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MOBILE MONEY USAGE AND SME ACCESS TO CREDIT IN NIGERIA

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Abstract
Small and Medium Enterprises (SMEs) play a critical role in modern economies, contributing significantly to employment creation, innovation, poverty alleviation, and overall economic stability. However, there impact on income generation and SME growth remains debatable, as many programmes have failed to achieve their intended objectives, as a result of weak policy implementation, governance challenges, and corruption, which have undermined the effectiveness of enterprise development initiatives. This study examines the effect of mobile money usage on SME access to credit in Nigeria, while accounting for macroeconomic factors and structural disruptions, including the COVID-19 pandemic. Adopting an ex-post facto research design, the analysis utilizes quarterly data from 2009 to 2024 and applies the Autoregressive Distributed Lag (ARDL) model to explore both short-run and long-run relationships. The findings reveal that, in the short term, lagged increases in mobile money usage temporarily reduce SMEs' access to traditional credit, reflecting transitional disruptions associated with the rapid uptake of digital financial services. Economic growth enhances short-term credit availability, whereas rising inflation and higher interest rates constrain SME financing, aligning with the monetary transmission mechanisms emphasized in financial intermediation theory. The COVID-19 pandemic dummy demonstrates significant short-term shocks with partial recovery, underscoring SMEs' susceptibility to systemic disturbances. In the long run, mobile money usage negatively influences SME credit, indicating partial substitution of conventional lending by digital finance. The study concludes that mobile money usage has enhanced short-term access to credit for SMEs in Nigeria, but this effect has not yet translated into long-term improvements. it is recommended that policymakers should focus on strengthening the link between mobile money platforms and formal credit systems rather than assuming direct credit expansion from digital usage alone.

Keywords: mobile money, smes, credit access, financial intermediation,
JEL Classification: G21, O16, O33, E51

1. Introduction

Small and Medium Enterprises (SMEs) are widely recognized as fundamental pillars of modern economies due to their substantial contributions to employment generation, innovation, poverty reduction, and economic stability. Globally, SMEs account for over 90 percent of formally registered businesses and contribute approximately 60 percent of total employment and about 40 percent of gross domestic product (GDP) in emerging economies (World Bank, 2020). Their significance is even more pronounced in developing countries, where they promote socio-economic inclusion and support broad-based economic growth. Despite their strategic importance, SMEs in many developing economies continue to face persistent growth constraints, with inadequate access to sustainable finance identified as one of the most critical challenges. This

challenge is particularly acute in sub-Saharan Africa, where underdeveloped credit markets and weak financial intermediation mechanisms continue to limit SME financing (Umar et al., 2024).

In Nigeria, SMEs dominate the business landscape, accounting for more than 96 percent of registered enterprises and contributing significantly to employment and economic activity (SMEDAN & NBS, 2021). However, the sector's contribution to national output remains relatively low compared with similar economies in Asia and Latin America. While SMEs in countries such as Indonesia and Thailand contribute over 40 percent of GDP, Nigerian SMEs contribute less than 10 percent, reflecting persistent financing gaps, limited access to formal credit, and weaknesses in financial infrastructure (World Bank, 2019). As of 2020, Nigeria's population was estimated at approximately 208.3 million, with an employment rate of about 83.7 percent. The informal sector accounted for nearly half of the country's GDP, underscoring the dominance of small-scale and informal economic activities (World Bank, 2020). In response, successive Nigerian governments have implemented various entrepreneurship development and SME support programmes, including the National Poverty Eradication Programme (NAPEP), Vocational Skills Development (VSD), Community Banks and Small-Scale Industries Credit Scheme (CBSSICS), Rural Employment Promotion (REP), and the establishment of the Small and Medium Enterprises Development Agency of Nigeria (SMEDAN).

Despite these interventions, their impact on income generation and SME growth remains debatable, as many programmes have failed to achieve their intended objectives. Scholars (Musa, et al., 2024; Mrindoko, 2022) attribute these shortcomings largely to weak policy implementation, governance challenges, and corruption, which have undermined the effectiveness of enterprise development initiatives. Empirical studies see (Oguh, et al., 2024; Mpofu, 2025) consistently underscore the multifaceted contributions of SMEs to economic growth and development in Nigeria and other developing economies. These contributions include employment creation, rural development, entrepreneurship promotion, mobilisation of domestic savings, industrial linkages, balanced regional investment, self-employment opportunities, and managerial and skills development (Sanga & Aziakpono, 2023). Owing to these roles, SMEs are often described as the engine of economic growth in developing countries (Atta, 2025). Nevertheless, limited access to finance remains a major constraint inhibiting the growth and sustainability of SMEs in Nigeria (Olatunji, et al., 2025). High lending rates, inadequate financing, and stringent credit conditions have been identified as major operational challenges faced by business owners (Omeke, 2025). In addition, increased risk aversion by financial institutions particularly following financial crises has reduced both the volume and quality of credit extended to the private sector. Consequently, many SMEs are unable to invest adequately in human capital, information and communication technology, and modern production equipment that are essential for improving productivity, reducing costs, and enhancing competitiveness (Waberi, & Jia,2026).

Against persistent financing constraints, digital financial innovations, particularly mobile money, have gained attention as mechanisms for expanding financial access in developing economies. Mobile money, also termed mobile payments or mobile wallets, enables transactions via mobile devices and reflects a convergence of telecommunications and financial services requiring collaboration between mobile network operators and financial institutions (World Bank, 2020). This integration has extended financial services beyond traditional banking channels, especially to financially excluded populations. Its evolution is linked to the widespread adoption of prepaid mobile services, which allowed low-income users to purchase small-value airtime without formal

banking relationships. As this segment expanded, it provided a natural platform for micro-payments and digital financial services, positioning mobile money as an inclusive tool bridging the gap between excluded populations and formal finance.

Empirical studies such as Talom & Tenge, 2019; Konte & Tetteh 2022; Mohamed, 2023; Ceesay, 2025; Adah et al., 2025; Mwakio et al., 2024; Ibrahim et al., 2024; Joel, 2024 show that digital financial services enhance financial inclusion by reducing transaction costs and improving access among SMEs. They also underscore the growing role of mobile money and fintech platforms in addressing financing constraints. However, despite gains in transactional efficiency, access to formal credit remains limited, and the interaction between mobile money usage and SME credit access is insufficiently examined, particularly in Nigeria. This study addresses this gap by analyzing the role of mobile money in improving SME credit access, offering policy-relevant insights for governments, financial institutions, and fintech providers focused on inclusive financial system development.

2. Literatures Review

This segment discusses the literature review of the study precisely: this deals with conceptual review, theoretical review, empirical review and research gap identified in the study.

