechanism turning financial inclusion into performance outcomes. Also, financial literacy is expected to moderate the relationship between POS adoption and the performance of small firms in a positive way – in other words, the performance of small firms run by financially literate owners may be more positively affected by using the technology.

Accordingly, the following hypotheses are proposed to guide the empirical investigation:

H₁: Financial inclusion has a significant positive effect on the performance of small businesses in Ekiti State.

H₂: Financial inclusion has a significant positive effect on POS adoption among small businesses in Ekiti State.

H₃: POS adoption has a significant positive effect on the performance of small businesses in Ekiti State.

H₄: POS adoption mediates the relationship between financial inclusion and small business performance.

H₅: Financial literacy positively moderates the relationship between POS adoption and small business performance, such that the effect is stronger at higher levels of financial literacy.

III. METHODS

3.1 Research Design

Quantitative and explanatory research design was employed in the study to examine the effect of financial inclusion on small business performance in Ekiti State, with the adoption of point-of-sale (POS) as a mediating variable and financial literacy as a moderating variable. The explanatory design was deemed appropriate because it allows for the testing of causality between constructs especially when the involved variables are subject to quantification via structured measurement instruments. The same methodological approaches adopted in this study is also Adetayo and Adebayo (2022) for investigating financial inclusion and SME growth in Nigeria, and Mbugua and Muthomi (2021) for on SMEs growth drivers in Kenya. This design is therefore consistent with previous empirical work that advocates the use of statistical inference and model-based analysis in the study of entrepreneurship and financial behaviour.

3.2 Population of the Study

The study was conducted among 497 MSEs operating in the sixteen local government areas of Ekiti State, Nigeria. These are businesses within the trade, service, manufacturing, and agro-allied sectors that are registered by the Ekiti State Ministry of Commerce, Industry and Cooperatives. Administrative data (2024) indicate that there are roughly 18,450 small businesses operating in the state. These firms play a crucial role for employment and income generation, are representative of the structural set up of the local economy, and consequently the reason behind the selection of the present study.

3.3 Sample Size and Sampling Technique

The sample size was calculated by using Yamane's (1967) formula for finite populations as follows to ensure sufficient statistical representation of the population:

$$n = \frac{N}{1 + N(e)^2}$$

where n is the required sample size, N is the population (18,450), and e is the margin of error (0.05). Substituting these values gives:

$$n = \frac{18,450}{1 + 18,450 (0.05)^2} = \frac{18,450}{47.125} \approx 392$$

Consequently, a total of 392 respondents was considered adequate at 95% level of confidence.

However, in order to counteract the effects of possible non-response, which is a typical problem in survey research (Dillman et al., 2014), a 20% buffer was added, making the number of questionnaires to be sent about 470. The adjustment was to ensure that the valid responses of the survey obtained would not be biased even if there were some voided questionnaires.

A multi-stage sampling procedure was used to maintain equal representation. In the first stage all three senatorial districts of Ekiti State were proportionately included. Five local government areas were randomly chosen from each district in the second stage. At the last stage, business owners were randomly chosen through systematic random sampling from the official directory which was obtained from the Ekiti State Ministry of Commerce, Industry and Cooperatives and local trade groups. This [sampling] allowed for greater sectoral diversity and geographical coverage and it ensured that the sample running for the small business enterprises across the whole state.

3.4 Instrumentation

Primary data was obtained from the survey conducted using a structured questionnaire that was developed based on the key constructs of this study. The instrument comprised two parts: one on the demographic characteristics (age, gender, education, type of business and number of years doing business) and one on the key study variables. Items on financial inclusion were adjusted from Sarma (2016) and Demirgüç-Kunt et al. (2018) which relate to possession of bank account, credit, saving and insurance. POS adoption was evaluated using items from Oladele and Afolabi (2021) with regard to the first three items, not to mention the importance of transaction frequency, ease of use and perceived reliability. Financial literacy was measured using the OECD-INFE (2018) based scales that assessed knowledge of budgeting, saving, and borrowing. Financial performance measures; revenue growth, employment growth, brand diversification, and operational efficiency were adopted from Venkatraman and Ramanujam (1986) and Ahmad, Halim, and Zainal (2010). All items were evaluated on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

3.5 Validity and Reliability

In order to establish the research instrument's credibility, the content validity was determined

through expert reviews, by three professors who specialized in entrepreneurship, finance, and research methods. Their comments led revisions for conceptual clarity and measurement precision. Reliability was measured using Cronbach's alpha coefficients on the basis of a pilot study conducted with 40 small business owners in Ado-Ekiti. The findings revealed that the internal consistency was acceptable for all the constructs: financial inclusion ($\alpha = 0.84$), POS adoption ($\alpha = 0.79$), financial literacy ($\alpha = 0.81$), and firm performance ($\alpha = 0.87$), with an aggregate reliability coefficient of $\alpha=0.83$. These numbers were above the 0.70 threshold that is advised for research in social sciences, thus the reliability is strong.

