Fintech Adoption and Startup Financing in Nigeria: Evidence from Entrepreneurial Finance.

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ABSTRACT

This paper aims to explore how the adoption of fintech and the financing of startups affect small and medium enterprises (SMEs) in Nigeria between 2009 and 2024. The analysis is done using Dynamic Ordinary Least Squares (DOLS) and Fully Modified Least Squares (FMOLS), which examine the long-run association between digital financial services and SME credit access. The results indicate that the impact of mobile payments (MPAY) on SME financing is strong and positive, which indicates that the use of digital payment systems enhances the management of money among SMEs and facilitate their financial operations in general. Conversely, web transfers (WAP) are negatively related to SME credit, suggesting that the use of digital transactions can lower the use of traditional borrowing. The impact of inflation (INF) on SME financing is also negative, that is, an increase in prices leads to the increased difficulty in getting credit by SMEs. Interest rates (INT), on the other hand, are not significantly affected in the long-run in the model. The FMOLS findings are generally consistent with these results but with weaker effects with mobile payments, indicating that even though FinTech is positively associated with financial efficiency, its direct influence on formal credit access is not quite significant when other statistical controls are taken into consideration. In general, it can be concluded that FinTech in Nigeria is transforming the way SMEs manage their finances more than it is widening their access to formal credit. It underscores the necessity to simplify fintech platforms and make them more accessible. Additionally, there should be greater regulatory support by governments and other concerned bodies to instill confidence in digital financial services.

Keywords: Fintech adoption, Startup financing, SMEs, Mobile payments, Web-based transfers

INTRODUCTION

The accelerated development of digital technologies has radically changed the financial situation in the world, creating financial technology (fintech) as an important source of innovation in financial intermediation. The term Fintech can be defined as the use of digital technology in providing financial services in an efficient, accessible, and cost-effective way. According to Ezeocha (2024), fintech firms have been very instrumental in transforming traditional banking models and increasing the reach of financial services in developing economies, especially to underserved groups in Nigeria. As Fintech News Africa (2025) reports, Nigeria has become one of the top fintech hubs in the African continent due to its high population, increasing smartphone numbers, and a significant number of the unbanked population. The report emphasizes that the industry has expanded considerably in the last ten years, and by 2025, there will be more than 430 fintech companies in the industry, which is more than the count of 255 companies reported in January 2024.

According to Tech in Africa (2024), this explosive growth has brought many investors on board, with fintech taking about 35% of total technology investments in Nigeria in 2024, and raising billions of dollars of investments. The industry also was very attractive to investors as it attracted approximately 72 percent of equity investment in the country. Fintech development has also been strongly associated with the advancement in financial inclusion and entrepreneurship. The availability of fintech like mobile payments and online lending has

reduced startup barriers by offering alternative financing options and business transactions. Researchers, including Iroakazi and Ade (2025), note that the use of fintech improves access to financial services and economic participation among people and small businesses. Simultaneously, the ecosystem of entrepreneurship in Nigeria, especially in such cities as Lagos, has gone through a tremendous growth, where fintech startups take the leading position in terms of venture capital inflows and innovation processes. The sector continues to attract both local and international investors, as evidenced by large funding rounds and the emergence of fintech unicorns. This highlights the growing significance of fintech in the dynamics of startup financing in the country.

In spite of these advancements, a significant challenge facing most startups in Nigeria is lack of access to finance. Conventional financial institutions tend to have strict requirements when it comes to lending, and therefore it is not easy to fund early-stage ventures. As a result, fintech has become another means of financing, with innovative solutions like peer-to-peer lending, crowdfunding, and digital credit systems.

Problem Statement.

According to Appiah et al. (2025), financial technology (FinTech) is a game changer in the financing of entrepreneurships, especially in the emerging economies like Nigeria. They state that innovations such as mobile payments, peer-to-peer lending, crowdfunding, and digital banking have broadened access to financial services and assisted alleviate financing limitations on the startups by decreasing the cost of transactions, insurance of information asymmetry, and facilitation of access to funding possibilities.

Otuya et al. (2024) note that, amidst these developments, funding remains a crucial problem to startups in Nigeria. Poor financial infrastructure, collateral requirements and limited access to information remain a challenge to many entrepreneurs more so, small and medium-sized enterprises (SMEs). They also observe that despite the efforts of FinTech solutions to fill in these gaps, their use is not evenly distributed and depends on such factors as perceived security, trust and digital financial literacy levels.

