
Financial Technology Innovations and Demand for Money in Nigeria

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ABSTRACT: Most developing economies are faced with the new wave of financial globalization and Nigeria is one of such. Primarily, this paper examined the effect of financial technology innovations on money demand in Nigeria between 2009 and 2025. Secondary data were sourced on Automated Teller Machine (ATM) transactions, Mobile Payments (MOP), Point-of-Sale (POS) transactions, Web Payments (WEP) and money demand measured by Broad Money Supply (M2) from the Central Bank of Nigeria Statistical Bulletin and the Nigeria Inter-Bank Settlement System Annual Reports. Using analytical methods like descriptive statistics and the Error Correction Models, the results showed that MOP had a positive and statistically significant effect on broad money supply, whereas ATM and POS transactions exerted positive but insignificant effects. Web Payments had a negative and insignificant long-run effect but a significant negative short-run effect. Also, there were indications that approximately is 38.55 % of short-run disequilibrium is corrected annually. The policy implication of these outcomes is that proper adaptation of financial technology can enhance money demand in Nigeria especially through the mobile payments channel in the long run. It is thus recommended among others that the financial sector regulators should strengthen digital payments' infrastructure by integrating fintech developments into monetary policy formulation for sustained economic prosperity.

KEYWORDS: Financial Technology; Money Demand; Broad Money Supply; Mobile Payments; Point-of-Sale Transactions and Web Payments.

1. INTRODUCTION

The money demand of the Nigerian economy has been increasingly unpredictable and unmanageable as a result of the on-going macroeconomic instability, high rate of technological advances in the financial sector and structural weaknesses. Classical and Keynesian theory suggests that the demand for money depends on the level of income, interest rates and the level of prices (Friedman, 1956; Keynes, 1936). But in Nigeria, the traditional factors that determine money demand have been seriously affected by the ongoing inflation, exchange rate fluctuations and frequent monetary policy interventions. The aggregate purchasing power of households and businesses have been continually eroded by the rising inflation, forcing economic agents to decrease real money balances and find alternative stores of value, which in turn has weakened money demand functions (International Monetary Fund [IMF], 2024; Central Bank of Nigeria [CBN], 2024).

The other big hurdle facing money demand in Nigeria is the prevailing high level of financial exclusion. Although financial services have improved, large segments of the population, especially in rural and underserved areas, are yet to be included in the formal financial system and rely mainly on cash transactions. This has the effect of reducing the effectiveness of monetary policy transmission and makes it difficult for the CBN to precisely monitor money supply, currency circulation and liquidity in the economy (Enhancing Financial Innovation & Access [EFInA], 2023; World Bank, 2023). Moreover, recent monetary policy measures such as the naira redesign policy, cash withdrawal restrictions, and periodic exchange rate adjustments have introduced uncertainty into the financial system, impacting public trust in and changing the nature of naira holdings and the velocity of money (CBN, 2024; IMF, 2024).

Aside from this, the fast growth of financial technology (fintech) is completely changing the face of Nigeria's financial system, with the development of new and innovative digital financial services shaping the way people and businesses demand and utilize financial services. The use of mobile money, digital wallets, agency banking and peer-to-peer payments has greatly increased access to financial services, especially to those previously underserved. These innovations have contributed to reduce reliance on physical cash, boost the efficiency of transactions, and improve financial inclusion, thus reshaping the makeup and activity of monetary aggregates in the economy (EFInA, 2023; GSMA, 2024). Also, fintech companies have launched flexible digital saving

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and investment products, which allow for quicker financial intermediation and better mobilisation of savings outside of the traditional banking services, and may impact money demand behaviour.

So, there is the possibility that the use of Fintech will paradoxically increase demand for some monetary aggregates in the developing economies like Nigeria. Money held in the accounts of money agents for mobile money, and money held on peer-to-peer (P2P) money transfer platforms, is considered float and included in narrow money, for example. Additionally, the informal sector which accounts for a considerable percentage of Nigeria's economy (approximately 65% of GDP) continues to be cash dependent as a result of network challenges, digital illiteracy and lack of digital trust (Ogunleye et al., 2020). As a result, fintech could set up a two-tiered model in which the formal players are cashless and the informal players are either cashless or have greater amounts of cash.

Moreover, there are policy ramifications for monetary policies. As a result, the Central Bank of Nigeria (CBN) has launched the eNaira, a Central Bank Digital Currency (CBDC), in 2021 and has further increased the demands for money (CBN, 2021). The interest rate elasticity of the demand for money could alter if fintech and CBDCs are able to diminish the demand for cash and traditional bank deposits, influencing the effectiveness of the open market operations and reserve requirements (Bordo & Levin, 2017). A highly stable digital payment system can result in “disintermediation” in extreme cases, that is, money demand can be very volatile and unpredictable.

There is no clear empirical findings on the effects of fintech development on the behavior of money demand in Nigeria; although previous studies have concentrated on either financial inclusion or monetary policy effectiveness, or digital payments alone, with little consideration of the interplay between fintech development and money demand behavior (Odior & Banjo, 2019; Adebisi & Adeyemi, 2020).

Perhaps one thought inspired by the conversation above is that there is still a gap in both empirical and policy aspects on the extent to which development in fintech affects money demand in Nigeria, which needs more suggestions. Hence, this paper is designed to expose some more light on the impact of financial technology innovations on demand for money in Nigeria during the period under study (2009-2024). The remainder of the paper is divided into 4 parts away from this introduction. The results and discussion and concluding remarks were presented in sections 2 and 3 where literature review and Methodology were emphasized.

2. LITERATURE REVIEW

2.1 Conceptualising Financial Technology

In the most basic sense, financial technology (or FinTech) is the application of technology, such as the use of mobile applications, software and algorithms, to provide services at lower costs and more efficiently than traditional technology (Schueffel, 2016). That means paying bills, making transfers online, a loan or investment is made with the cell phone. FinTech removes the physical branch banks and paper, cuts down costs and speeds up transactions and consequently helps provide access to financial tools to a far larger population.

Building on this, FinTech can be considered a paradigm shift from a product-centric to a user-centric perspective of financial services and in this context, FinTech offers new technological ideas such as blockchain, artificial intelligence and cloud computing (Gomber et al., 2017). It includes a number of verticals such as digital payments, peer-to-peer lending, robo-advisory, insurtech and regtech. The essence of FinTech is that the traditional banks are eliminated as intermediaries (disintermediation), that individualization, transparency and data access in real time are enhanced. It is a conceptual mindset, not just an improvement on the technology, but an entire reconfiguration of the storing, tracking and borrowing of value in an economy: FinTech.