3.6 Data Collection Procedure

The data were collected by trained field assistants through face-to-face interviews during June to August 2025. This method reduced non-response bias and allowed the interviewer to elaborate on each item if necessary. The study received ethical clearance from the Ekiti State Research Review Board and participation was wholly voluntary. Respondents were guaranteed that their participation would be anonymous and confidential. Comments were written anonymously to preserve the integrity of the responses.

3.7 Method of Data Analysis

The completed questionnaire was coded and analysed using SPSS version 26 and the mediation and moderated mediation analyses were conducted with the PROCESS Macro (Models 4 and 14). Means, standard deviations, frequencies were analysed descriptive in order to assess the extent of financial inclusion, POS adoption and financial literacy among the sample of firm. A Pearson correlation analysis was then conducted to determine the relationships between the constructs. Then, multivariate regression and mediation analyses were conducted to examine the direct and indirect effects of financial inclusion on small business performance via adoption of POS. The potential moderating effect of financial literacy was also examined to see if it would strengthen or attenuate these relationships. All the hypotheses were tested at 5% level of significance ($p < 0.05$) and mediation effects were supported using bootstrapped confidence intervals (95%) based on 5,000 resamples.

3.8 Ethical Consideration

Complete adherence to ethical principles was assured throughout every aspect of this study to maintain integrity, transparency, and respect towards the participants. All participants were sufficiently informed about the aim of the study, the voluntary character of their participation and the possibility of withdrawal at any time without any disadvantage. Prior to data collection, informed consent was received and confidentiality was rigorously maintained by not including any personally identifiable information in the dataset. Ethical clearance for the study was obtained from the Research Ethics Committee of Bamidele Olumilua University of Education, Science and Technology, Ikere-Ekiti, Ekiti State, Nigeria. The investigation followed the ethical standards established by the World Medical Association Declaration of Helsinki (2013) relating to respect for persons, beneficence, and justice.

IV. RESULTS AND DISCUSSION

4.1 Descriptive Statistics of the Demographic Characteristics of Respondents

The demographic profile (Table 1) provides a summary of the socio-economic and business characteristics of the SME owners and managers who responded to the survey. A total of 400 questionnaires were distributed; 392 questionnaires were properly filled and valid for analysis representing a response rate of 98%. About the male-female ratio 57.7 percent were among the males and 42.3 were females. This distribution goes to show that this sector, in Ekiti State still had male entrepreneurs dominating and female are laggards, although gender inclusivity in the area of entrepreneurship is evident. 45.9% of the respondents were in the age group of 31–40 years, 28.6% were in the age group of 41–50 years, 16.8% were between 21 and 30 years and 8.7% were above 50 years (Figure 2a). This is an indication that the majorities of the small and medium scale operators are within the productive age and innovative group and interested in the “promotion of technological intensive business model. While 53.8% had attained a bachelor’s degree, 26.0% had HND, 12.5% had postgraduate degree and 7.7% had education of secondary level. This represents a numerically skilled SME community which further supports informed management and expertise to embrace the digitised financial inclusion.

For business experience, the results show that 38.5% of the respondents had been in business for 6 to 10 years, 32.9% of them had 1 to 5 years of experience, and 19.1% of respondents had over 11 to 15 years of experience while 9.5% had been in business for more than 15 years (see Figure 2b). This indicates that a majority of the respondents were experienced entrepreneurs and were expected to provide reliable responses on establishment’s performance and digital adoption. By sector, 43.9% of SMEs were engaged in trade and retail, 27.6% were in services, 16.3% were in manufacturing, and 12.2% of them were agro-based. This breakdown highlights the superiority of business and service related SME in Ekiti State.

Overall, the demographics reveal a dynamic small- and medium-sized enterprise sector that is young, moderately gender-inclusive, educated, and technology-savvy — all attributes conducive for enhancing financial inclusion and performance growth.