Bamanga et al. (2025) highlight that despite a body of evidence suggesting that adoption of FinTech positively affects financial inclusion and entrepreneurship, a large number of the population, especially in rural and underserved regions, is still left out. This omission is ascribed to low uptake of technology, poor infrastructure, and lack of awareness all of which limit startups to maximize the use of FinTech platforms to finance and grow.

Omoniyi et al. (2025) point out that, though Nigeria has been experiencing a rapid growth in the area of FinTech investment and the number of transactions, there is currently a lack of empirical clarity regarding the direct effect of the adoption of FinTech on the outcome of startup funding. Current literature is more inclined towards the financial inclusion and general performance of SMEs, which creates gaps in comprehending the particular effects of financial inclusion on access to funding, cost of funds, and long-term sustainability of start-ups.

Omoniyi et al. (2025) also add that discrepancies in start-up funding information within Nigeria pose another problem, and it is hard to gauge the results of financing. This has compelled researchers to resort to proxy indicators like inflows of venture capital and credit to the private sector which in itself might not reflect the reality of entrepreneurial finance. The proposed study thus attempts to fill this gap by analyzing how the adoption of FinTech and startup funding relate to each other in Nigeria, with credit to the private sector being used as a proxy to entrepreneurial finance.

LITERATURE REVIEW

Financial Technology (FinTech)

This can be defined as the application of technology to deliver financial services in more efficient, accessible and innovative forms. This includes an extensive list of solutions, including mobile payments, digital wallets, blockchain technology, peer-to-peer lending, and robo-advisors. The emergence of FinTech has transformed the traditional financial services to be cheaper, faster, and more inclusive of finance, particularly in areas that have been facing limited access to the banking services. According to Financial Stability Board (2017), FinTech is

technology-based financial innovation capable of introducing new business models, processes, or products that have a high impact in financial markets and institutions. Such researchers as Arner, Barberis, and Buckley (2016) regard FinTech as an intersection between finance and technology, which brings forth innovations that shake the conventional finance industry. These new technologies have led to new financing opportunities to start-ups, transforming the entrepreneurial finance environment.

FinTech has been instrumental in overcoming financing issues of startups in such countries as Nigeria. Lending and mobile money services have facilitated the accessibility of capital to small businesses that otherwise would not have been accessible due to the digital platforms. According to the explanations by Ozili (2018) and In Lee and Yong Jae Shin (2018), FinTech firms are in a position to determine the quality of credit more effectively through data analytics and automated decisions, thus facilitating faster and more convenient financial services. They state that FinTech is an essential contributor of financial inclusion and it helps to create the entrepreneurial ecosystem.

Startup Financing in Nigeria

According to David Deakins and Mark Freel (2020), startup financing is the process of acquiring funds to form and develop new businesses. They observe that this continues to be a significant challenge in Nigeria where start ups are generally viewed as being risky and have neither collateral nor financial track records and therefore a formal bank loan is hard to take. Consequently, small businesses often rely on their own savings and informal sources of funds in the start-up phase.

Josh Lerner et al. (2021) and Paul Gomers and Josh Lerner (2020) point out that information asymmetry is a major problem in the startup financing, where investors lack the information about the potential of new enterprises. This risk aversion heightens uncertainty, which frequently results in financing terms which are founded on equity participation or performance-contingent terms or conditions.

According to Pukelsheim and Christoph Schmidt (2022), the last few years have seen financial technology enhance access to funding in Nigeria. They note that the emergence of digital lending platforms and the crowdfunding mechanisms have introduced different financing options to startups to alleviate a bit of what comes with the old financing systems.

FinTech Adoption in Nigeria: Obstacles.

1. Inequalities of Adoption: Urban-Rural and Social Inequalities.

According to Sam Abugu et al. (2025), access and distribution of the benefits of FinTech are unequal, which is one of the key obstacles to its use in Nigeria. They state that cities are more predisposed to use FinTech services, as they have better digital infrastructure and are more digitally literate. Conversely, small-scale entrepreneurs, rural communities, and women have a lot of difficulty, such as low mobile network coverage, inadequate financial infrastructure, and unreliable internet connectivity. The World Bank (2023) also mentions that women, especially in rural regions, also face other cultural and economic barriers that restrict their use of digital financial services, and their adoption rates are lower than those of men. Otuya et al. (2024) further note that small-scale entrepreneurs have low financial literacy and poor digital skills, which further limit their ability to utilize FinTech solutions and access credit.

2. Lack of Literacy and Awareness: Digital and Financial Literacy Gaps.

According to Anama and Evbayiro Osagie (2024), the low digital and financial literacy levels of a large percentage of Nigerians, and more so low-income earners, is one of the biggest impediments to the adoption of FinTech. They note that the potential users do not have the knowledge and confidence needed to successfully utilize digital financial tools, constraining the effects that FinTech can have in fields like savings, payments, and access to credit. Otuya et al. (2024) also discover that lack of financial literacy negatively affects the ability of users to make informed choices and leads to mistrust of online platforms since worries about fraud and cybersecurity risks are prevalent.