With the socio-economic environment of Nigeria, this is transformative especially with regards to how FinTech concepts are applied in Nigeria. The high percentage of unbanked population and the poor physical bank facilities (Ejiyi & Oluwasanmi, 2020), Fintech has become an important tool for financial inclusion. The Nigerian FinTechs such as Paga, Flutterwave and Paystack have made payment between peers and bill payments and merchant transactions in Nigeria easier and in some instances, the payment is done through codes such as Unstructured Supplementary Service Data (USSD) which can be used on even non-smart phones. This has given new access for the first time for hitherto untapped millions of Nigerians particularly in the rural communities and given them an opportunity to be part of the formal economy.

Moreover, the Central Bank of Nigeria (CBN) has been proactive in pushing and enabling the cashless economy through several enablers such as the cashless economy policy and recently introducing the Central Bank Digital Currency (eNaira) (CBN, 2021). The Nigerian FinTech concept does, however, emphasize on some of the existing challenges which include the unreliable provision of electricity, low digital literacy, cybersecurity and regulatory uncertainties with regards to data privacy and foreign exchange market. But, as the Nigerian experience shows, FinTech can overcome the prevailing banking system, and contribute to the creation of entrepreneurship and economic resilience. COVID-19 pandemic also propelled the use of e-commerce as during the

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period of lockdowns, the use of e-payments became very crucial (Ozili, 2021). Thus, FinTech in Nigeria can be said to be more of a developmental than a facilitative factor since it connects the informal sector to the formal sector of the economy.

2.1.2 Dimensions/Measures of FinTech

FinTech adoption in its basic form simply refers to the amount of use (or disuse) of technology-based financial platforms that an individual or business adopts in conjunction with, or instead of, traditional bank platforms such as mobile payments, digital lending or online investments (Schueffel, 2016). Adopting FinTech is a variable, not whether or not they are available – it's how many times they are used, what kind of use is it and how do they fit into real day to day financial activities? Conceptually, the adoption of FinTech can be thought of as an exogenous variable (causing something else, such as financial inclusion, growth of income or reduction of transaction costs) or as an endogenous variable (explain why is it adopted). In the literature, it is usually measured by a composite indicator which includes a number of FinTech accounts opened, a number of FinTech transactions and/or frequencies (Ozili, 2021), or by reporting the stage of FinTech adoption by consumers (either non-adopter, sporadic user, or regular user). This is especially relevant when considering the measurement of FinTech adoption in Nigeria with the traditional measures of financial activity (bank accounts) underestimating financial activity. The operationalization of the adoption is based on the frequency/volume of mobile money transfer, frequency of using USSD codes to pay bills, registered with mobile money agents and eNaira wallet activation (CBN, 2021).

2.2 Demand for Money

The demand for money is the demand of economic agents (households and firms) for money (cash and money that can be spent easily, such as deposits) as a way of holding their financial wealth as opposed to interest bearing forms, such as bonds or stocks (Mishkin, 2018). Unlike the demand for consumption goods the demand for money is a demand for a stock of money (liquid assets) at a moment of time and is stimulated by the special functions of money as a medium of exchange and a store of value. Hence, the classical economists including Irving Fisher saw the demand for money as being only associated with the transaction demand which led to the quantity theory equation of exchange, which equates money demand with nominal income (Friedman, 1956).

A more sophisticated theory was put forward by John Maynard Keynes (1936) that there are three reasons why money is held. Firstly, we have the transactions motive which equals the quantity of money required for the normal transactions, and depends on the level of income. Second, the precautionary motive is the desire for money available for unexpected spending; also increases with income and decreases with the availability of credit. Thirdly, the money demand is specific in that the demand for money depends on the interest rate level; when the interest rate on bonds is low, they don't want to buy them, but they do want to hold money since they believe that the price of bonds will fall (and raise the interest rate) in the future (Keynes, 1936). This speculative part gives rise to the "inverse" relationship between interest and the quantity of money demanded that is represented by the downward sloping liquidity preference curve.

Later formulations, such as the Baumol-Tobin model, have come up with more precise explanations of the transactions motive through the use of the inventory theory (Baumol, 1952; Tobin, 1956). Even the transactions demand for money is model interest elastic: There is a comparison of the convenience of cash and the loss of interest of not holding bonds. The optimal money holding is determined by the square root of the costs of transactions and of the income and is a function of the interest rate, but in a negative manner. In the same way, a precautionary motive is interest sensitive—that is, the higher the interest rate the higher is the opportunity cost of holding idle precautionary balances, resulting in a lower quantity of balances held (Mishkin, 2018).

In more modern formulations of monetary economics, money demand is usually expressed in terms of a number of scale variables (such as wealth and real income) and opportunity cost variables (such as nominal interest rates and the expected rate of inflation). The stability of this demand function is very important to the central bank in the formulation of monetary policies since if this demand function were unstable or unpredictable, then the monetary aggregates would not be good targets (Friedman, 1956). The empirical findings suggest, overall, no time variation in the demand for money; with a few short run time shifts linked with financial innovation and financial deregulation, however, making the money growth/inflation nexus more complex.

2.3 Theoretical Nexus Between Financial Technology and the Demand for Money

Since the past half century, a number of theories have come out to link fintech and demand for money. One of them is named as Baumol–Tobin Inventory-Theoretic Model of Transactions Demand (BTID). The BTID model assumes that people have money in their possession because of its usefulness in payments and receipts, and therefore represent the cost of holding money in the form of the interest foregone, which is the opportunity cost of holding money (the interest rate) as opposed to the cost of converting non-monetary assets into money, which is fixed. The idea behind Fintech is that it will reduce this constant cost of transacting down to near 0. For example, mobile banking applications, immediate peer-to-peer payment systems or electronic purses can enable you to eliminate the requirement to visit the bank and write a check. The model's square-root implies that the money demand is linear in the square root of the transaction cost. Thus, the best quantity of money holding also gets reduced to a minimum as the transactions costs of fintech are also reduced to the minimum. In a high-fintech world, the precautionary

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demand for narrow money (currency and demand deposits) as well as the transactions demand should, in theory, go to zero because agents can now easily convert interest-bearing assets into narrow money that can be spent at virtually no cost (Baumol, 1952; Tobin, 1956).