Table 1. Descriptive Statistics of the Demographic Characteristics of Respondents

Characteristics	Category	Percentage%
Gender	Male	57.7
	Female	42.3
Age Group (years)	21-30	16.8
	31-40	45.9
	41-50	28.6
	Above 50	8.7
Education Level	Secondary Level	7.7
	HND	26.0
	Bachelor’s Degree	53.8
	Postgraduate Degree	12.5
Business Experience (years)	1-5	32.9
	6-10	38.5
	11-15	19.1
	More than 15	9.5
Business Sector	Trade and Retail	43.9
	Service	27.6
	Manufacturing	16.3
	Agro-based	12.2

Source: Field Survey (2025)

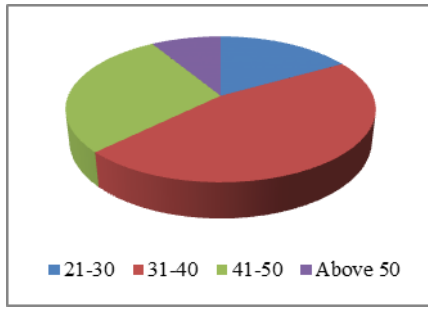


Figure 2a

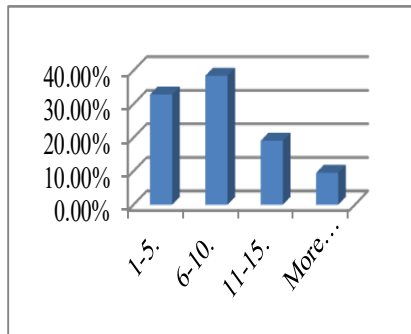


Figure 2b

Figure 2. Bar Chart and Pie Chart Showing the Percentage Distributions of Age and Year of Experience of the Respondents Respectively

4.2 Descriptive Statistics of the Key Variables

Table 2 presents the descriptive statistics for all the study variables. The mean of financial inclusion (M = 3.42; 68.4%) reflects the level of use of financial services by the small business owner in Ekiti State and shows a low integration to the formal financial system. Also, the high mean of POS adoption (M = 3.56; 71.2%) shows increasing popularity of digital payment mechanism, though it is yet to penetrate all the industries.

In contrast, financial literacy (M = 3.87; 77.4%) achieved a relatively higher mean indicating that the majority of entrepreneurs had sound knowledge in budgeting, savings, and credit management. Moderately consistent improvements in both operational outcomes (e.g., revenue and employment) and financial performance (e.g., profit) are signaled by firm performance (M = 3.64; 72.8%). In summary, these results address the first two research questions by indicating that although small businesses in Ekiti are becoming more conscious of financial inclusion and POS technology, the full utilization of digital finance to improve business performance is yet to be realized.

Table 2: Descriptive Statistics of Key Study Variables (N = 392)

Variables	Mean (M)	% Mean Score	Standard Deviation (SD)	Minimum	Maximum	Interpretation
Financial Inclusion	3.42	68.4%	0.81	1.00	5.00	Moderate financial access
POS Adoption	3.56	71.2%	0.77	1.00	5.00	Moderate digital payment use
Financial Literacy	3.87	77.4%	0.69	1.00	5.00	Relatively high financial competence
Firm Performance	3.64	72.8%	0.73	1.00	5.00	Stable but moderate performance level

Source: Field Survey (2025)

4.3 Correlation Analysis

The correlations among variables were all significant and positive (Table 3). Financial inclusion had the highest positive correlation with firm performance ($r = 0.61, p < 0.01$), which indicates that entrepreneurs that are financially included are more likely to have better growth and operational efficiency. Similarly, POS penetration was significantly and positively associated with financial inclusion ($r = 0.58, p < 0.01$) and firm performance ($r = 0.55, p < 0.01$), lending support to the role of digital transaction instruments in promoting business performance.

Financial literacy was found to have moderate positive correlations with all other variables (r 's ranged from 0.49 to 0.57), indicating that financially savvy entrepreneurs tend to be more inclusive in their financial behaviours as well as being better facilitators in using digital means. Together, these findings offer empirical evidence for the posited relatedness of inclusion, technology adoption, and business performance.