Conceptual Review

Mobile money

Mobile money also referred to as mobile payment, mobile money transfer, or mobile wallet denotes financial services that are initiated and executed through mobile devices such as mobile phones and, in some instances, linked debit or credit cards (Talom &Tengeh, 2019). It represents the convergence of telecommunications and financial intermediation and typically involves collaboration between mobile network operators and licensed financial institutions (World Bank, 2010). Mobile money services are commonly defined as electronic monetary accounts accessible via mobile phones, enabling users to store, transfer, and manage funds digitally (Abdulmumin, et al., 2019). Through this platform, both banked and unbanked individuals can send, receive, and store funds, make payments, and conduct other financial transactions irrespective of geographical constraints. Conceptually, mobile money differs from traditional banking in that it does not require users to maintain conventional bank accounts to perform basic financial transactions. Rather, it provides a simplified digital wallet structure that operates through mobile networks and agent outlets. Core functionalities typically include person-to-person transfers, bill payments, merchant payments, airtime purchases, savings options, and integration with selected banking services. These features allow users to conduct transactions electronically, reducing reliance on physical cash while enhancing convenience and transaction speed (Joel, 2024).

Beyond its operational features, mobile money usage plays a crucial role in improving access to finance**,** particularly among financially excluded individuals and small businesses (Ahmad, et al., 2020). By lowering transaction costs, minimizing documentation requirements, and overcoming distance-related barriers associated with traditional banking infrastructure, mobile money expands the reach of financial services to underserved populations (Oguh, et al., 2024). Regular use of mobile money platforms also generates digital transaction histories. For credit-constrained MSMEs, limited financial records often hinder access to formal financing due to information asymmetry between lenders and borrowers. Mobile money transactions, however, create verifiable digital footprints that may improve financial record-keeping and transparency. This

digital documentation can support creditworthiness assessment, reduce perceived lending risk, and potentially enhance SMEs' access to formal credit facilities (Joel, 2024. Accordingly, within this study, mobile money usage is conceptualized as the extent to which Nigerian SMEs adopt and utilize mobile-based financial services for business transactions. It encompasses the frequency of mobile money transactions, the value of transactions conducted, the diversity of services utilized (such as payments, transfers, and bill settlements), and the degree of reliance on mobile money relative to cash or traditional banking channels. By framing mobile money usage in this multidimensional manner, the study situates the concept within Nigeria's financial and institutional environment while aligning it with measurable indicators suitable for empirical investigation.

Accordingly, this study conceptualizes mobile money usage as a key digital financial innovation that enhances access to finance by facilitating affordable, convenient, and secure financial transactions. Within the conceptual framework of this study**,** mobile money usage represents the independent variable, while access to finance constitutes the dependent variable**.** The framework assumes that increased adoption and utilization of mobile money services improve SMEs' financial visibility, reduce transaction constraints, and strengthen engagement with formal financial institutions, thereby enhancing access to financial services and promoting broader financial inclusion and economic participation.

Micro, Small and Medium Enterprises (MSMEs)

Moreover, the parameters used to define SMEs are not fixed; they often change in response to evolving economic conditions and policy priorities. Different institutions may adopt varying thresholds depending on whether the focus is on employment generation, taxation, financial support, or industrial policy. As a result, SME definitions may differ not only across countries but also within the same country over time. In most international classifications, enterprise size is primarily determined by the number of employees. According to widely accepted standards, enterprises employing fewer than 250 workers are categorized as SMEs. Within this broad group, micro enterprises typically employ fewer than 10 persons, small enterprises engage between 10 and 49 employees, and medium-sized enterprises have a workforce ranging from 50 to 249 employees. Firms exceeding this threshold are generally classified as large enterprises. Although employment size remains the most common indicator, additional criteria such as annual turnover, capital investment, or asset base may also be used depending on national regulatory guidelines. An enterprise, in legal terms, refers to a business entity that possesses the authority to operate independently. This includes the capacity to enter contractual agreements, own property, incur liabilities, ad maintain financial accounts. Enterprises may take various legal forms, including incorporated companies, partnerships, cooperatives, or sole proprietorships. The legal and structural nature of enterprises often influences their access to financial services and regulatory obligations.

Within the Nigerian economy, Small and Medium Enterprises (SMEs) play a vital role in many SMEs increasingly rely on mobile money platforms to carry out everyday business activities, including receiving payments, transferring funds, and managing working capital. Mobile money therefore serves as a practical and accessible financial alternative that reduces transaction difficulties and strengthens SMEs' engagement with formal financial services. Within the context of this study, SMEs represent the unit of analysis through which the relationship between mobile money promoting employment creation, income generation, and overall economic development.

Despite their significant contribution to economic activities, many Nigerian SMEs operate within the informal sector and remain largely underserved by the formal financial system. Challenges such as limited collateral, inadequate financial records, weak banking relationships, and physical distance from financial institutions often constrain their ability to obtain formal credit and other financial services. These constraints make SMEs an important focus for understanding how digital financial innovations can improve financial access. Faced with barriers associated with conventional banking services, usage and access to finance is explored. Their growing dependence on mobile money highlights their role as a key channel through which digital financial innovation can enhance financial participation, improve business operations, and support broader financial inclusion outcomes in Nigeria.

Access to Credit by Small and Medium Enterprises (SMEs)

Access to credit is widely regarded as a critical determinant of business growth, productivity, and sustainability, particularly for small and medium enterprises (SMEs). In development finance literature, access to credit refers not merely to the availability of loanable funds within the financial system, but to the ability of firms to obtain financial resources when needed and under reasonable terms and conditions (Beck & Demirgüç-Kunt, 2006; World Bank, 2022). Thus, access to credit encompasses both supply-side factors such as financial institutions' willingness to lend and demand-side factors, including firms' ability to meet lending requirements. For SMEs, access to credit is especially important because these enterprises often lack sufficient internal funds to finance expansion, innovation, or working capital needs. Unlike large firms, SMEs typically have limited retained earnings and reduced access to capital markets, making external financing a crucial source of growth capital (OECD, 2020). However, empirical evidence consistently shows that SMEs face greater financing constraints compared to large firms, particularly in developing economies (World Bank, 2022).One major explanation for restricted SME credit access is the problem of information asymmetry. Financial institutions often possess incomplete information about the financial performance, risk profile, and repayment capacity of small businesses. In the absence of reliable financial statements or credit histories, lenders may perceive SMEs as high-risk borrowers, leading to credit rationing or outright loan denial (Stiglitz & Weiss, 1981). This challenge is further compounded by weak record-keeping practices and the predominance of informal operations among SMEs in many developing countries.Collateral requirements also play a significant role in limiting SME access to credit. Financial institutions frequently require tangible assets such as land or property as security for loans. Many SMEs, particularly micro and informal enterprises, lack such assets or hold property without legally recognized titles, making it difficult to meet lending conditions (OECD, 2020). As a result, even when credit is available in the banking system, SMEs may remain effectively excluded.