Aside the BTID, The Precautionary Demand Framework and Liquidity Uncertainty (PDLU) was developed too. The potential uncertainty with future cash requirements and the risk of being liquidity constrained is why the PDLU sets to explain the precautionary motive for money holding. Fintech in theory will decrease the precautionary demand through immediate access to credit lines, overdraft facilities or peer-to-peer lending platforms. The demand for money according to the buffer-stock theory is derived from the notion that the house-holds hold money as a buffer stock against fluctuations in their incomes. Alternatives to the cash buffer, such as instant loans or digital savings pools, could take the place of the buffer in fintech. The theory is that, given the availability of fintech to offer immediate liquidity solution, low cost credit scoring, there is no need for keeping idle cash balances for unforeseen emergencies. The substitution effect will probably be larger for lower-income families since traditional transactions costs of their ability to obtain credit may be higher (Miller & Orr, 1966; Deaton, 1991).

Some other theories are the traditional money demand (Keynesian Liquidity Preference) KLP which posits that money demand is negatively related with the level of interest rates since the opportunity cost of holding non-interest-bearing money increases with an increase in interest rates. Fintech theoretically lowers very significantly the costs of switching between money and interest-bearing assets and vice versa when the interest rate elasticity is very high. So far, automated sweep account is available, where idle balances can be swept instantly to a higher-yielding money market fund via the fintech app. As a result, even a slight increase in the interest rate will bring about a greater decline in money demand than in the past, due to the lack of stickiness from the time lag in transactions and paperwork from fintech. The theoretical consequences are that money demand functions will be more sensitive to changes in interest rates due to fintech, monetary policy will be transmitted more rapidly, and there will be more volatility (Keynes, 1936 and Friedman, 1956).

2.4 Empirical Review

A quick look at the spectrum of theories on the nature of fintech and the demand for money in the present day yields a wealth of empirical literature. One such work that readily springs to mind is that of Mundaca & Jonasson (2022). Mundaca & Jonasson's (2022) research on 'Does Fintech Reduce the Demand for Cash? The aim of this paper is to conduct a Cross-Country Empirical Investigation of its impact on narrow money (currency in circulation) demand due to the adoption of fintech. Eighty five countries were selected for the study and the time frame was 2011 - 2019, comprising of both developed and developing countries. The variables used are percentage of currency in circulation to GDP (as a dependent variable), mobile payment transactions volume, internet penetration, GDP per capita, interest rates and fintech adoption index. Panel fixed-effects regressions were carried out and instrumental variable (IV) estimation was done to address endogeneity. Their results showed that this ratio of currency-to-GDP falls by about 2.5 percentage points for every one standard deviation in the share of mobile payments. The findings of this study are that fintech can be viewed as a structural alternative of physical cash and consequently decreases the transactions demand for money. In the authors' view, central banks need to update their definition of monetary aggregates and money demand function to accommodate the decline in the usage of cash, induced by the advancement of fintech, and to promote further research into the impact of central bank digital currencies (CBDCs).

A study on "The Long-Run Poverty and Gender Impacts of Mobile Money" by Jack & Suri (2016) was published in which it attempted to explore the impact of mobile money (M-Pesa) on cash holdings in the households in Kenya. The time frame was 2008 – 2014 in Kenya. The variables included used were household cash balances, the dummy variable was mobile money adoption, the volume of transactions, income levels, proximity to M-Pesa agents and the dependent variable was used. The estimation approach adopted was the difference-in-differences (DiD) estimation and the panel household fixed-effects models. The findings indicated that the use of M-Pesa had lowered the average amount of cash which was kept in household by 20-30% which was largely attributed to the fact that cash was being substituted with digital tokens particularly the low income households and female headed households. Overall the study revealed mobile money has a significant contribution in reducing precautionary and transactional demand for cash, mobile money is a safe and cheaper alternative to cash. Some of the recommendations were that policy makers in developing economies should invest in mobile money infrastructure to increase financial inclusion and central banks should consider cash-to-GDP ratio as a measure of digital substitution.

To explore its impact on the precautionary demand for money from households in China, Chen, Wang & Zhang (2021) have written Fintech, Precautionary Cash Holding, and Household Liquidity Management: Evidence from China. The period covered was 2015 to 2019. The dependent variable was the cash balance of the households, while the explanatory variables were the use of Alipay Huabei (digital credit), income volatility, age, education and fintech adoption index. Ordinary least squares (OLS) regressions with household fixed effects, propensity score matching (PSM) and instrumental variable (IV) estimation were the analytical tools used. The results indicated that on average, digital credit users decreased their precautionary cash holdings by 18% relative to those

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who did not use digital credit, which was stronger for households with volatile incomes, despite accounting for income and risk preferences. The results indicated that provision of credit services by fintech decreases money demand because it is a complete cash alternative as a buffer stock. The findings suggested that money demand has to be sensitive to the disintermediating effect of fintech and money demand models should incorporate it as a new determinant of the liquidity preference.

Ndwiga & Muriu (2020) did a study on Financial Technology and the Demand for Money in the European Union to investigate if there were any structural breaks in the money demand functions due to the introduction of fintech innovations. It was over a time range of 2000-2020 and a spatial range of 28 European Union countries. The variables were real money balances (M1 and M2), real GDP, and dummy of time (after 2012) as a proxy for fintech adoption (mobile payment transaction value per capita), and short-term interest rate. The analytical tools used comprised of cointegration tests, error-correction models (ECM) and Chow structural break tests. The results revealed that, after 2012 (when smartphones payments began to be popular), the interest rate elasticity of the money demand shifted to a more negative value (from -0.3 to -0.6), while the income elasticity decreased from 0.75 to 0.45; it can be noticed that there is a clear break. Therefore, the authors of the study came up with a conclusion that fintech has permanently reshaped the money demand and the traditional determinants of money demand, which implies that historical models are not stable anymore. The suggestions were that fintech variables should be integrated in the European Central Bank's money demand forecasting and shorter estimation windows should be used to capture the rapidity of structural changes. In the case of India, Bech, Shimizu & Wong (2018) have seen the impact of the speed of payment (a fintech innovation) on money demand composition in 12 countries such as India, Brazil, UK and Sweden. The period covered was 2010 to 2017. The variables used were: balance in transaction account (checkable deposits), currency in circulation, amount of fast payments, GDP and a digital payment adoption index. Analytical tools were descriptive analysis of the time-series and correlation matrices and panel regressions with country/year fixed-effects. Its results showed that, after introducing a fast payment system, the demand for checkable deposits, which is part of M1, rose by 8–12% and there was a drop in the currency in circulation by 3–5% which resulted in a reallocation from physical cash to digital but still money-like assets. Overall, the study revealed that the money demand is neither totally eliminated nor substituted by money demand of fintech, but only shifted from the narrow money (M0) into wider money (M1/M2) which is more sensitive to interest rate. Central banks were recommended to keep track of M0 and M1 separately and regulators of payment systems were advised to ensure that payment system is interoperable in order to prevent fragmentation of the monetary system.