3. Infrastructure and Regulatory Constraints: Policy, Power, and connectivity.

According to the Nigerian Communications Commission (2023), poor internet connectivity and unreliable electricity supply remains one of the challenges to the adoption of digital financial services, particularly in rural locations. Sam Abugu et al. (2025) also add that mobile money agents and service providers are adversely impacted by frequent power outages. According to Anama and Evbayiro Osagie (2024), regulatory uncertainty is also a big challenge. Despite the introduction of the policies by the Central Bank of Nigeria in order to encourage the use of digital finance, current regulatory frameworks have failed to keep up with the blistering development of the FinTech industry. This gives doubt to the users and service providers. All these infrastructural and policy constraints make FinTech services less scalable, more unreliable, and less trustworthy in Nigeria, on the whole.

Regulatory Environment

The main regulatory agencies that regulate the FinTech industry in Nigeria are the Central Bank of Nigeria (CBN), the Securities and Exchange Commission (SEC), and the Nigerian Communications Commission (NCC). Ekene (2025) describes the objectives of these institutions as ensuring a secure, stable and consumer friendly digital financial services environment as well as promoting innovation. Recent regulatory actions have been aimed at enhancing consumer protection, enhancing cybersecurity, advancing digital currency projects, and ensuring that there are clear licensing standards to which FinTech operators must comply.

However, Ekene (2025) continues to argue that these regulatory initiatives have yet to be completely translated into meaningful advancements in financial inclusion. Though the current system structure is more secure and is more innovative, it still fails to meet the economic demands of the underserved groups. This underscores the importance of enhanced policy compatibility and cooperation between regulators and the industry players to be able to harness the full potential of FinTech in ensuring inclusive finance.

Present State of FinTech in Nigeria (2014-2025).

According to McKinsey & Company (2020) and KPMG, to grasp the role of FinTech in the startup financing in Nigeria, it is necessary to consider the development of the sector between 2014 and 2025 when it turned out to be a significant contributor to financial innovation and inclusion. Asli Demirguc-Kunt et al. (2018) and the World Bank (2021) note that during the initial stage (20142018) the development of FinTech was mainly aimed at enhancing payment systems and access to financial services by the vast unbanked population and was facilitated by the spread of mobile phone usage and the internet. According to the European Investment Bank (2021), and Africa D (2022), the sector grew to digital lending, savings, and investment platforms in the period between 2019 and 2022, bringing both international and local investments to Nigeria and making the country one of the most successful FinTech hubs in Africa.

As noted by the Nigeria Inter-Bank Settlement System (2026) the number of transactions over instant payments had increased substantially between 2023 and 2025 by almost 11 billion transactions in 2024 alone, indicating how Nigeria is becoming a leading country in real-time payments. Although such developments were made, the Central Bank of Nigeria (2023) and Ozili (2020) observe that regulatory uncertainty, poor infrastructure, and the threat of cyber-attacks continue to be a challenge. In sum, the development of FinTech in Nigeria shows that it gains more significance in the process of startups acquiring funds and how they use them.

Correlation between FinTech and Startup Financing in Nigeria.

According to Aina (2025), FinTech has become a disruptive technology in funding startups in Nigeria, providing feasible substitutes of the traditional bank loans, which are usually hard to secure because of high perceived risk, lack of collateral, and poor financial history. The author observes that capital access is a significant limitation to startups and that FinTech platforms have taken a step in providing greater flexibility, accessibility, and speed of funds.

Aina (2025) and Sam-Abugu et al. (2025) point out, further, that information asymmetry reduction can be considered one of the most valuable contributions of FinTech. Conventionally, investors would use formal

financial records in order to determine the viability of a business, which was disadvantageous to startups. Nonetheless, FinTech platforms are currently also using alternative forms of data - such as online behavioral data and digital transaction histories - to assess creditworthiness. This innovation has made more Nigerian entrepreneurs get the financing without having to engage in lengthy formal documentation.

Sam-Abugu et al. (2025) also highlight that FinTech solutions, such as crowdfunding, mobile money, and peer-to-peer lending, have diversified the sources of funds that startups can access. These sites enable direct relationships between businesses, investors, and customers, thus eliminating the need to use conventional financial intermediaries such as banks. This has seen numerous Nigerian startups better placed to expand, scale quickly and enter new markets.