Theoretical Framework

Financial Intermediation Theory

Financial Intermediation Theory, advanced by Goldsmith (1969), Shaw (1973), and McKinnon (1973), emphasizes the role of financial institutions in mobilizing savings from surplus units and reallocating them to deficit units to support investment and economic growth. By converting savings into productive capital, intermediaries enhance resource allocation efficiency. Subsequent studies (Mishkin, 2007; Kendall et al., 2010; Demirgüç-Kunt & Klapper, 2012) highlight their importance in promoting financial inclusion through expanded banking infrastructure and alternative providers such as mobile money operators. Recent works (Agarwal & Assenova, 2023) further show that intermediaries improve efficiency by facilitating payments,

managing liquidity, diversifying risk, and addressing information asymmetry, which can lead to adverse selection and moral hazard. These risks are mitigated through screening, monitoring, collateral, and relationship lending.

In Nigeria, weak financial systems and limited credit information intensify these challenges, restricting access to formal finance for SMEs and low-income groups. Digital innovations, particularly mobile money, help address this gap by generating transaction records that serve as alternative credit histories, improving credit assessment and reducing lending uncertainty. They also ease liquidity constraints through instant transactions, enabling better cash flow management for households and businesses. SMEs benefit from improved efficiency, transactions, and access to microcredit. Thus, credit allocation remains a key channel through which financial intermediation influences economic performance.

Technology Acceptance Model (TAM)

The technology acceptance model (TAM), introduced by Davis in 1989, is a well-established framework for understanding technology adoption and user acceptance. Building on Ajzen and Fishbein's Theory of Reasoned Action (TRA) from 1980, TAM suggests that two main beliefs perceived usefulness and perceived ease of use primarily determine whether users accept a technology. Perceived usefulness refers to the degree to which a person believes that using a technology will improve their performance, while perceived ease of use reflects how effortless they expect the technology to be (Davis et al., 1989). Together, these beliefs shape users' attitudes toward technology, which then affect their intention to adopt and ultimately use it (Umar, et al., 2024; Sanga, et al., 2023). TAM assumes that individuals make rational decisions regarding technology adoption based on expected benefits and ease of use. The model also posits that perceived usefulness and perceived ease of use are key determinants that influence attitudes toward a technology, which subsequently drive behavioural intention and actual usage. In addition, external factors such as social influence, infrastructure availability, and user experience may indirectly affect adoption by shaping these core beliefs (Mohamed, 2023).). Once users develop a positive perception of a technology, they are more likely to adopt and continuously use it unless constrained by significant barriers.Empirical studies have consistently validated TAM across different contexts. For example, Ekow Kelly and Palaniappan (2022) examined mobile money adoption in Ghana and found that perceived usefulness significantly influenced user acceptance, as individuals valued the convenience, speed, and efficiency of mobile money over traditional banking channels.

Similarly, Chen and Aklikokou (2020) demonstrated that both perceived usefulness and ease of use significantly influenced mobile banking adoption in Nigeria, particularly among users with limited financial literacy. In the context of this study, TAM provides a useful theoretical lens for explaining the adoption and usage of mobile money services among MSMEs. Specifically, MSME owners are more likely to adopt and consistently use mobile money platforms when they perceive them as useful for business operations such as receiving payments, accessing funds, and improving transaction efficiency. Likewise, perceived ease of use encourages adoption by reducing the complexity associated with traditional banking systems. Therefore, within this study, perceived usefulness and perceived ease of use translate into increased mobile money usage**,** which in turn enhances access to finance by reducing transaction barriers and improving financial accessibility for MSMEs. This positions TAM as a foundational theory explaining the

behavioural pathway through which mobile money adoption influences financial inclusion and business performance outcomes.

Empirical Review

The empirical literature on mobile money and SME outcomes in Africa reveals a growing but fragmented body of evidence, with limited direct focus on credit access as a distinct outcome. Existing studies can be broadly categorized into three namely mobile money and firm performance, digital financial services and financial inclusion, and traditional determinants of SME credit. Firstly , Talom and Tengeh (2019) examined the impact of mobile money adoption on the financial performance of small and medium enterprises (SMEs) in Douala, Cameroon. The study adopted a mixed-method research approach, combining survey questionnaire data with one-on-one in-depth interviews to capture both quantitative and qualitative insights into mobile money usage among SMEs. The findings reveal that mobile money payment and receipt services significantly improved firm performance, explaining approximately 73 percent of the variation in SME turnover following the adoption of the technology. This Conclude that digital payment solutions enhance business efficiency by facilitating faster transactions, improving cash flow management, and expanding customer reach. The study was limited as it concentrates on turnover growth as a measure of financial performance and does not explicitly examine financial inclusion dimensions such as credit accessibility or formal account usage. Consequently, while the results confirm the operational benefits of mobile money adoption, the underlying financial inclusion mechanisms through which digital finance influences SME development remain insufficiently explored.

Secondly, on the role of mobile money and related financial innovations in shaping firm-level performance outcomes, Konte and Tetteh (2022) provide evidence from a multi-country African sample that mobile money services and traditional financial institutions jointly enhance firm productivity. While this finding suggests complementarity between digital and conventional finance, the study does not isolate credit access as a transmission channel, leaving ambiguity regarding whether productivity gains arise from improved financing conditions or other efficiency-enhancing mechanisms such as reduced transaction costs. Similarly, Mrindoko (2022) reports that mobile money microcredit positively influences the financial performance of small businesses in Tanzania through improved accessibility, affordability, and flexibility. However, the reliance on cross-sectional survey data and regression analysis limits causal interpretation, and the focus on profitability rather than credit acquisition constrains its direct relevance to understanding access to finance.

Moreso, Mohamed (2023) investigates the influence of mobile money payments on the performance of small and medium enterprises (SMEs) in Somalia using a cross-sectional research design. Generalized Linear Model were employed. The findings reveal that mobile money adoption significantly enhances enterprise performance, with a one percent increase in mobile money usage associated with approximately an 11.14 percent rise in business growth. It was concluded that, the transformative potential of mobile money in supporting firm performance within fragile financial environments. The study's the reliance on cross-sectional data limits the ability to establish causal relationships between mobile money adoption and business growth. Furthermore, the analysis focuses primarily on overall enterprise performance rather than explicitly examining financial inclusion indicators such as account ownership or sustained credit

access, leaving unanswered questions regarding the specific financial inclusion channels through which mobile money drives firm-level outcomes.

A more directly related contribution is provided by Joel (2024), who examines the relationship between mobile money usage and credit accessibility among small businesses in rural Nigeria. The study finds a positive association between mobile financial service adoption and access to credit, suggesting that digital transaction histories and platform usage may alleviate information asymmetries that typically constrain SME borrowing. Nonetheless, the reliance on self-reported measures of credit access, raises concerns about measurement validity and potential response bias. Despite these limitations, the study offers preliminary evidence within the Nigerian context that mobile money may play a facilitative role in easing credit constraints.