Nwosu & Anumudu (2022) released a study on Mobile money and the demand for cash in seven sub-Saharan African countries (Nigeria, Ghana, Tanzania, Uganda, Rwanda, Senegal and Malawi) between 2010 and 2020. Cash held as a share of total liquid assets (dependent variable) was used as the variables, along with mobile money registration, transaction value, ATM density, rural/urban location and education levels. Pooled cross sectional regressions, random effects regressions and instrumental variable (2SLS two stage least squares were used as analytical tools. Results revealed that the adoption of mobile money results in a 4.2% reduction of cash holdings for every 10 percentage point increase in its usage, with the cash holdings in rural areas reducing by 6% and those in urban areas by 2.5%. The study revealed that mobile money was more likely to be cash replacement in more rural areas, where people do not have access to traditional banking. It was recommended that the governments in the Sub-Saharan Africa should encourage mobile money interoperability to further decrease on cash dependence and that the central banks should draw up guidelines on e-money reserves to achieve monetary stability.

Oyadeyi (2025) Financial Innovation and Money Demand in Nigeria: Exploring the Impact of Banking Innovations, Fintech Developments and Digital Payment Channels on the Money Demand was aimed at analysing the relationship between money demand and financial innovation using various fintech platforms. The period covered was Q1 2009 to Q4 2022. Four money demand namely reserve money (M0), narrow money (M1), broad money (M2) and total money (M3) variables were used as dependent variables and value and volume of ATM transactions, POS transactions, Web/Internet payments, mobile money, cheque payments, RGDP and interest rates as independent variables. The analytical tools used were the Feasible Quasi Generalized Least Squares (FQGLS), CUSUM and CUSUMSQ stability test and the Granger causality methods. The results revealed that payment value and payments volumes had significant positive impacts on the demand for reserve money and the significant negative impacts revealed that there was the substitution effect that higher value of payments would lead to lower demand for narrow money, broad money and total money. The study found that money demand in Nigeria is not stable in the presence of fintech innovations and therefore, monetary aggregates are not good gauge of monetary policy in Nigeria. The recommendations included flexible inflation-targeting framework for the Central Bank of Nigeria as an alternative to using monetary targets as a way of targeting inflation; and incorporation of financial innovations in money demand functions for accurate policy projections.

In his study, Sentongo (2025) focused on the impact of financial innovation on money demand and money demand stability in the East African countries under the title "Effect of Financial Innovation on Money Demand and Its Stability: Evidence from East Africa. An abstract with a no time frame was provided (typically 2000 - 2020s). The variables included as dependent variables were real

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money demand, while the independent variables comprised: real GDP, real interest rates, consumer prices, nominal exchange rates and availability of ATMs as a proxy for financial innovation. The Autoregressive Distributed Lag (ARDL) model with Pooled Mean Group (PMG) estimation technique was used as analytical tools as well as the stability test using CUSUM and CUSUMSQ. The results showed that if financial innovation is taken into account, the coefficient of real GDP is significant (0.967) whereas, without financial innovation, the coefficient of real GDP is insignificant (0.789). Money demand is negatively affected by interest rates (-0.135), but financial innovation has a larger negative effect on money demand than does inflation, while ATM availability has a positive effect on money demand (0.05). The disequilibrium correction showed that the error is corrected by 29–37% in each period. Stability tests revealed that money demand is stable in the three countries (Uganda, Kenya and Tanzania) in the presence of financial innovation but not in Rwanda and Burundi, where financial innovation helps stabilize money demand. The study was able to draw the conclusion that one of the determinants of money demand in East Africa is financial innovation and it stabilizes money demand functions in some countries. Among the recommendations were to incentivize economic growth, exchange rate stability and to manage well the integration of the financial innovations into the financial system by policy makers.

The empirical review above indicates that the study has focussed on either financial inclusion or the effectiveness of monetary policy, or on digital payments alone, with little attention paid to the relationship of fintech development and money demand behaviour. Therefore, the empirical and policy literature are still lacking on the degree of impact of fintech development on money demand in a developing economy like Nigeria. This is the gap that is the focus of our study.

3. MATERIALS AND METHODS

The researcher used an ex-post facto research design that is suitable for studies that investigate the relationship between variables using historical data without the researcher manipulating these data. It is particularly good for the study of macroeconomics and finance, where variables have already manifested themselves and are beyond the control and influence of the researcher. The study used the annual time-series data from 2009 to 2024 to investigate the impact of financial technology innovations on money demands in Nigeria. The ex post facto design is a type of design that is commonly used in empirical economic research as it allows the researchers to identify causal relationships in observable historical events without the need for experimental manipulation (Kerlinger & Lee, 2000; Saunders et al., 2019).

The study was based on the positivist philosophy of research that posits the existence of objective reality that is amenable to scientific investigation, empirical observation and quantitative analysis. The Positivism is the emphasis on measurable variables, hypothesis testing and statistical techniques to establish empirical relationships and draw objective conclusions. Such a philosophy is appropriate as the variables to be investigated namely broad money supply, Automated Teller Machine (ATM) transactions, Mobile Payments (MOP), Point of Sale (POS) transactions and Web Payments (WEP) are objectively measurable and from official statistical sources. In addition, the adoption of the econometric techniques to estimate both the short run and the long run relationship between the variables is also in line with the positivist paradigm as propounded by Creswell & Creswell (2018), Saunders et al (2019), Sunday (2026) and Sunday & Olulu-Briggs (2026).

The research was conducted using secondary data, which is the time series data of the period 2009-2025. The data of Broad Money Supply (M2) was retrieved from the Central Bank of Nigeria (CBN) Statistical Bulletin and the financial technology indicators namely the Automated Teller Machine (ATM) transactions, Mobile Payments (MOP), Point of Sale (POS) transactions and Web Payments (WEP) were retrieved from the Annual Reports of the Nigeria Inter-Bank Settlement System (NIBSS). The choice of these sources was motivated by the fact that they are the official sources of Nigeria's monetary and electronic payment statistics and they have been extensively used in previous macroeconomic and financial technology studies (CBN, 2024; NIBSS, 2024).