Okoh, Stephen, Afrogha, and Adamu (2025) warn, though, that these advantages notwithstanding, a number of challenges persist. They indicate that lack of proper infrastructure and complicated regulations still impede the complete implementation of FinTech solutions by small businesses in Nigeria. Nevertheless, FinTech still has huge potential in better financing of startups, increasing financial inclusion, and enriching the entrepreneurial ecosystem in general in the country.

Theoretical Framework

This paper frames FinTech adoption as an effective tool of alleviating the economic pressures on startups in the context of entrepreneurial ecosystems. It describes the way in which digital financial solutions can be used to address classic barriers on the way to finance.

The framework is based on Technology Acceptance Model as suggested by Fred Davis (1989). Davis (1989) states that people tend to embrace a technology more when they have a perception that it is useful and convenient to operate. This implies that entrepreneurs are likely to embrace FinTech tools more easily when they see them as effective solutions to their funding issues and when they are easily accessible and do not make the running of the business difficult.

Following this line of thought, the Diffusion of Innovations Theory by Everett Rogers (2003) describes the dynamics of the spread of FinTech innovations over time. According to Rogers (2003), the perceived advantages, compatibility and ease of use influence adoption. Digital lending, crowdfunding, and mobile finance are examples of FinTech solutions that are gaining prominence in Nigeria due to providing quicker and more convenient options to the current financing systems.

At the firm-level, the Resource-Based View, proposed by Jay Barney (1991) emphasizes the significance of resource access, in the form of financial capital. According to Barney (1991), the better the access of the firms to such resources, the higher the chances of the firm attaining competitive advantage. In this respect, FinTech makes startups more capable of raising capital, innovating and improving their performance by providing alternative financing sources.

Furthermore, the Institutional Theory that was put forward by W. Richard Scott (2004) highlights the impact of the institutional environment as a whole on FinTech adoption. According to Scott (2004), regulatory structures, infrastructure, and trust among people are some of the factors that have critical impacts on technology acceptance. Ozili (2018) also notes that, though effective institutional frameworks can foster financial inclusion and the use of FinTech, weak institutions (such as in developing countries such as Nigeria) can undermine their potential.

Empirical Review

The evolution of financing models for these businesses is examined by Madegowda, (2026), who contrasts more modern options like supply chain financing, revenue-based financing, crowdfunding, blockchain, and financial technology (FinTech)-driven lending platforms with more conventional sources like government programs and bank loans. For comparison assessment, the study makes use of important factors like accessibility, financing cost, flexibility, risk, and scalability. The results of a few case study analyses demonstrate how FinTech has revolutionised financial inclusion. According to the survey, digital technologies are making it easier for MSMEs

and startups who were previously unable to obtain funding. Modern funding models are faster and more adaptable. On the other hand, they also pose certain acceptance and regulatory obstacles.

The report also looks at how the future of MSME finance is being shaped by the government, banking and financial institutions, and technology. It helps MSMEs and startups select the best funding options by offering them strategic insights.

According to Rivandi (2026), FinTech, or financial technology, is the application of contemporary technologies in the banking and financial industries to enhance and streamline financial services. In many developed societies, the use of this technology is growing quickly. The demand for digital financial services has increased, the digital economy is expanding quickly, blockchain technology and cryptocurrencies are becoming more and more popular, and regulations that are favourable to the FinTech sector have all contributed to the recent surge in investment in FinTech. Globally, fintech has grown dramatically, particularly in Asian countries and developing economies. In this study, we first give an overview of FinTech, its goals, and the infrastructure required for its implementation. Next, we briefly discuss the extent of its development and adoption in different countries. Finally, we review a number of studies carried out by researchers in the FinTech field.

The impact of fintech and digital payments on entrepreneurial finance is examined by Abah et al. (2025), who identify trends, obstacles, and potential prospects. The article reviews the literature on the topic of digital payment systems, the adoption of fintech, and its effects on entrepreneurial finance. The conclusions of the study indicate that fintech and digital payments have simplified access to financing by owners of businesses, particularly in developing countries. To digital payment solutions such as online payment gateways and mobile money have led to financial inclusion and a reduction in transaction costs. An example of fintech that has democratised access to capital is peer-to-peer lending and crowdfunding.

Aina, A. T. The study (2025) examined the financial barriers affecting the Nigerian small- and medium-sized businesses (SMEs) and the opportunities of fintech to address the barriers. This paper analyzed SME owner and manager data in the form of theme analysis, revealing the significance of financing shortages and the role of fintech in promoting financial access. The survey reported that SMEs find it hard to access financing due to high interest rates, regulatory barriers, and inaccessibility of financial inclusion. Fintech technologies such as mobile payments, crowdsourcing, and digital financing, on the other hand, offered promising alternatives. The study argues that fintech can bridge the funding gaps that Nigerian SMEs are facing by enabling them to access capital easier, increase the performance of their companies, and drive economic growth.