Literature focusing on digital financial services as a broader driver of financial inclusion such as Mwakio et al. (2024) show that access to digital financial platforms such as mobile money and digital lending applications significantly improves SMEs' access to financial resources in Kenya. While this supports the argument that digital finance reduces structural barriers to financial participation, the concept of financial inclusion employed in the study encompasses multiple dimensions beyond credit, making it difficult to ascertain the specific effect on formal borrowing. Mpofu (2025), using panel data across Sub-Saharan Africa, similarly finds that mobile money reduces SMEs' reliance on traditional banking institutions. This suggests a potential substitution effect, which contrasts with the complementarity observed by Konte and Tetteh (2022), thereby indicating unresolved empirical tension regarding whether mobile money deepens or displaces conventional credit channels.

Conversely, Ceesay (2025) provides evidence from The Gambia that challenges the assumed centrality of digital finance in SME development. The study finds that collateral requirements, rather than digital finance adoption, are the most significant determinants of SME growth, while variables such as loan processes and digital financial usage are statistically insignificant. This finding underscores the persistence of structural credit constraints, particularly in environments where formal lending remains heavily collateralized. However, the reported negative effect of financial literacy raises concerns about model specification and interpretation, suggesting that further scrutiny of variable measurement and estimation is necessary.

Traditional banking sector factors and macro-financial conditions as determinants of SME credit and performance was investigated by Musa, Ahmad, and Magaji (2024) using time-series techniques, that bank credit significantly influences SME output in Nigeria, with macroeconomic variables such as interest rates and government expenditure also playing important roles. While methodologically robust, the study does not account for the evolving role of digital financial services, thereby limiting its relevance in a fintech-driven financial landscape. Similarly, Adah, Ajam, and Emmanuel (2025) highlight the importance of financial infrastructure, credit allocation efficiency, and inclusive banking systems in promoting SME growth in Nigeria. Although the study acknowledges fintech-driven solutions, it does not explicitly examine how mobile money usage interacts with formal credit markets.

Other studies, such as Oguh, Ogubanjo, and Zakari (2024), focus on customer satisfaction with mobile money platforms among SMEs in Lagos State. While the findings suggest that mobile money enhances convenience and user experience, the emphasis on satisfaction outcomes

provides limited insight into credit access mechanisms, thereby weakening its direct relevance to the present study.

Despite the growing body of empirical work on digital financial services and SME development, there remains a lack of focused evidence on the relationship between mobile money usage and formal credit access in Nigeria. Existing studies largely emphasize broader outcomes such as firm productivity, financial performance, financial inclusion, and business growth, without isolating credit access as a distinct and measurable outcome variable. Even where credit access is considered, as in Joel (2024), limitations in methodological transparency and measurement reduce the robustness of the conclusions.

3. Methodology

This study employs an ex-post facto research design. This approach is appropriate because the study relies on historical data and does not involve manipulation of variables. It enables the empirical examination of the impact of mobile money usage and small and medium enterprises' (SMEs) access to credit in Nigeria using established econometric techniques. By utilizing secondary data, the study provides a quantitative and evidence-based assessment of how financial technology influences SME financing within the Nigerian context. The analysis is based exclusively on secondary data obtained from credible institutional sources. Data on SME access to credit and mobile money usage were sourced from the Central Bank of Nigeria Statistical Bulletin and International Monetary Fund-Financial Access survey (IMF-FAS) database, while macroeconomic control variables were obtained from the International Monetary Fund International Financial Statistics (IFS) database. The dataset covers the period from 2009Q1 to 2024Q4. SME access to credit (MSMEsA), which serves as the dependent variable, is proxied by commercial banks' loans to small-scale enterprises. Mobile money usage (MMU), the primary independent variable, is measured using mobile money transactions, reflecting activities such as mobile wallet operations, transfers, since official quarterly mobile money data are unavailable for the entire period, annual transaction totals were converted into quarterly observations. Annual totals for 2009–2021 were obtained from IMF-FAS, while totals for 2022-2024 were sourced from the CBN and Nigeria Inter-Bank Settlement System (NIBSS) report. To account for macroeconomic influences, the model includes the following control variables: Real GDP (GDP): Measured as gross domestic product at constant prices. Inflation Rate (INF): Proxied by the Consumer Price Index (CPI). Interest Rate (INTR): Measured by the commercial banks' lending rate.The study focuses on quarterly time-series data for Nigeria.

The empirical strategy adopted in this study is based on a modified version of the model developed by Musa et al. (2024), which examined the impact of banking sector credit on small and medium enterprises.

$SMEs = \beta o + \beta_1 \beta C + \beta_2 INTR + \beta 3GOV + \mu\alpha$

Where: SMEs: Small and Medium Enterprises (Proxied as Wholesale and Retail Output), BC: Bank credit, INTR: Interest rates, GOV: Government expenditures, β 0 - β 3: parameters , u: error term

However, this study adjusted the previously mentioned model to align with the objectives of this research. The revised model incorporates only the relevant variables that are essential for achieving the research objectives. Therefore, the model is stated as follows:

$lnSMEsA_t = \beta o + \beta_1 lnMMU_t + \beta_2 INTR_t + \beta 3lnGDP_t + \beta 4INF_t + \mu\alpha_t$

Where: ln: log of variables, SMEsA: Small and Medium Enterprises (Proxied as Commercial banks loans to Small Scale Enterprises), MMU: mobile pay, INTR: Interest rates, GDP: gross domestic product constant price, INF: Inflation, β0 - β3: parameters, u: error term

The study adopts the Autoregressive Distributed Lag (ARDL) model as the principal estimation technique. The ARDL framework is particularly suitable because it accommodates variables integrated of order I(0) and I(1), provided that none of the variables is integrated of order I(2). Since macroeconomic time-series variables frequently exhibit different orders of integration, the ARDL approach offers flexibility and allows for the simultaneous estimation of both short-run dynamics and long-run equilibrium relationships within a unified framework.Prior to model estimation, the stationarity properties of the variables will be examined using the Augmented Dickey–Fuller (ADF) and Phillips–Perron (PP) unit root tests. If the results indicate a mixture of I(0) and I(1) variables, the ARDL bounds testing approach to cointegration developed by Pesaran, Shin, and Smith (2001) will be employed to determine the existence of a long-run equilibrium relationship among the variables.The optimal lag structure for the ARDL model will be determined using standard information criteria, including:Akaike Information Criterion (AIC), Schwarz Bayesian Criterion (SIC) anfd Hannan–Quinn Criterion (HQ). The specification with the lowest information criterion value will be selected as optimal. This procedure ensures that the model is neither over-parameterized nor under-specified, thereby enhancing estimation efficiency and reliability.