Table 3. Correlation Matrix of Study Variables

Variables	1	2	3	4	Mean (M)	Std. Dev (SD)
1. Financial Inclusion	1				3.42	0.81
2. POS Adoption	0.58*	1			3.56	0.77
3. Financial Literacy	0.49*	0.52*	1		3.87	0.69
4. Firm Performance	0.61*	0.55*	0.57*	1	3.64	0.73

Note: *N = 392; *p < 0.01 (2-tailed)

4.4 Regression and Mediation Analysis (PROCESS Model 4)

The regression with mediation analyses (Table 4) indicates that financial inclusion promotes small business performance directly as well as indirectly through POS adoption. In particular, those with greater access to banking and credit institutions had markedly higher performance efficiency (B = 0.341, p < 0.001). The significant indirect effect via POS adoption (B = 0.118, 95 % CI [0.087, 0.201]) indicates that partial mediation is supported, which means that although inclusion promotes growth by itself, also businesses which actively use POS systems are the best performers.

These observations validate the hypothesis that fintech adoption maximizes the beneficial impact of financial inclusion, consistent with Technology Acceptance Model (TAM), Financial Intermediation Theory. The result thus responds to the research questions three and four by confirming that financial inclusion has an impact on SME performance directly and using the digital payment system.

Table 4. Regression and Mediation Analysis Results (PROCESS Model 4)

Path	B	SE	T	p	95% CI (Lower - Upper)	Interpretation
Direct Effect						
Financial Inclusion → Firm Performance	0.341	0.052	6.51	<0.001	[0.238, 0.444]	Significant direct effect
Path a						

Financial Inclusion → POS Adoption	0.417	0.061	6.84	<0.001	[0.297, 0.537]	Significant predictor
Path b						
POS Adoption → Firm Performance	0.284	0.047	6.04	<0.001	[0.192, 0.376]	Significant mediator path
Indirect Effect						
Financial Inclusion → POS Adoption → Firm Performance	0.118	0.029	—	—	[0.087, 0.201]	Partial mediation confirmed
Total Effect						
Financial Inclusion (Total Effect on Firm Performance)	0.334	0.049	6.82	<0.001	[0.238, 0.430]	Combined direct and indirect impact

Note: N = 392; Bootstrap samples = 5,000; CI = Confidence Interval; SE = Standard Error; B = Unstandardized Coefficient.

4.5 Moderated Mediation Analysis (PROCESS Model 14)

The results of the moderated mediating analysis (Table 5) show that the relation between financial inclusion and small business performance through POS adoption is significantly moderated by financial literacy.

A positive and significant interaction term (B = 0.112, p < 0.01) suggests that financially literate entrepreneurs utilize financial inclusion and POS in a better way to enhance performance. The bootstrapped moderated mediation index (0.083, 95% CI [0.029, 0.162]) corroborates the conditional indirect effect, which means that financial literacy strengthens the joint impact of financial inclusion and POS adoption on SME growth. This suggests that financial literacy does not claim out for a separate relationship, instead it strengthens the combined effect of inclusion and digital payment adoption on performance. In other words, financially included and financially literate small firms derive greater performance benefits from POS technologies.

Table 5: Moderated Mediation Analysis Using PROCESS Model 14

Path /	Coefficient	Standard Error	p-value	95% CI	Interpretation
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Interaction	Coef- ficient (B)	Standard Error (SE)	t- value	Confid- ence Interval (CI)	Interpretation level.
Financial Inclusion → POS Adoption	0.267	0.051	<0.01	[0.166, 0.368]	Financial inclusion positively predicts POS adoption.
POS Adoption → SME Performance	0.241	0.046	<0.01	[0.150, 0.332]	POS adoption significantly enhances small business performance.
Financial Literacy → SME Performance	0.198	0.058	<0.01	[0.084, 0.312]	Financial literacy independently contributes to small business performance.
Financial Inclusion × Financial Literacy	0.112	0.039	<0.01	[0.036, 0.188]	Interaction is significant; financial literacy strengthens the effect of inclusion on POS adoption.
Moderated Mediation Index	0.083	–	–	[0.029, 0.162]	Indicates that the indirect effect of financial inclusion on performance via POS adoption is conditional on financial literacy.

4.6 Discussion of Findings

This section discusses the findings in direct response to the study’s four research questions, providing evidence-based insights supported by prior literature and theoretical reasoning.

RQ1: What is the level of financial inclusion among small businesses in Ekiti State?