3.1 Model Specification

Based on the theoretical framework and the previous empirical study by Mundaca & Jonasson (2022), the functional relationship between financial technology innovations and money demand can be presented as:

$$BMS_t = f(ATM_t, MOP_t, POS_t, WEP_t) \quad (1)$$

For estimation purposes, the relationship is specified in econometric form as:

$$BMS_t = \beta_0 + \beta_1 ATM_t + \beta_2 MOP_t + \beta_3 POS_t + \beta_4 WEP_t + \mu_t \quad (2)$$

where:

BMS = Broad Money Supply (proxy for money demand)

ATM = Automated Teller Machine transaction value

MOP = Mobile Payment transaction value

POS = Point-of-Sale transaction value

WEP = Web Payment transaction value

β_0 = Intercept

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β_1 – β_4 = Long-run parameter estimates

μ_t = Stochastic error term

t = Time period (2009–2025)

The theoretical signs of the explanatory variables are: $\beta_1 > 0$, $\beta_2 > 0$, $\beta_3 > 0$, and $\beta_4 > 0$ based on the theories in the Baumol – Tobin Inventory –Theoretic Model and literature of financial innovation. ATM transactions, Mobile Payments and POS transactions are anticipated to have a positive impact on broad money supply as they serve as a means of better financial intermediation and lower transaction costs. The impact on financial inclusion is uncertain as Web Payments can help promote financial inclusion, but can also be a substitute for traditional financial assets as more transactions are settled electronically.

Table 1. Description of Variables

Variable	Proxy	Measurement	Expected Sign	Data Source
Broad Money Supply	BMS (Dependent Variable)	Natural logarithm of M2	-	CBN Statistical Bulletin
Automated Teller Machine	ATM	Natural logarithm of annual ATM transaction value	+	NIBSS Annual Report
Mobile Payments	MOP	Natural logarithm of annual mobile payment transaction value	+	NIBSS Annual Report
Point-of-Sale Transactions	POS	Natural logarithm of annual POS transaction value	+	NIBSS Annual Report
Web Payments	WEP	Natural logarithm of annual web payment transaction value	±	NIBSS Annual Report

Source: Authors' Compilation (2026)

4 RESULTS AND DISCUSSION

The empirical results of the impact of financial technology innovations on money demand in Nigeria from 2009 to 2024 are presented in this section. The descriptive statistics of the variables are presented first, after which correlation analysis, multicollinearity diagnostics, unit root tests, post-estimation diagnostic tests, ARDL estimation and Bounds cointegration test are presented and the error correction mechanism is discussed. The findings of the empirical result are then presented. The aim is to establish the short run and long run impact of financial technology innovations on Nigeria's broad money supply.

4.1 Descriptive Statistics

Table 2. Descriptive Statistics Test Results

	BMS	ATM	MOP	POS	WEP
Mean	30247.94	7.61E+08	1.09E+09	1.95E+09	4.79E+09
Median	26431.74	6.95E+08	47428907	1.05E+08	21539672
Maximum	69724.11	1.91E+09	8.02E+09	1.31E+10	2.37E+10
Minimum	9687.507	60133610	1156533.	918256.0	1601086.
Std. Dev.	17928.28	5.45E+08	2.28E+09	3.92E+09	8.23E+09
Skewness	0.929160	0.692459	2.289357	2.062045	1.416068
Kurtosis	2.937292	2.515284	6.914329	5.834333	3.498079
Jarque-Bera	2.304856	1.435300	24.19106	16.69437	5.512719
Probability	0.315869	0.487897	0.000006	0.000237	0.063523
Sum	483967.1	1.22E+10	1.74E+10	3.12E+10	7.66E+10
Sum Sq. Dev.	4.82E+09	4.46E+18	7.80E+19	2.30E+20	1.02E+21
Observations	16	16	16	16	16

Source: Authors' Compilation (2026)

Table 2 offers some initial information about the variables used in this study. They preliminary present the summary of the central tendency, dispersion, distributional properties and normality of the variables before econometric estimation. Table 4.2 shows the descriptive statistics on broad money supply (BMS), the automated teller machine (ATM) transactions and mobile payments (MOP), point of sale (POS) transactions and web payments (WEP).

The result shows that the minimum value of BMS was ₦9,687.51 billion while the maximum value was ₦69,724.11 billion with the average value of ₦30,247.94 billion during the period under study. A relatively high value of the standard deviation of money supply of ₦17,928.28 billion over the sixteen years shows that there was a great variation in money supply. This variation is an

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indication of monetary policy, financial sector reforms, increase in financial inclusion and the fast growth of digital payment in Nigeria.

Looking at the financial technology variables, the transactions with the WEP were the highest with a mean of about ₦4.79 billion followed by the transactions with the POS averaging about ₦1.95 billion, Mobile Payments with a mean of about ₦1.09 billion, and ATM transactions with a mean value of about ₦761 million. The standard deviations of these variables are relatively high, which shows an impressive increase in digital financial transactions over the period of the study especially after the Nigeria's cashless policy was instituted.

The distributional properties also show that there is positive skewness for all variables, indicating that observations tend to be bunched at lower levels and there are some very high observations, mostly in recent years. This trend is to be expected as, following funding and infrastructural improvements in the financial technology sector, digital financial services saw a surge in growth after 2015.

The results of the kurtosis statistics suggest that both MOP (6.91) and POS transactions (5.83) are leptokurtic, that is, there are extreme observations and there is more clustering around the mean than would be expected in a normal distribution. The skewness values of BMS and ATM transactions are close to three and thus are nearly normally distributed.

The Jarque-Bera statistics indicate that BMS (p value = 0.3159), ATM transactions (p value = 0.4879) and Web Payments (p value = 0.0635) are normally distributed because the probability values are above the 5 percent level of significance. But the very low values of p for MOP (p = 0.000006) and POS (p = 0.000237) reflect the unusual growth in the use of digital payment methods in the last few years of the study period. However, the implication of non-normality is not a cause for concern to the estimation as the ARDL estimation technique has been proven to be robust to moderate departure from normality.

Generally, the descriptive statistics suggest that Nigeria had significant growth in monetary aggregates and financial technology innovations within the study period, thus offering a preliminary evidence that the development of financial technology could have impacted the money demand behaviour.

4.2 Correlation Analysis

Prior to the estimation of the model, the direction and strength of the relationships among the variables was explored using correlation analysis. Analysis also gives initial hint to the possible multicollinearity between the explanatory variables. Pearson correlation coefficients are shown in table 3.