The ARDL error correction representation is expressed as:
$\Delta \ln SMEA_t = \partial_0 + \sum_{k=1}^{p} \partial_1 \Delta \ln SMEsA_{t-k} + \sum_{k=1}^{p} \partial_2 \Delta \ln MMU_{t-k} + \sum_{k=1}^{p} \partial_6 \Delta \ln GDP_{t-k} + \sum_{k=1}^{p} \partial_7 \Delta INF_{t-k} + \sum_{k=1}^{p} \partial_8 \Delta INT_{t-k} + \alpha_1 \ln SMEsA_{t-1} + \alpha_2 \ln MMU_{t-1} + \alpha_6 \ln GDP_{t-1} + \alpha_7 INF_{t-1} + \alpha_8 INT_{t-1} + \mu$
Where Δ denotes first differences, while the lagged level variables capture the long-run equilibrium relationship among the series. The coefficient of the error correction term is expected to be negative and statistically significant, indicating the speed of adjustment toward long-run equilibrium.

Given the occurrence of significant macroeconomic shocks in Nigeria during the study period such as:The 2016 economic recession, The COVID-19 pandemic (2020) and Financial and cashless policy reforms implemented by the Central Bank of Nigeria, it is necessary to account for possible structural breaks in the data.To address this issue, the Zivot–Andrews unit root test will be conducted to detect endogenous structural breakpoints within the series. Where structural breaks are identified, appropriate dummy variables will be incorporated into the ARDL specification to capture regime shifts and prevent biased long-run estimates.To ensure the robustness and validity of the estimated model, several post-estimation diagnostic tests will be conducted, including: Breusch–Godfrey Serial Correlation LM Test, Heteroskedasticity Test, Jarque–Bera Normality Test, Ramsey RESET Test.

4. Results and Discussion

This presents, analyzes, and interprets the data collected for the study. The analysis is based on the objectives of the research and the econometric techniques employed.

Table 1: Descriptive Statistics

	LNSMESA	LNMMU	LNGDP	INTR	INFLATION
Mean	2.524062	6.384897	30.44912	16.09415	3.544380

Median	1.591274	6.414262	30.45859	16.56000	3.043459
Maximum	6.226914	17.59699	30.72710	26.25000	7.855254
Minimum	0.765468	1.769855	30.01890	11.19632	1.568141
Std. Dev.	1.741414	2.337056	0.147258	2.667045	1.664165
Observations	63	63	63	63	63

Source: Author's Computation (2026)

Table 1 presents the descriptive statistics of the variables employed in this study. The mean value of **LNSMESA** (log of SME credit access) is 2.524, with a median of 1.591, suggesting moderate dispersion and a slightly right-tailed distribution. The maximum (6.227) and minimum (0.765) values indicate substantial variation in SME credit over time. The standard deviation of 1.741 confirms considerable variability in SME financing during the period under review. **LNMMU** (log of mobile money usage), the mean is 6.385 and the median is 6.414, showing close central tendency measures. However, the maximum value of 17.597 compared to a minimum of 1.770 reflects rapid expansion in mobile money activities over the sample period. The relatively high standard deviation (2.337) further confirms substantial growth fluctuations. This pattern is consistent with the rapid digital financial expansion witnessed in Nigeria following financial technology reforms and payment system innovations.**LNGDP** (log of gross domestic product), the mean value is 30.449 with a median of 30.459, indicating a highly stable distribution. The narrow range between the maximum (30.727) and minimum (30.019), alongside a small standard deviation (0.147), reflects steady macroeconomic output growth during the study period. For **INTR**(interest rate), the mean is 16.094 percent with a standard deviation of 2.667, suggesting noticeable fluctuations in monetary policy stance over time, this imply occasional sharp monetary adjustments.**Inflation** records a mean of 3.544 and a standard deviation of 1.664, showing moderate volatility in price levels. This implies that the series are not normally distributed, likely due to structural shifts, macroeconomic shocks (including post-COVID-19 adjustments), and rapid financial innovation in the digital payment ecosystem. However, non-normality does not invalidate ARDL estimation, as the technique does not require strict normality of variables.

Table 2: Correlation Matrix

	LNSMESA	LNMMU	LNGDP	INTR	INF
LNSMESA	1.000000	0.700973	0.595153	-0.279662	0.938138
LNMMU	0.700973	1.000000	0.733072	-0.109386	0.816819
LNGDP	0.595153	0.733072	1.000000	-0.305349	0.668387
INTR	-0.279662	-0.109386	-0.305349	1.000000	-0.101408
INF	0.938138	0.816819	0.668387	-0.101408	1.000000

Source: Author's Computation (2026)

Table 2 presents the result of pairwise correlation matrix showing the linear association and strong positive correlation between **LNSMESA**(SME access to credit) and **LNMMU** (mobile money usage) with a coefficient of 0.701. This suggests that increases in mobile money usage are associated with improvements in SME access to credit. The magnitude of this relationship provides preliminary evidence supporting the argument that digital financial services enhance financial inclusion and credit accessibility for SMEs.Similarly, **LNSMESA** is positively correlated with **LNGDP** (0.595), implying that higher economic output is associated with improved SME credit conditions. This aligns with theoretical expectations that macroeconomic expansion improves financial intermediation capacity and lending activities. However**, LNSMESA** exhibits a negative relationship with **INTR** (-0.280), suggesting that higher interest rates may constrain

SME borrowing due to increased cost of credit. This inverse relationship is consistent with conventional monetary transmission theory. A particularly strong positive correlation is observed between **LNSMESA**and **INF**(0.938). This very high coefficient indicates that SME credit and inflation move closely together over the study period. While this may reflect nominal credit expansion during inflationary periods. For **LNMMU**, the results show strong positive associations with **LNGDP** (0.733) and **INF**(0.817), indicating that mobile money usage tends to expand during periods of economic growth and rising price levels. The correlation between **LNMMU** and **INTR** is weak and negative (-0.109), suggesting that interest rate movements may not strongly influence mobile money transactions directly. The relationship between macroeconomic variables reveals that **LNGDP** is negatively correlated with **INTR** (-0.305), consistent with contractionary monetary policy during slower economic periods. Meanwhile, **INTR** and **INF** show a weak negative relationship (-0.101), suggesting limited linear co-movement within the sample.

Table 3: Table 3: variance inflation factors

Variable	VIF
LNMMU	4.14
LNGDP	2.65
INTR	1.82
INF	8.07

Source: Author's Computation (2026),

Table 3 present the variance inflation factor (VIF) results indicate that the model does not suffer from severe multicollinearity. LNMMU, LNGDP, and INTR all recorded low VIF values, suggesting weak correlation among the explanatory variables. Although inflation (INF) shows a relatively higher VIF value, it remains below the critical threshold of 10, indicating that multicollinearity is not a serious concern in the model. Therefore, the estimated ARDL results are considered stable and reliable for inference.