The findings indicated a moderate financial inclusion amongst small business owners (M = 3.42, SD = 0.81), suggesting that although an overwhelming number of entrepreneurs are somewhat included in the space of financial services, they are still not sufficiently serviced in terms of depth and quality of financial inclusion. This is reminiscent with the overall trend from EFInA (2023) and NBS (2025) that, formal account ownership and digital financial participation have experienced steady growth, however, the rural-based SMEs continue to experience barriers relating to poor digital infrastructure and low credit penetration. These results resonate with Sarma’s (2016) contention that financial inclusion is multidimensional (covering accessibility, availability, and usage), and that progress in one without the others can only lead to partial inclusion.

In relation to Ekiti State where the local economy is dominated by micro and small enterprises, the medium-level inclusion may be taken as an indication of a transition towards full financial inclusion. It highlights the classical view of Gurley and Shaw (1960) that a well-functioning financial intermediary system is a pre-requisite in mobilizing capital for productive investment activities. Although inclusion has increased there is still great room for expansion particularly in bringing small enterprises into networks of formal digital finance.

RQ2: To what extent have small businesses adopted POS systems?

Descriptive results (M=3.56, SD=0.77) show a rather high level of POS use among SMEs, suggesting a certain degree of acceptance of digital payment systems. The trend confirms Fintech Magazine Africa (2025) that POS transactions in Nigeria rose to ₦18 trillion in 2024—an breaking record indicator of fintech spread in both urban and peri-urban centers.

The result is in line with Oladele and Afolabi (2021) and Alabi and Olaoye (2022) findings that POS acceptance facilitates business operations and decreases reliance on cash transactions.

An implication of the study for entrepreneurs in the Ekiti SME environment is that entrepreneurs is that each of them is increasingly wired to seek convenience and delight their customers in the use of digital mediums. However, the extents of adoption may differ in relation to digital literacy and access to infrastructure, indicating that foundational technology was in place, but its full integration in to business operations was in progress..

RQ3: How does financial inclusion influence the performance outcomes of SMEs?

The regression result showed that financial inclusion is a significant determinant of firm performance ($B = 0.341$, $p < 0.001$), implying that firms with better access to financial services are more likely to have higher sales growth, more employment, and better efficiency in operation. This result is in line with that of Demirgüç-Kunt et al. (2018) and Sajuyigbe, Odetayo and Adeyemi (2023) in which inclusive financial systems provide entrepreneurs with liquidity and credit for productive investments and sustainable performance. In the same vein, Abubakar (2020) revealed that entrepreneurs who are financially literate and financially included are likely to have better profitability results owing to efficient financial management.

Theoretically, our findings support the RBV (Venkatraman & Ramanujam, 1986), in which an organization's possession of valuable, rare, and non-imitable resources (e.g., financial capital and institutional trust) is a source of competitive advantage. Hence, financial inclusion is not merely an economic enabler; it represents the strategic capability that ensures the sustainability of MSMEs in turbulent markets such as Nigeria's.

RQ4: How does POS adoption mediate the link between financial inclusion and performance, especially under varying levels of financial literacy?

The mediating and moderated mediation analyses offer more profound understanding of the mechanisms of SME growth. The findings reveal that POS adoption acts as a partial mediator between

financial inclusion and firm performance (indirect effect CI [0.087, 0.201]) suggesting that financial services access improves performance in part by way of the adoption of digital payment technologies. This is consistent with the observations of Oladele and Afolabi (2021), and Busari and Jayeoba (2024) who identified fintech solutions such as POS systems contribute in making transactions more reliable, fast and transparent – a facilitator of good performance.

Moreover, the moderated mediation analysis indicated that financial literacy strengthens the mediating pathway (interaction term $B = 0.112$, $p < 0.01$). That is to say, entrepreneurs with financial literacy gain more from financial inclusion since they have a better understanding and usage of digital resources. This conforms with the conclusions drawn from OECD-INFE (2018) and CBN (2025) that financial literacy enables cognition to facilitate implementing fintech services and managing risks. In the same vein, Adewumi and Cele (2023) also concluded that literacy enhances financial decisions, which results in more prudent allocation of resources. Together, these two results underscore that neither inclusion nor technology, on their own, can do without the interpretive competence that literacy provides. Financial literacy is therefore a 'power amplifier,' enhancing the effect of inclusion through improved digital adoption—a pattern coherent with RBV logic that internal capabilities translate external opportunities into enduring advantage.