Ahmad, S. M. The study (2025) examined the association between the use of FinTech and financial inclusion using panel data of 30 SSA countries in the year 2010-2023. FinTech acceptance uses mobile subscriptions, mobile money transactions and registered accounts as proxies and account ownership, mobile money usage, and digital payment adoption as indicators of financial inclusion. The research minimizes the endogeneity as well as unobserved heterogeneity through System GMM along with fixed and random effects estimates. The results indicate that the adoption of FinTech contributes significantly to financial inclusion, particularly by mobile money transactions, and that the association is enhanced by the internet prevalence and the quality of regulations.

Olagoke et al. (2025) investigated how Small and Medium Enterprises (SMEs) in Ilorin, Nigeria, adopted Financial Technology (FinTech) solutions and how this affected financial management and business performance. Specifically, the research involved the manipulation of digital lending platforms and mobile payment systems on the performance and financial management of SMEs in Ilorin, Nigeria. The study adopted a descriptive survey design with purposive sampling to select 350 SMEs across various industries in the Ilorin city to form a population of 8,450 SME operators. Cochran's formula was used to choose a sample of 382 SME owners/managers. Simple linear regression was used to analyse the data, which was gathered using structured questionnaires. The analysis indicates that digital lending platforms significantly influence the business performance, contributing 68.2% to the variation ($R^2 = 0.682$, $p = 0.000$), whereas mobile payment systems have a considerable positive effect on the financial performance of the business ($R^2 = 0.724$, $p = 0.000$). The analysis concluded that the use of FinTech is a determinant of the performance of SMEs. Digital lending systems are better able to access finance and growth potential, whereas mobile payment systems are better able to manage transactions and cash flows.

Bamanga et al. (2025) evaluate the role of Fintech financial services in enhancing financial inclusion in Nigeria and focus on mobile banking, online banking, Point of Sale (POS) terminals, and Automated Teller Machines (ATMs). The study used secondary data that was gathered and subjected to multiple regression analysis in order to ascertain the connection between financial inclusion and digital financial services. The results show that POS terminals ($\beta = 0.365$, $p < 0.001$) and mobile banking ($\beta = 0.558$, $p < 0.001$) have the greatest impact on financial inclusion. ATMs ($\beta = 0.065$, $p = 0.001$) and internet banking ($\beta = 0.089$, $p < 0.001$) both have a beneficial, albeit smaller, contribution. The combination of these factors accounts for 83.7% of the change in financial inclusion ($R2 = 0.837$). In the results of the study, the financial services of Nigerian fintech companies are critical in client loyalty.

Akande (2025) investigates the effect of Financial Technology (FinTech) on the development of SMEs in Nigeria in 2014-2024. The research evaluates adoption, access to credit, and volume of transactions in manufacturing, retail and agricultural sectors based on ten years of trend analysis and empirical data of national surveys, FinTech platform reports and central banking statistics. The findings indicate that despite SME FinTech utilization rising to 42% in 2024, digital loan penetration was low at 12%, and only a small proportion of the total FinTech usage originated in the rural areas, with only 35% of all access to FinTech being in Northern Nigeria. In addition, the infrastructural shortcomings, regulatory overlaps, and cybersecurity threats continue to limit the inclusive potential of FinTech despite an exponential growth in investment amounting to 1.26 billion in 2022.

METHODOLOGY

The present study relies on ex-post facto research design, the Dynamic Least Squares (DOLS) approach, which provides the main evidence because of the small sample size and the possibility of addressing the issues of endogeneity and short-run dynamics. The study covers 2009–2024, to ensure consistency in electronic payment data reported by the Central Bank of Nigeria and Nigeria Inter-Bank Settlement System. Mobile payment (MPAY), Web pay (WAP) data becomes richer from 2009 onward, making the time series more reliable. The secondary data was selected because it provides a comprehensive and detailed historical record of the variables under investigation. This approach is not only efficient but also ensures that the study can accurately capture the trends and dynamics of the Nigerian FinTech over time and macroeconomic data that has already been collected as control factor.