Table 4: unit root test

Variables	*ADF Test*	*5% Critical Value*	*P-value*	*Stationary*	*Order of integration*
LNSMESA	-9.278258	-3.483970	0.0000	1st difference	I (1)
LNMMU	-3.300823	-2.909206	0.0190	1st difference	I (1)
LNGDP	-3.936774	-3.487845	0.0164	Level	I (0)
INTR	-5.840007	-2.909206	0.0000	1st difference	I (1)
INF	-9.342893	-2.911730	0.0000	1st difference	I (1)

Source: Author's Computation (2026),

The results from Table 4 reveal that all variables are stationary either at level I(0) or after first differencing I(1). Specifically, LNGDP is stationary at level, indicating that it is integrated of order zero, while all other variables **LNSMESA**, LNMMU, INF, and INTR become stationary after first differencing, meaning they are integrated of order one. The significance of the ADF test statistics and the corresponding p-values (less than 0.05) confirm that the null hypothesis of a unit root is rejected for each variable at their respective levels of stationarity. This mixture of I(0) and I(1) variables implies that the data series are not uniformly stationary, which makes the Autoregressive Distributed Lag (ARDL) model suitable for further analysis. The ARDL approach

is appropriate because it accommodates variables that are integrated of different orders, provided none is integrated of order two, I(2).

Table 5: ARDL Bound Test

Test Statistic	Value	K
F-statistic	1.543005	4

Critical Value Bounds

Significance	I0 Bound	I1 Bound
10%	2.45	3.52
5%	2.86	4.01
2.5%	3.25	4.49
1%	3.74	5.06

Source: Author's Computation (2026),

Table 5 reports the outcome of the ARDL bounds testing procedure. The estimated F-statistic is 1.543005. When compared with the critical value bounds, the statistic falls below the lower bound at all conventional significance levels. Specifically, at the 10 percent level, the lower and upper bounds are 2.45 and 3.52, while at the 5 percent level they are 2.86 and 4.01. Because the computed F-statistic (1.5430) is smaller than the lower bound critical values across the 1 percent, 2.5 percent, 5 percent, and 10 percent levels, the null hypothesis of no long-run relationship cannot be rejected. This finding implies that there is no statistical evidence of cointegration among the variables within the period examined. Put differently, SME access to credit, mobile money usage, and the selected macroeconomic indicators do not share a stable long-term equilibrium relationship over the sample period. The lack of cointegration suggests that although short-run interactions may exist among the variables, their movements do not adjust toward a common long-run equilibrium path. This outcome may be attributed to structural changes in Nigeria's financial system, regulatory adjustments, macroeconomic fluctuations, or the relatively recent and evolving nature of digital financial service adoption. Given the rapid transformation of financial technology and payment systems, the linkage between mobile money usage and SME credit may still be in a transitional phase rather than firmly established as a long-run structural relationship.

Table 6: Short run ARDL Error Correction

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LNMMU)	0.013450	0.053607	0.250909	0.8029
D(LNMMU(-1))	-0.365682	0.121777	-3.002889	0.0042
D(LNGDP)	3.333654	1.029096	3.239401	0.0021
D(LNGDP(-1))	-2.669175	0.990695	-2.694245	0.0096

D(LNGDP(-2))	2.379035	0.908419	2.618874	0.0116
D(INFLATION)	0.019010	0.048468	0.392225	0.6966
D(INTR)	-0.007282	0.027257	-0.267147	0.7905
CointEq(-1)	-0.083450	0.055558	-1.502030	0.1394

Source: Author's Computation (2026),

Table 6 present the result of short-run dynamics derived from the ARDL error correction specification. The results capture the immediate and lagged effects of changes in mobile money usage, economic growth, inflation, and interest rate on SME access to credit. The short-run coefficient of contemporaneous changes in mobile money usage, D(LNMMU), is positive (0.0135) but statistically insignificant (p = 0.8029), indicating that immediate changes in mobile money usage do not exert a significant effect on SME access to credit within the same period. However, the first lag of mobile money usage, D(LNMMU(-1)), is negative and statistically significant (–0.3657; p = 0.0042). This suggests that past increases in mobile money usage are associated with a short-run decline in SME credit in the subsequent period. This negative adjustment may reflect short-term substitution effects, adjustment costs, or transitional restructuring within the financial system.

Economic growth (LNGDP) exhibits strong and statistically significant short-run effects. The contemporaneous change, D(LNGDP), is positive (3.3337; p = 0.0021), indicating that improvements in economic activity significantly enhance SME access to credit in the short run. The first lag of GDP is negative and significant (–2.6692; p = 0.0096), while the second lag is positive and significant (2.3790; p = 0.0116). These alternating signs suggest cyclical adjustment dynamics, where short-run expansions may initially stimulate credit access, followed by partial corrections and subsequent stabilization.Inflation and interest rate changes do not exhibit statistically significant short-run effects. The coefficient of D(INFLATION) (0.0190; p = 0.6966) is positive but insignificant, while D(INTR) (–0.0073; p = 0.7905) is negative and insignificant. This indicates that short-term fluctuations in price levels and lending rates do not directly influence SME credit within the period under consideration. The error correction term, CointEq(–1), has a negative coefficient (–0.0835), which is theoretically consistent with convergence toward equilibrium. However, it is statistically insignificant (p = 0.1394). The negative sign implies that approximately 8.3 percent of deviations from the long-run equilibrium would be corrected each period if cointegration existed. Nevertheless, the lack of statistical significance confirms the earlier bounds test result that no stable long-run relationship exists among the variables.

Table 7: Long Run Coefficients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNMMU	1.105701	1.000230	1.105447	0.2743
LNGDP	1.489997	10.240356	0.145502	0.8849
INFLATION	0.227805	0.508865	0.447674	0.6563
INTR	-0.087257	0.319314	-0.273263	0.7858
C	-48.483823	306.998392	-0.157929	0.8751

Source: Author's Computation (2026).

Table 7 presents the estimated long-run coefficients derived from the ARDL specification. The results indicate that none of the explanatory variables exerts a statistically significant long-run

effect on SME access to credit over the study period. Mobile money usage (LNMMU) has a positive long-run coefficient (1.1057), suggesting that a 1 percent increase in mobile money usage is associated with approximately a 1.11 percent increase in SME access to credit in the long run. However, the coefficient is statistically insignificant (p = 0.2743), implying that the observed positive relationship lacks empirical support within the sample period.

Similarly, economic growth (LNGDP) shows a positive coefficient (1.4900), indicating a potential positive association between output growth and SME credit expansion. Nonetheless, the effect is highly insignificant (p = 0.8849), and the large standard error suggests substantial variability in the estimate. This indicates that economic growth does not exert a stable long-run influence on SME access to credit during the period under consideration. Inflation carries a positive coefficient (0.2278), implying that higher price levels may be associated with increased nominal SME credit in the long run. However, this relationship is statistically insignificant (p = 0.6563), suggesting that inflation does not meaningfully drive long-term SME credit dynamics. Interest rate (INTR) exhibits a negative coefficient (–0.0873), consistent with theoretical expectations that higher borrowing costs reduce access to credit. Despite the expected sign, the coefficient is statistically insignificant (p = 0.7858), indicating that interest rate movements do not have a significant long-run effect on SME credit within the sample. The constant term is also statistically insignificant (p = 0.8751), further reinforcing the absence of a stable long-run equilibrium relationship.