4.6 Theoretical and Policy Implications

Results of this paper have implications and contribute to theoretical as well as policy discourse on financial inclusion, technology adoption, and SMEs performance in developing countries. In terms of theoretical contribution, the research advances RBV by demonstrating that non-tangible capabilities (financial literacy and digital adaptability) are crucial internal resources that a firm should utilize to enhance its competitive position. POS adoption and financial inclusion are not considered as separate enablers for regional integration, results highlight that these two have a strategic value which is reinforced by cognitive capabilities. The moderated mediation effect reveals that financial literacy positively moderates mediating relationship of financial inclusion and performance, that is, financial inclusion leads to performance in a stronger manner through financial literacy, which implies a synergetic (access

to finance along with digital capability and internal absorptive capacity) effect.

The study shows that it is high time to move away from access-oriented inclusion policies towards capability-oriented strategies at the policy-practice interface. Enhanced entrepreneurship education and financial literacy especially for the women entrepreneurs will also help small scale business owners to become better informed financial decision-makers. Enhancement of digital infrastructure, subsidies for POS schemes and extension of fintech integration to the semi-urban and rural clusters will take inclusion further. Finally, to maintain digital inclusion, cooperation from government institutions, banks, and technology providers must be continuous. In sum, the study highlights the achievement of true financial inclusion at the nexus of access, literacy and technology that culminates into stronger and resilient SMEs fostering economic growth.

5.1 Conclusion

This research investigated the interaction between financial inclusion, POS usage, financial education, and the success of small-scale industries in Ekiti State. The results run parallel with small business owners in the area, who are mostly young, educated, somewhat gender inclusive and already open to technology, which the study suggests can be interpreted as an indicator for potential acceptance of innovative financial solutions. While entrepreneurs tend to be financially literate, the overall penetration of formal financial systems is moderate, and uptake of digital payment infrastructures such as POS is increasing but far from universal.

Results indicate that financial inclusion has a positive effect on small business performance directly, and the positive impact is further strengthened by POS adoption, indicating partial mediating. Furthermore, the research reveals that financial literacy positively moderates the two-way interaction of financial inclusion and POS usage such that the combined benefits of financial inclusion and POS usage, in terms of operational efficiency, growth in revenue, and profitability, are higher for financially knowledgeable entrepreneurs capable of making the most of digital financial tools. Together, the results from these two research questions offer empirical proof that the complementary relationship between financial knowledge and digital finance adoption is

vital in driving small business growth in Ekiti State thus theoretical motivation of both the Technology Acceptance Model and Financial Intermediation Theory holds virtuous in this work.

5.2 Strengths and Limitations

The study has some distinguished merits. As a result, the findings of the study can be trusted and the sample can be said to be a true representation of the SME population in Ekiti State. The analytical procedure, which consisted of correlation, regression, mediation and moderated mediation analysis, facilitated an in-depth investigation of direct and indirect effects to better understand how financial inclusion, POS adoption and financial literacy combined affect the performance of small businesses. The heterogeneity of respondents by age, sex, education, and business experience contribute veracity and contextual richness, and the emphasis on a pragmatic, policy relevant issue should translate into practical implication for small business entrepreneurs and their stakeholders. Yet, there are limitations. However, the study's generalizability is limited by its sole focus on Ekiti State as study area, and could be extended to include other states with similar financial and technological environmental. Also, the cross-sectional design restricts the interpretation of causality, thus longitudinal studies are warranted. Use of self-reported data may have introduced bias, and the predominance of trade and service firms may have affected the generalizability of the results to manufacturing or agro-based SMEs.

5.3 Recommendations

From the conclusions, it can be concluded that improving the performance of small and medium-scale enterprises in Ekiti State is a complex phenomenon. Policies that increase access to formal financial services and enable the usage of digital payment mechanisms need to be put in place to foster a conducive business environment. Entrepreneurs need to be motivated to adopt POS solutions in their businesses to increase the operational, transactional and shopping convenience for the consumers. Financial literacy programs that equip small business owners with the skills needed to budget, save, manage credit and harness digital financial services to the full extent possible, to ensure that they can make the greatest use of financial tools available to them, should also be promoted.

There might also be focus should be given to gender inclusivity as male entrepreneurs are still topping the industry; empowering female business owners to receive support could lead to a more balanced and sustainable entrepreneurial climate. Lastly, future studies may investigate longitudinal design, geographical scope, and sector-specific characteristics to test and further the current findings to provide a more comprehensive understanding of the contributions of financial inclusion and digital technology to small business performance.

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