Model Specification

This study adopted the Abah, *et al.* (2025) model with slight modifications as shown below;

$SML = f(MPAY, WAP, INF, INT)$ ……..……...….. (1)

Econometrically, the above model can be re-organized as follows:

$SML_t = \beta_0 + \beta_1 MPAY_{t-1} + \beta_2 WAP_{t-1} + \beta_3 INF_{t-1} + \beta_4 INT_{t-1} + \mu_t$……..……..... (2)

Logarithm model

$LogSML_t = \beta_0 + \beta_1 LogMPAY_{t-1} + \beta_2 LogWAP_{t-1} + \beta_3 LogINF_{t-1} + \beta_4 LogINT_{t-1} + \mu_t$……..... (3)

Where:

SML = Small and Medium Enterprise credit (Startup Financing)

MPAY = Mobile Pay

WAP = Web (Internet) Transfer

INF = Inflation Rate

INT = Interest Rate

β_0, β_1, - β_4 = parameter estimates

μ = stochastic error term.

Apriori Expectations

The expected signs of the regression coefficients are $\beta1 > 0$, $\beta2 > 0$, $\beta3 < 0$, and $\beta4 < 0$. This means Mobile Pay and Web (Internet) Transfer are anticipated to have positive relationships with the dependent variable, while Inflation Rate and Interest Rate are expected to have negative effects when they are high.

DATA PRESENTATION

Table 4.1: Descriptive statistics result

	SML	MPAY	WAP	INF	INT
Mean	89.86938	49483.35	293796.0	15.34813	3.397500
Median	16.22000	929.4500	158.4800	12.00000	3.480000
Maximum	465.3700	382711.2	1880679.	34.80000	7.210000
Minimum	10.75000	1.270000	25.05000	8.000000	1.410000
Std. Dev.	145.9611	106782.7	543121.8	7.473465	1.483197
Skewness	2.031823	2.311190	1.878255	1.447954	0.874398
Kurtosis	5.513144	7.246300	5.639941	4.259352	3.837879
Jarque-Bera	15.21941	26.26497	14.05377	6.648169	2.506883
Probability	0.000496	0.000002	0.000888	0.036005	0.285520
Sum	1437.910	791733.6	4700736.	245.5700	54.36000
Sum Sq. Dev.	319569.8	1.71E+11	4.42E+12	837.7902	32.99810
Observations	16	16	16	16	16

Source: *E-Views 10 output extract*.

Table 4.1 provides an overview of the main features of the variables used in the study. The average value of Small and Medium Enterprise credit (SML) is relatively modest when compared to digital payment channels. In contrast, Mobile Pay (MPAY) and Web Transfer (WAP) record very high average values, reflecting the increasing reliance on electronic payment systems. The average of inflation (INF) is quite high, whereas the Interest Rate (INT) is relatively low. The mean and median of most of the variables, especially MPAY and WAP, differ significantly. This implies that the averages are being pushed up by some uncharacteristic large values and that most of the observations are actually at lower values. The large difference between minimum and maximum values, and high standard deviations of MPAY and WAP, further reveal large changes in the volumes of digital transactions. The variables are all skewed positively, hence higher values are less represented but have a strong influence upon the data. The results of the kurtosis indicate the presence of extreme values in the distributions. The test of normality indicates that most variables are not normally distributed except INT. Altogether, the data indicate that there is a certain amount of variability and inconsistent patterns that might influence the further analysis.

Stationarity Test

In econometric analysis, it is important that variables used in a regression model are stationary to ensure that the results are valid and not misleading. This requirement is typically evaluated at the 1%, 5 or 10 significance levels. To ensure that the variables satisfy this requirement, a unit root test was used in the study to test the stationarity of the variables.

Table 4.2: Results of Unit root test: Augmented Dickey Fuller test statistic at Level and First difference.

Variable	Level I(0)				1st Difference I(1)				Order of Integration
	ADF T-statistics	5% Crit value	P-value	Remark	ADF T-statistics	5% Crit value	P-value	Remark	
SML	3.289081	-4.992279	1.0000	Non-stationary	-5.570309	-3.875302	0.0046	Stationary	I(1)
MPAY	**-6.665306**	**-3.875302**	0.0011	stationary				Stationary	I(0)
WAP	-3.896031	-3.875302	0.0485	stationary				Stationary	I(0)
INF	-3.353557	-3.791172	0.0983	Non-stationary	-3.387410	-2.971853	0.0302	Stationary	I(1)
INT	-2.493920	-3.791172	0.3252	Non-stationary	-4.900830	-3.828975	0.0098	Stationary	I(1)

Remark: 5% level of significance is used in making statistical decisions.

Source: Author's computation.

According to the results of the Augmented Dickey-Fuller tests in Table 4.2, a variable is said to be stationary when the test value is negative with a test value that is lesser than the 5% critical value. The results indicate that MPAY, WAP are constant at level whereas SML, INF, and INT are constant only after first differencing.