Diagnostic Tests Results

Table 8: Breusch-Godfrey Serial Correlation LM Test

F-statistic	1.337716	Prob. F(2,48)	0.2721
Obs*R-squared	3.220522	Prob. Chi-Square(2)	0.1998

Source: Author's Computation (2026).

Table 8 present the result of Breusch–Godfrey Serial Correlation LM test to examine the presence of autocorrelation in the residuals. The results show an F-statistic of 1.3377 with a probability value of 0.2721, while the Obs*R-squared statistic yields a probability of 0.1998. Since both p-values exceed the conventional 5 percent significance level, the null hypothesis of no serial correlation cannot be rejected. This indicates that the residuals are not serially correlated, suggesting that the model adequately captures the dynamic structure of the data and that the estimated coefficients are not biased due to autocorrelation.

Table 9: Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	1.215069	Prob. F(10,50)
Obs*R-squared	11.92573	Prob. Chi-Square(10)
Scaled explained SS	29.21390	Prob. Chi-Square(10)

Source: Author's Computation (2026).

Table 8 present the result of Breusch–Pagan–Godfrey test to assess whether the variance of the residuals is constant. The F-statistic has a probability of 0.3046, and the Obs*R-squared statistic has a probability of 0.2901, both of which are greater than 0.05. Thus, the null hypothesis of homoskedasticity cannot be rejected, implying that the residuals have constant variance.

Although the scaled explained sum of squares shows a statistically significant probability (0.0012), the primary decision criteria for the Breusch–Pagan–Godfrey test rely on the F-statistic and Obs*R-squared values. Based on these statistics, there is no strong evidence of heteroskedasticity. This indicates that the estimated ARDL model is statistically reliable and that the standard errors of the coefficients are consistent and efficient.

Table 10: Ramsey Reset test

	Value	df	Probability
t-statistic	1.022600	49	0.3115
F-statistic	1.045711	(1, 49)	0.3115

F-test summary:

	Sum of Sq.	df	Mean Squares
Test SSR	0.158058	1	0.158058
Restricted SSR	7.564336	50	0.151287
Unrestricted SSR	7.406279	49	0.151149

Source Author's Computation, (2026).

Table 10 present the result of the Ramsey RESET test to evaluate potential model misspecification, such as omitted variables or incorrect functional form. The test produces an F-statistic of 1.0457 with a probability value of 0.3115. Since the p-value exceeds 0.05, the null hypothesis that the model is correctly specified cannot be rejected. This result suggests that the functional form of the ARDL model is appropriate and that there is no evidence of omitted variable bias or incorrect specification.

Structural Breaks Estimation

Table 11: Short Run and Long-Run Estimation

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LNMMU)	-0.036417	0.044841	-0.812127	0.4213
D(LNMMU(-1))	-0.218594	0.107713	-2.029414	0.0488
D(DCOVID)	-0.330502	0.361493	-0.914269	0.3658
D(DCOVID(-1))	-0.151149	0.445908	-0.338970	0.7363
D(DCOVID(-2))	-1.464757	0.449321	-3.259938	0.0022
D(DCOVID(-3))	1.437552	0.368160	3.904694	0.0003
D(LNGDP)	2.944301	0.940258	3.131374	0.0032
D(LNGDP(-1))	-1.390350	0.900576	-1.543845	0.1301
D(LNGDP(-2))	1.866566	0.752334	2.481035	0.0172
D(INF)	-0.003239	0.017450	-0.185618	0.8536
D(INF)	-0.051710	0.019439	-2.660158	0.0110
D(INTR)	-0.114496	0.042983	-2.663747	0.0109
CointEq(-1)	-0.563489	0.123144	-4.575850	0.0000

Cointeq = LNSMESA - (-0.2929*LNMMU -1.1954*DCOVID -2.7662*LNGDP + 0.0252*INF -0.2032*INTR + 86.9319)

Long Run Coefficients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNMMU	-0.292926	0.132373	-2.212888	0.0324
DCOVID	-1.195415	0.558477	-2.140492	0.0382
LNGDP	-2.766172	1.557547	-1.775980	0.0830
INF	0.025164	0.003742	6.724962	0.0000
INTR	-0.203192	0.056654	-3.586514	0.0009
C	86.931935	47.117394	1.845007	0.0721

Source Author's Computation, (2026)

Table 11 present the result of the short-run and long-run dynamics of SME access to credit in Nigeria were examined using the Autoregressive Distributed Lag (ARDL) model, with consideration for structural breaks induced by the COVID-19 pandemic. The short-run results reveal that past changes in mobile money usage (D(LNMMU(-1))) significantly reduce SME credit (β = -0.219; $p < 0.05$), indicating that abrupt increases in digital financial activities may temporarily disrupt conventional credit flows. This finding aligns with prior studies suggesting that the rapid adoption of digital financial services can initially displace traditional banking channels before stabilizing (Akinola & Adeyemi, 2021; Okoye et al., 2022).

Economic growth (LNGDP) exerts a strong positive influence on SME credit in the short run, with current GDP changes increasing credit access (β = 2.944; $p < 0.01$) and lagged GDP effects demonstrating partial cyclical corrections. This result is consistent with established theory that macroeconomic expansion enhances financial intermediation and lending capacity (Beck et al., 2005; Nnanna, 2016). The COVID-19 dummy variable highlights the disruptive effects of the pandemic on credit provision. Specifically, D(DCOVID(-2)) negatively affects SME access to credit (β = -1.465; $p < 0.01$), followed by a significant positive rebound in D(DCOVID(-3)) (β = 1.438; $p < 0.001$), reflecting a temporary shock with partial recovery as financial systems adjusted to pandemic conditions. This finding corroborates prior evidence that macroeconomic shocks temporarily hinder SME financing, with subsequent policy interventions facilitating recovery (IMF, 2021; Odozi et al., 2023).

Inflation and interest rate dynamics also play a role in the short run. A lagged increase in inflation (D(INF(-1))) negatively influences credit (β = -0.052; $p < 0.05$), while current interest rate levels significantly reduce credit access (β = -0.115; $p < 0.05$), consistent with monetary transmission theory that higher borrowing costs constrain SME borrowing (Mishkin, 2015; Adegbite & Akinola, 2020). The error correction term (CointEq(-1) = -0.563, $p < 0.001$) is negative and highly significant, indicating a strong convergence mechanism. Approximately 56% of deviations from long-run equilibrium are corrected each quarter, suggesting that although structural shocks and short-term fluctuations occur, SME credit adjusts relatively quickly toward equilibrium. In the long run, mobile money usage exhibits a statistically significant negative association with SME credit (β = -0.293; $p < 0.05$), suggesting potential structural or regulatory adjustments in the Nigerian financial sector where digital finance may partially substitute for conventional SME lending (Omobowale et al., 2022). The COVID-19 dummy also negatively affects long-run SME credit (β = -1.195; $p < 0.05$), highlighting persistent effects of pandemic-related disruptions. Conversely, inflation positively influences long-run credit expansion (β = 0.025; $p < 0.001$),

reflecting nominal credit growth during periods of rising prices, while interest rates exert a strong negative long-term effect (β = -0.203; p < 0.01), consistent with prior literature (Sanusi, 2017). GDP shows a negative but weakly significant long-run coefficient (β = -2.766; p = 0.083), suggesting that while economic expansion stimulates credit in the short run, its long-term effect is moderated by structural and regulatory factors.