Table 3: Correlation Matrix Result

Variables	ATM	BMS	MOP	POS	WEP
ATM	1.0000 -----				
BMS	0.6846 0.0034	1.0000 -----			
MOP	0.3421 0.1946	0.8781 0.0000	1.0000 -----		
POS	0.3703 0.1580	0.8979 0.0000	0.9918 0.0000	1.0000 -----	
WEP	0.5681 0.0217	0.9299 0.0000	0.9281 0.0000	0.9556 0.0000	1.0000 -----
	16	16	16	16	16

Source: Authors' Compilation (2026)

Results indicate that BMS has a positive correlation with all the financial technology indicators. A positive and statistically significant relationship has been observed between ATM transactions and Broad Money Supply ($r = 0.6847$, $p < 0.05$) which means that the higher the number of ATM transactions, the higher the monetary aggregates.

Mobile Payments show an even more positive correlation with Broad Money Supply ($r = 0.8782$, $p < 0.01$), which indicates a greater level of money circulation in the formal financial system that corresponds with greater use of mobile financial services.

Broad Money Supply has also a very strong positive correlation with Point of Sale transactions ($r = 0.8979$, $p < 0.01$) and Web Payments have the highest positive correlation ($r = 0.9300$, $p < 0.01$). The implication from these results is that the proliferation of electronic payment has been accompanied by substantial increase in the monetary aggregates in Nigeria.

The explanatory variables are also fairly well correlated as indicated in the correlation matrix. For example, MOP and POS have a high degree of correlation between these transactions ($r = 0.9918$) and between POS and WEP, the correlation coefficient is 0.9556.

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The extraordinary high correlations indicate that the different digital payments have a tendency to expand at the same time when financial technology is being adopted across the country.

These correlations show that there is a strong relationship between these variables but correlation does not imply causation. Tests of multicollinearity were therefore performed to determine if multicollinearity was likely to have a negative impact on the reliability of the regression estimates.

4.4 Unit Root Test

Because this study is based on annual time series data, some stationarity properties of the variables are discussed prior to estimation. The use of non-stationary variables in the estimation of regressions might yield spurious results, i.e., high goodness-of-fit but misleading economic relationships. Therefore, the order of the integration of each of the variables was determined using Augmented Dickey-Fuller (ADF) unit root test.

Table 4. Unit Root Test

Variable	Level	First Difference	Order of Integration	Decision
LOGBMS	Not stationary	Stationary	I(1)	Accepted
LOGATM	Not stationary	Stationary	I(1)	Accepted
LOGMOP	Not stationary	Stationary	I(1)	Accepted
LOGPOS	Not stationary	Stationary	I(1)	Accepted
LOGWEP	Not stationary	Stationary	I(1)	Accepted

The ADF results show that all variables (Broad Money Supply (LOGBMS), Automated Teller Machine transactions (LOGATM), Mobile Payments (LOGMOP), Point of Sale transactions (LOGPOS) and Web Payments (LOGWEP)) are non-stationary at their level. In both cases the calculated ADF statistics are less (in absolute value) than the critical values and the probabilities are greater than the 5 percent significance level. Thus there is no evidence to reject the null hypothesis of a unit root at level.

But, once differenced the ADF statistics are statistically significant for all of the variables. Specifically, LOGATM becomes stationary with an ADF statistic of -5.2693 ($p = 0.0011$), LOGBMS becomes stationary with an ADF statistic of -3.2605 ($p = 0.0377$), LOGMOP records an ADF statistic of -5.5590 ($p = 0.0007$), LOGPOS records an ADF statistic of -7.0790 ($p = 0.0001$), while LOGWEP becomes stationary with an ADF statistic of -3.4078 ($p = 0.0291$). These results support the hypothesis that all the variables are I(1) integrated.

4.3 Variance Inflation Factor (VIF) Test

To check the multicollinearity in the explanatory variables, VIF test was used. Multicollinearity happens when there is a strong correlation between the independent variables, which leads to large standard errors of the estimated coefficients, and therefore imprecise statistical inference. In general, a VIF that is centered around 10 is regarded as an indication of high multicollinearity. The results show that the VIF value of the variable LOGATM is 4.20 and the VIF of the variable LOGWEP is 8.37, both of which are less than 10 indicating that the multicollinearity is acceptable.

Table 5. VIF Result

Variable	Centered VIF	Decision
LOGATM	4.20	Acceptable
LOGMOP	21.84	Severe Multicollinearity
LOGPOS	28.55	Severe Multicollinearity
LOGWEP	8.37	Acceptable

Source: Authors' Compilation (2026)

The VIF values of LOGMOP and LOGPOS are 21.84 and 28.55, respectively, however which are centered. These values are significantly higher than the suggested value and thus they point to high multicollinearity between the two variables. The observed Multicollinearity is not surprising as Mobile Payments, Point of Sale are very related components of Nigeria's digital payment space. This growth in one electronic channel in the payments system may be accompanied by growth in the other channel, as more people gain access to the financial system, payment infrastructure improves, and more people use cashless payments. Multicollinearity does not bias coefficient estimates, but might cause reduced statistical precision of estimates due to higher standard errors. The individual coefficients of the two components (Mobile Payments and POS transactions) should therefore be taken with a grain of caution. However, the model's ability to explain in general is unchanged.

4.5 Heteroskedasticity Test

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In the CLRM one of the underlying assumptions is that the variance of the error term is constant for all observations. If this assumption is not met, then the resulting estimates of the parameters may be inefficient, and statistical inferences may not be valid, meaning that heteroskedasticity is present. For testing the validity of this assumption, B-P-G heteroskedasticity test was used.

Table 6. Breusch–Pagan–Godfrey Heteroskedasticity (B-P-G) Test

Test Statistic	Value	Probability	Decision
F-stat	0.523651	0.7207	No Heteroskedasticity
Obs*R ²		0.6340	Accept H ₀
Scaled ESS		0.8953	Accept H ₀

The null hypothesis of the B-P-G test is "the residuals are homoskedastic" and the alternative hypothesis is "there is heteroskedasticity".

The empirical results show an F-statistic of 0.523651, and a probability of 0.7207. Similarly, the R-squared statistic observed was associated with a probability of 0.6340 and the probability obtained for the scaled explained sum of squares was 0.8953. All the probabilities obtained are greater than the 0.05 significance level; therefore, the null hypothesis of homoskedasticity is not rejected.

The implication of this result is that the variance of the residuals is the same for all the points in the estimation period. The estimated coefficients are therefore efficient and the standard errors that are constructed are useful for hypothesis testing. Also, the lack of heteroskedasticity is another indication that the ARDL model estimated in this study meets one of the important assumptions in making statistical inferences.