As the variables are a combination of I(0) and I(1), the second step will be to check whether the variables have a long-run relationship. To achieve this, the Dynamic Ordinary Least Squares is suitable in the estimation of the long-run effects. It also enhances results by eliminating problems such as endogeneity and serial correlation by including leads and lags. Nevertheless, due to the small size of the dataset, the results are to be taken with a grain of salt.

Table 4.3: Dynamic Least Squares (DOLS) Output

Dependent Variable: SML				
Method: Dynamic Least Squares (DOLS)				
Date: 04/10/26 Time: 16:47				
Sample (adjusted): 2010 2023				
Included observations: 14 after adjustments				
Cointegrating equation deterministics: C				
Fixed leads and lags specification (lead=1, lag=1)				
Long-run variance estimate (Bartlett kernel, Newey-West fixed bandwidth = 3.0000)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
MPAY	6.05E-07	7.25E-09	83.52735	0.0076
WAP	-5.19E-08	8.03E-10	-64.58195	0.0099
INF	-5.534220	0.092126	-60.07233	0.0106
INT	-0.879312	0.379433	-2.317434	0.2593
C	70.20773	0.499253	140.6256	0.0045
R-squared	0.999998	Mean dependent var		70.12214
Adjusted R-squared	0.999980	S.D. dependent var		119.6906
S.E. of regression	0.532174	Sum squared resid		0.283209
Long-run variance	0.031657			

Source: *E-Views 10 output extract*.

Results of the Dynamic Ordinary Least Squares that were used to determine the long-run relationship between SME credit (SML) and the chosen explanatory variables during the period 20102023 are reported in Table 4.3. The findings show that Mobile Pay (MPAY) positively impacts SME credit, which is statistically significant (β= 6.05E-07, p= 0.0076). This implies that the increased the mobile payment systems, the better access to financing of SMEs in the long run. Web Transfer (WAP) on the other hand, has a strong negative correlation with SME credit (β = -5.19E-08, p = 0.0099) which means that the higher the dependence on web transfer, the lesser the necessity to borrow funds as firms become more dependent on online transfer methods. This is in line with the results of Olagoke et al. (2025) and Madegowda (2026) that indicate that the adoption of fintech is transforming the behaviour of businesses in terms of financing. Inflation (INF) influences SME credit negatively (β -5.5342, p = 0.0106) too, thus indicating that the SME access to credit can be undermined by higher prices. Nonetheless, Interest rate (INT) is negative although not statistically significant (p = 0.2593) that is, there is no significant effect of interest rate on SME credit in the long term in this model. The fit of the model is very high and the R-squared and adjusted R-squared have a value equal to or near to one. Although this is a sign of good explanatory power, it needs to be handled cautiously, as the sample size is small.

On the whole, the findings indicate that the use of digital payment systems contributes significantly to the development of SME financing behaviour, and the influence of macroeconomic factors is less significant and more inconsistent. Once DOLS has been performed, the Fully Modified Least Squares (FMOLS) is applied to verify once again that the FMLS is sound in the long-term correlation between the variables. It is also another method of correcting problems such as endogeneity and serial correlation as it assists in ensuring that the findings are not reliant on a single estimation technique.

Table 4.4: The Fully Modified Least Squares (FMOLS)

Dependent Variable: SML				
Method: Fully Modified Least Squares (FMOLS)				
Date: 04/09/26 Time: 14:50				
Sample (adjusted): 2010 2024				
Included observations: 15 after adjustments				
Cointegrating equation deterministics: C				
Long-run covariance estimate (Bartlett kernel, Newey-West fixed bandwidth = 3.0000)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
MPAY	0.001018	0.000538	1.891150	0.0879
WAP	-3.30E-05	0.000105	-0.315504	0.7589
INF	4.942205	4.139342	1.193959	0.2600
INT	5.875702	12.64425	0.464694	0.6521
C	-50.25329	50.83918	-0.988476	0.3462
R-squared	0.858067	Mean dependent var		94.76933
Adjusted R-squared	0.801294	S.D. dependent var		149.7158
S.E. of regression	66.73804	Sum squared resid		44539.66
Long-run variance	1608.165			

Source: *E-Views 10 output extract*.

The results of the Fully Modified Least Squares (FMOLS) provide a complementing view. In this case, mobile payments exhibit a slight positive impact on startup funding, but of a negligible significance, and web transfers are insignificant. This implies that although the adoption of fintech has the potential of supporting access to formal credit, its long-run effect is less strong after considering endogeneity and serial correlation. These findings

are indicative of the practical difficulties of fintech adoption in Nigeria such as poor internet connectivity, substantial transaction fees, uneven rates of adoption between regions, and regulatory obstacles. Whereas FMOLS validates the general direction of DOLS, it emphasizes that digital financial tools do not necessarily ensure more access to formal startup financing.