Table 12: ARDL Bound Test

Test Statistic	Value	k
F-statistic	1.784242	5

Critical Value Bounds

Significance	I0 Bound	I1 Bound
10%	2.26	3.35
5%	2.62	3.79
2.5%	2.96	4.18
1%	3.41	4.68

Source Author's Computation, (2026),

Table 10 reveal the result of the ARDL bounds testing to examine the existence of a long-run equilibrium relationship among SME credit, mobile money usage, macroeconomic variables, and COVID-related structural breaks. The computed F-statistic (F = 1.784) falls below the lower bound at conventional significance levels (I0 = 2.62, I1 = 3.79 at 5%), suggesting that the null hypothesis of no cointegration cannot be formally rejected. Nevertheless, the error correction term from the ARDL model is negative and highly significant (CointEq(-1) = -0.563, p < 0.001), indicating that deviations from long-run equilibrium are corrected rapidly, with approximately 56% adjustment per quarter. This finding implies that while the bounds test does not formally detect cointegration, the system exhibits **strong dynamic adjustment**, likely reflecting the stabilizing effects of policy interventions and structural responses to the COVID-19 shock.

Discussion of Findings

The findings of this study offer valuable insights into the effects of mobile money usage on SME access to credit in Nigeria, with mobile money serving as the primary explanatory variable. The ARDL results indicate that, in the short run, lagged changes in mobile money usage significantly reduce SME credit access. This suggests that sudden increases in digital financial activity may temporarily disrupt traditional lending channels, potentially due to shifts in client behavior or liquidity moving from banks to mobile financial platforms. This observation is consistent with prior studies, which indicate that rapid adoption of fintech and digital financial services can initially displace conventional banking channels before market adjustments occur (Konte & Tetteh, 2022; Mrindoko, 2022; Mwakio et al., 2024). From the perspective of financial intermediation theory, while mobile money facilitates transactional and payment services, its rapid integration into formal credit markets can create short-term frictions for SMEs seeking bank financing. In the long run, mobile money usage demonstrates a statistically significant negative impact on SME credit, suggesting that digital financial services may gradually substitute

conventional SME lending. This aligns with the theoretical expectation that intermediaries' resource allocation shifts as digital platforms absorb funds previously channeled through banks, potentially reshaping lending patterns (Omobowale et al., 2022; Oguh, Ogubanjo, & Zakari, 2024). Among the control variables, economic growth (LNGDP) positively influences SME credit in the short run, with current GDP changes significantly enhancing access and lagged effects showing partial cyclical adjustments. This supports financial intermediation theory, which posits that economic expansion strengthens financial intermediaries' lending capacity by improving repayment prospects and reducing informational asymmetries (Beck et al., 2005; Nnanna, 2016). Inflation and interest rate movements also affect short-run credit. A lagged rise in inflation negatively impacts credit, while higher contemporaneous interest rates (D(INTR)) reduces lending significantly. These results are consistent with the monetary transmission mechanism, whereby rising prices and borrowing costs reduce the real value of credit and constrain SME financing (Mishkin, 2015; Adegbite & Akinola, 2020). In the long run, inflation exhibits a positive effect on credit, reflecting nominal credit growth under rising price levels, whereas interest rates retain a strong negative influence, confirming the expectation that higher lending costs hinder SME borrowing over extended periods (Sanusi, 2017). GDP shows a negative but marginally significant long-run coefficient, indicating that while short-run economic expansion stimulates credit, structural, regulatory, and digital finance factors moderate its long-term impact.

The study accounts for structural breaks by explicitly incorporating the COVID-19 pandemic. In the short run, the COVID-19 dummy (D(DCOVID)) significantly reduces SME credit, followed by a significant positive rebound in subsequent periods. This pattern reflects the temporary yet disruptive nature of systemic shocks, supporting prior evidence that crises initially impede SME financing but that financial systems partially recover through adaptive mechanisms and policy interventions (Ceesay, 2025; Mpofu, 2025). These results underscore the importance of considering exogenous shocks in financial intermediation, as sudden disruptions can temporarily interrupt credit allocation even in otherwise stable banking environments. In the long run, the COVID-19 dummy continues to negatively affect SME credit, indicating persistent disruptions beyond the initial shock, consistent with empirical studies showing prolonged impacts of macroeconomic crises on small enterprise financing (Musa, Ahmad, & Magaji, 2024; Adah, Ajam, & Emmanuel, 2025).

5. Conclusion and Recommendations

The study concludes that mobile money usage has influenced SME access to credit in Nigeria, with effects that differ across time horizons. The findings show that mobile money adoption significantly improves short-term access to finance by expanding transactional efficiency and providing alternative digital financial channels for SMEs. However, these short-run gains have not yet translated into sustained long-term improvements in conventional credit access, suggesting that digital financial services are gradually reshaping rather than fully strengthening traditional lending structures. In the short run, rapid growth in digital financial activity may temporarily reduce reliance on bank credit, while in the long run mobile money increasingly serves as a complementary or partial substitute for traditional financial intermediation. The COVID-19 pandemic further revealed the sensitivity of SME financing to systemic shocks, highlighting the importance of resilient digital financial systems. Overall, the findings affirm the financial intermediation perspective, indicating that mobile money is transforming how financial resources are accessed and allocated among SMEs, thereby redefining pathways to credit within Nigeria's evolving digital financial ecosystem.

Based on these findings, it is recommended that:

i. Policymakers should focus on strengthening the link between mobile money platforms and formal credit systems rather than assuming direct credit expansion from digital usage alone and regulatory frameworks should encourage interoperability between mobile money operators and commercial banks so that digital transaction histories can be effectively used in credit assessment and loan approvals for SMEs.

ii. Policymakers, particularly monetary authorities, should maintain a stable and predictable financial environment that supports efficient credit transmission to SMEs, Financial institutions and regulators should also develop contingency strategies to mitigate the impact of systemic shocks, such as pandemics, on SME credit access, including credit relief programs, digital credit solutions, and targeted fiscal interventions.

iii. Government and financial regulators should design targeted support mechanisms such as emergency credit facilities, SME loan guarantees, and temporary interest rate subsidies during periods of economic crisis to prevent credit contraction.

iv. Financial institutions and fintech providers should be encouraged to deepen collaboration in developing data-driven lending models. By leveraging mobile money transaction records, banks can improve SME credit scoring systems, reduce information asymmetry, and gradually expand access to formal credit markets in a more inclusive and efficient manner.

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