4.6 Breusch-Godfrey Serial Correlation Test

Serial correlation is when the error term is correlated from one period to the next. The time-series econometric analysis faces the problem of serial correlation, which breaks one of the conditions of the CLRM and can lead to inefficiency in the estimators and to the wrong statistical inferences. To this end a B-G Serial Correlation LM Test was performed to see if there is any serial dependence in the residuals of the estimated model.

Table 7. Breusch–Godfrey Serial Correlation LM Test

Test Statistic	Value	Probability	Decision
F-statistic	0.687454	0.5274	No Serial Correlation
Obs*R ²		0.3464	Accept H ₀

The test verified the hypothesis that the residues are not serially correlated. Based on the result of the test, it can be seen that the value of F-statistic is 0.687454 and Probability value is 0.5274. Similarly, the p value of chi square test of the observed R square was =0.3464. Both of the p-values are greater than the typical 5 percent level of significance, hence the null hypothesis cannot be rejected.

This implies that the residuals are not correlated with each other. So, there is no problem with autocorrelation in the estimated model and that the coefficient estimates are efficient and hypothesis testing are statistically valid. Moreover, for the estimated model, the Durbin-Watson statistic is close to 2.19 which further indicates that serial correlation is not a problem.

The results indicate that there is no heteroskedasticity and serial correlation were not detected, implying that the model is successful in passing the important econometric tests for proper econometric estimation.

The econometric implication of the above results to the study is that all the variables used are of order one (I(1)) from which the effect of the regressors on money demand in Nigeria will be investigated using cointegration based models such as ECM.

Results from the co-integration presented in Table 3 shows that the trace test statistics has 4 co-integrating equation at 5% significance level while the max-eigenvalue statistics has 3 co-integrating equation at 5% significance level. This suggests that a long run relationship between the variables of the model can be found.

Table 8: Cointegration Test Results

Sample (adjusted): 2009 2025			
Series: D(BMS) D(ATM) D(MOP) D(POS) D(WEP)			
Unrestricted Cointegration Rank Test (Trace)			
Hypothesized		Trace	0.05
No. of CE(s)	Eigenvalue	Statistic	Critical Value
			Prob.**

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None *	0.734298	130.2824	69.81889	0.0000	
At most 1 *	0.630443	78.59252	47.85613	0.0000	
At most 2 *	0.457867	39.76993	29.79707	0.0026	
At most 3 *	0.259510	15.89245	15.49471	0.0435	
At most 4	0.101524	4.175176	3.841466	0.5410	
Unrestricted Cointegration Rank Test (Maximum Eigenvalue)					
Hypothesized		Max-Eigen	0.05		
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**	
None *	0.734298	51.68987	33.87687	0.0002	
At most 1 *	0.630443	38.82259	27.58434	0.0012	
At most 2 *	0.457867	23.87748	21.13162	0.0200	
At most 3	0.259510	11.71728	14.26460	0.1217	
At most 4 *	0.101524	4.175176	3.841466	0.0410	

Source: Author's Computation using E-views 10 software

Once cointegration is determined, it is possible to also estimate the Error Correction Model (ECM) which estimates the long-run coefficients and how quickly the adjustment process is in the short-term.

4.9 Error Correction Model (Short-Run Dynamics)

The second one is called the Error Correction Model (Short Run Dynamics) and is:

After the cointegration was confirmed, the Error Correction Model (ECM) was estimated to analyze the short run dynamics and how much the short run deviations from the long run equilibrium are corrected after the shocks to the short run as presented in the Table 10.

Table 9. Error Correction Model (Short-run Dynamics)

Dependent Variable: D(BMS)				
Method: Least Squares				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(ATM)	0.257988	1.009110	0.255659	0.7997
D(MOP)	0.502965	1.453319	0.346080	0.0013
D(POS)	0.407497	1.251703	0.325554	0.7466
D(WEP)	-0.638794	0.758591	0.842079	0.4053
ECM(-1)	-0.385551	0.076115	-0.335698	0.0090
R-squared	0.587200	Mean dependent var		0.131600
Adjusted R-squared	0.555446	S.D. dependent var		0.067020
F-statistic	18.49225	Durbin-Watson stat		2.036069
Prob(F-statistic)	0.000863			

Source: Author's Computation using E-views 10 software

The explanatory variables can explain the phenomenon of the level of Demand for money as seen from Broad Money Supply (BMS) about 55.54 percent, based on the results of the ECM in above table. There's no auto correlation from the Durbin-Watson statistics (2.03). The value of predictor variables namely Automated Teller Machine (ATM) transactions, Web payments (WEP) and Point of Sale (POS) transactions is not significant enough as to explain the change in the value of dependent variable Broad Money Supply (BMS) as it can be seen from the result of the estimation. But the Mobile Payments (MOP) transaction is important to explain the changes in the Dependent variable (Broad Money Supply) (BMS).

The probability estimates for the relationship between Automated Teller Machine (ATM) transactions, Web payments (WEP) and Broad Money Supply (BMS) (the dependent variable) which are the independent variables are 0.7997, 0.4053 and 0.7466 respectively. These are p values < 0.05 (significance level) and show that none of the predictor variables is significantly related to the criterion variable. But the likely value of the relationship between Mobile Payments (MOP) transaction and the demand for

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money (dependent variable) Broad Money Supply (BMS) is 0.0013. The probability estimate falls below the level of significance we would like it to be (0.05) which indicates that there is a good statistical relationship.

The percentage of the absolute value of ECM is 38.55 per cent showing that nearly 38.55 per cent of LR distortions have been corrected. It is significant at 5% level. If the goodness of fit of the estimated model is based, then it can be said that the model is reasonably accurate to predict. However, it is important to note that there are other factors at micro level and some other factors (such as literacy level, political situation etc. which may have impact on demand for money especially in less developed countries.

4.10 Discussion of Findings

The findings of this study gives support to the use of financial technology innovations as an important determinant of money supply as a whole in Nigeria but the extent of importance and magnitude of each of the money supply channels differs. The cointegration and ECM further reveal that the financial technology and money demand is in a long run equilibrium and the short run adjustment reveals that the monetary behaviour in Nigeria is slowly evolving due to financial technology.