Collectively, the findings suggest that the adoption of fintech in Nigeria is transforming the behavior of SME financing and not necessarily raising formal access to credit. Digital payment systems are flexible, fast, and efficient, enabling businesspeople to control liquidity and cash flow in a way that minimizes the use of conventional loans. This is a complement to earlier studies by Ahmad and Abah et al., who put a lot of weight on the role of mobile money and digital payments in facilitating financial inclusion, but focus on the Nigerian context, where uptake is not necessarily accompanied by higher bank credit. Essentially, fintech is becoming a viable economic lifeline to Nigerian SMEs. It facilitates business survival and expansion in a setting where formal financing is usually scarce by allowing it to manage finances more efficiently. These results highlight the necessity of measures that bring digital financial solutions to the traditional lending systems, enhance credit infrastructure, and offer regulatory assistance to the fullest extent of the advantages of fintech usage to startups.

SUMMARY

This paper analyses the long-run association between financial technology implementation and SME funding in Nigeria in the year 2010-2024 based on Dynamic Ordinary Least Squares (DOLS) as well as Fully Modified Least Squares (FMOLS) estimation models.

The results show that mobile payments (MPAY) have a strong positive effect on SME credit access. This observation is in line with the Technology Acceptance Model, put forward by Fred Davis (1989) that the entrepreneur adopts the technologies that they view as useful and easy to use. It also aligns with the theory of Diffusion of Innovations Theory that was developed by Everett Rogers (2003), as mobile payments have become popular because of their speed, convenience, and cost.

On the other hand, web/online transfers (WAP) and inflation (INF) are negative in the DOLS results. This implies that despite the proliferation of digital financial tools, they can, at times, replace formal credit access by traditional borrowing, instead of increasing access to formal credit. The SME financing is also limited by inflation which decreases the purchasing power and undermines financial stability. These conclusions are reasonable in line with the Institutional Theory (Scott, 2004; Ozili, 2018), which highlights that the value of financial innovation may be constrained by poor economic performance and institutional failures. Interest rates, however, are statistically non-significant, which means that they have little effect on the long-run in the model.

The results of FMOLS affirm a similar but less significant pattern. The mobile payments are also still positively correlated with SME financing, albeit with a marginal significance, and the majority of other variables not being statistically significant. This implies that FinTech can have a greater impact on increasing financial efficiency and transparency in transactions than on the formal increase of access to credit.

According to the Resource-Based View, which was proposed by Jay Barney (1991), FinTech improves the functioning of SMEs but is yet not completely reflected in the financial resource increase. On the whole, the results show that although FinTech facilitates SME activity, institutional and macroeconomic restrictions moderate its effects on the financing outcomes.

CONCLUSION

The conclusion, the research that financial technology, particularly mobile payment systems, plays a significant part in SME financing behaviour in Nigeria. Its effects are greater in enhancing financial management, liquidity and efficiency in transactions rather than directly raising access to formal credit. A comparison of the findings of the DOLS and FMOLS shows inconsistent findings. DOLS demonstrates more and greater effects, whereas FMOLS demonstrates weaker relations following more strict adjustments. This implies that the use of fintech in itself is insufficient to ensure an improvement in access to credit by SMEs.

RECOMMENDATIONS

To extract the maximum benefits of fintech adoption to SMEs, it is suggested to follow the following actions:

1. It is necessary to simplify fintech platforms and make them more accessible. Small and medium-sized enterprises (SMEs) will use the digital financial services more frequently and manage their finances better when they are easy to use, reliable, and user-friendly.
2. The governments and other authorities ought to give greater regulatory support to build confidence in online money services. This includes enhancing cybersecurity, safeguarding user data, and creating explicit regulations that make the fintech operations secure and transparent.
3. Additional financial literacy and digital skills training should be provided to the owners of SMEs. This will empower them to know more about fintech tools and how to utilize them in order to enhance their business performance and to make sound financial decisions.
4. Commercial banks and Fintech companies need to enhance cooperation. Those SMEs that use mobile money and online payment systems frequently can have an increased opportunity of getting loans by adding digital transaction histories to formal credit evaluation systems.
5. There should also be efforts towards ensuring a stable economic environment particularly through dealing with inflation. During high inflation, businesses are faced with uncertainty and SMEs find it difficult to plan ahead, save and access credit.

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