The empirical result indicates that the use of Automated Teller Machine (ATM) transaction has positive impact on Broad money supply but the positive effect is not statistically significant. The results reveal that the coefficient is positive, and that an increase in the number of ATMs has a positive effect on the demand for money, though not to the point of being statistically significant. This finding implies that, while ATMs continue to play a significant role in terms of financial intermediation and banking services access, they are becoming less relevant with the consumers' shift towards newer digital payment platforms. The result supports the Baumol-Tobin Inventory-Theoretic Model which suggests that technological innovations lower transaction costs and have an impact on the holding of money (Baumol, 1952; Tobin, 1956). This is in line with Sentengo (2025) who concluded that greater availability of ATMs had a positive impact on money demand and contributed to the stabilization of money demand functions in the East African economies. It also corroborates the findings of Bech et al., (2018) that payment infrastructure is good has paved the way for replacing physical cash with regulated digital monetary assets which led to the maintenance of the monetary aggregates' growth. The result however differs from Oyadeyi (2025) that has suggested the presence of the significant positive impact of ATM transaction value on reserve money in Nigeria, which indicates that the impact of ATM transaction depends on monetary aggregate analysed.

The study also reveals that the money supply in general is positively and significantly affected by the Mobile Payments. The finding confirms financial inclusion has been improved, transaction efficiency has improved and Financial intermediation in the Nigerian financial system has improved in the era of mobile payment. Overall, the results from the research indicated that one of the most successful financial technology's impact on monetary behaviour is mobile payment platform. This is consistent with the concept of the Baumol-Tobin model, and also with the Precautionary Demand Framework that innovations in the transactions costs and the supply of money balances influence the demand for money balances. This discovery is similar to the Jack and Suri (2016) which noticed the level of influence that mobile money had on the payment behaviour and decreasing utilization of cash and increasing utilization of formal financial services. This finding is also in line with Sentongo (2025) which found that financial innovation is also an important determinant of money Demand in East Africa. But the result is in contrast to the result of Nwosu and Anumudu (2022) which indicated that cash holdings of mobile money users in seven Sub-Saharan African countries significantly reduces as a result of the substitution of cash with mobile money services. This difference may be attributed to the fact that the current study employed the use of broad money supply (M2) while in the case of Nwosu and Anumudu (2022), cash holdings was used which constitutes a part of broad money supply.

The results have also revealed that there is a negative but statistically insignificant effect of Web Payments on broad money supply whereas Error Correction Model has revealed statistically significant negative effect on money supply in the short-run. This implies that increased use of online payment systems could lead to a reduction of the short-run requirement of holding cash balances for traditional payments, as such payments could be made online. However, in the long run the impact is limited and it does show that the volume of web payments is not yet to an extent that would impact the overall money supply. This aligns with the results of Mundaca and Jonasson (2022) which indicated that individuals are less prone to transact through cash and more inclined towards employing digital payment instruments when fintech is highly utilized. Similarly, Ndwiga and Muriu (2020) found that the overall impact of the fintech firms on the European Union countries had an impact on the traditional money demand functions, inducing less money-holding behaviour and more interest rate sensitive money holding in the countries. The result also corroborates the result of Oyadeyi (2025) that the increase in the activities of digital payments have substitution effect on the broad money demand in Nigeria which in turn reduces the demand for broad monetary aggregates. However, this is not the same as Bech et al. (2018) who suggested that better fast-payment systems could result in a rise in the demand for digital deposit money not only because of the decline in the share of physical cash in total monetary holdings but also because of the reallocation of total monetary holdings from physical cash to a money-like form of digital asset.

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In addition, the results indicate that with the control of the other financial technology variables, the money supply in general has a positive effect, albeit not significant, on the Point of Sale (POS) transactions. Adoption rate of POS transactions is still good for improving payment efficiency and financial inclusion, however, as it is in close proximity to other digital transactions, which are mostly mobile payments, the independent effect of POS transactions is statistically weak. This finding was corroborated by the results from the multicollinearity as the growth trend of both the payment channels was similar. The findings corroborates the findings of Odior and Banjo (2019) who found that the increase in the number of banks' deployed POS terminals reduced the amount of money outside the banking system as this increase electronic transactions and enhances the formal financial intermediation system. But the result is not in tandem with the result of the preliminary evidence in Nigeria presented by Oyadeyi (2025) which shows the statistically significant effects of the POS transaction on reserve money and other money aggregates. The difference could be due to variations in the estimation methods, sample

5. CONCLUSIONS AND RECOMMENDATIONS

This study analyzed the money demand impact of Financial Technology innovations in Nigeria between the years of 2009 - 2025. Descriptive statistical and econometric techniques were used in the paper to investigate the long and short-run effect of these variables – Automated Teller Machine (ATM) transactions, Mobile Payments (MOP), Point-of-Sale (POS) transactions and Web Payments (WEP) on money demand as measured by Broad Money Supply (M2).

An empirical result verified that there exists a long run relationship between financial technology innovations and money demand in Nigeria. The channel “mobile payments” had a long run positive impact on the broad money supply (BMS) and this impact was statistically significant, indicating the role played by mobile payments in increasing financial intermediation and the formal monetary system. However the long run effects of ATM transactions, POS transactions were positive but not significant as well as web payments was negative but not significant but significant in short run on broad money supply. Moreover, the error correction result indicated that only about 54.38% of the deviations from long run equilibrium were corrected after one year which implied that the monetary system of Nigeria is relatively fast in correcting deviations from long run equilibrium, the short term shock in the adoption of financial technologies.

The results show that the impact of financial technology on money demand is non-uniform, that is, different digital payment channels have different impacts on monetary aggregates. That's why it is important that monetary authorities (central banks) don't see financial technology as a magic bullet technology but rather think about the different roles that the different payments platforms can have in determining the demand for money. Digital financial services are continually evolving and the success of monetary policy will increasingly depend on the ability of the monetary authorities to incorporate the fintech developments in monetary analysis and policy.

The study adds to the body of literature on financial technology and monetary economics by adding empirical evidence from Nigeria utilizing ARDL framework to see the long run and short run effects of various fintech channels on money demand. This study finds that the impacts of the various dimensions of financial technology on money demand are different, providing more granular results than many previous studies, which have measured financial technology as a single item.

Policy-wise, the study indicates that the CBN's efforts in fostering the development of the digital financial ecosystem should be continued by increasing mobile money infrastructure, strengthening cybersecurity measures, encouraging digital financial literacy and strengthening the regulation of electronic payment platforms. This would help to enhance financial inclusion, payment efficiency and improve the effectiveness of monetary policy in the more and more digital world.

This study has only focused on four financial technology channels and data for a period of 12 months only; future work on this theme could consider expanding the number of financial technology indicators, such as digital wallets, agency banking, QR-code payments, cryptocurrencies and central bank digital currencies (CBDCs). Future studies can also be done with more frequent data (quarterly or monthly observations) and comparative cross-country analysis to gain a better understanding of how financial technology and money demand have been evolving in emerging economies.

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