

The potential of digital financial services to enhance remittance flows, financial inclusion and economic growth

Rahji Ohize Ibrahim (Ph.D)

Department of Finance, AL-Hikmah University, Ilorin, Nigeria

Email: ibrahimrahji2010@gmail.com

0000-0002-3329-1081

Abstract

This paper has discussed how digital financial services have potential in promoting remittance flows, financial inclusion, and economic growth in Nigeria. The study was based on Financial Intermediation Theory and Technology Acceptance Model, and the research design applied was cross-sectional survey with primary data gathering involving 137 respondents in Lagos and Abuja through purposive sampling. The descriptive statistics, correlation, and multiple regression methods were used to analyze the data. Results showed that the use of digital financial services has significant and positive impacts on financial inclusion, which explains a great deal of variance in the outcomes of financial inclusion. Remittance flows were also found to have great positive impact on financial inclusion by the recipients. The digital financial services and remittances had an independent positive effect on economic wellbeing, meaning that they are complementary, not substitutes. The paper has concluded that though digital platforms and remittances have the potential to be a transformative source of development, sustainable financial inclusion depends on strong institutional structures, increased digital networks, and increased financial literacy. The recommendations are the focus on rural expansion of digital infrastructure, the creation of meshed financial literacy programs, and the creation of integrated regulatory frameworks that bring digital financial services with remittance corridors to ensure that developmental potentials are maximized.

Keywords: Digital Financial Services, Remittance Flows, Financial Inclusion, Economic Growth

1 Introduction

The remittance situation in the world has experienced transformation on a massive scale in the recent years with the advent of digital financial services that have become a key catalyst of financial inclusion and economic growth, especially in the developing economies (Onwuka and Aniebo, 2025). In 2023, the world experienced some 656 billion dollars worth of remittance flows to low- and middle-income countries, which is a savior to millions of households around the world (Jemiluyi and Jeke, 2024). On the other hand, Sub-Saharan Africa received approximately 54 billion in remittances in the same year, of which Nigeria received almost forty percent or 20.1 billion, making it the leading recipient of remittances in Africa and the sixth in the world. Nevertheless, this number is probably too small because there are still huge amounts of money flowing in informal sectors because of the cost constraint, inability to access formal financial services, and the lack of infrastructure (Onyia et al., 2024).

Even though Nigeria is the largest economy in Africa with a GDP of 477 billion in 2023, the country has an enigmatic financial inclusion problem. The Access to Financial Services Survey

(2023) of the Central Bank of Nigeria (CBN) and EFInA reveals that about 36 percent of adults in Nigeria are financially excluded, which corresponds to more than 38 million without any access to formal financial service (Adedipe and Ogunsola, 2025). This marginalization is especially severe in the rural regions where every 48 percent of the adult population is not connected to banking as compared to 25 percent in the urban regions. The irony is intensely shocking: Nigeria has been getting large amounts of remittance inflows which can be used to boost economic growth, yet much of her population is unable to access and use them in a formal way (Mpofu and Mhlanga, 2022).

Remittances and financial exclusion have an intersection and it is both a challenge and an opportunity. The average transaction cost of sending money to Sub-Saharan Africa through traditional remittance channels, which are dominated by money transfer operators and commercial banks, stands at 7.8%, which is way higher than the Sustainable Development Goal (SDG) of 3% by 2030 (Kolawole, 2025). Nigeria by itself has an average of 6.4 remittance costs which applies to parts of the country some of which have been found to have higher remittance costs of over 10 percent when they have to cover hidden foreign exchange margins (Ifediora, et al., 2022). Such high prices, coupled with the reason of little agent networks in the under-served regions, drive most Nigerians to abuse informal organizations like hawala systems or carry cash across borders by hand, exposing them to very great risks and denying the formal economy access to the much-needed foreign exchange (Onyia et al., 2024).

Make an entry into digital finance. The growth of mobile money transfer systems, financial technology, and electronic payment systems has produced opportunities to transform remittance transfers and financial inclusivity like never before. The fintech sector of Nigeria has grown exponentially with the industry raising more than 1.6 billion dollars in venture capital between 2020 and 2023 (Ononiwu et al., 2024). The value of mobile money transaction increased by 236 percent, N86 trillion to N289 trillion, in both 2020 and 2023, respectively (Nigeria Inter-Bank Settlement System, 2024). OPay, PalmPay, Moniepoint, and Kuda have a combined 40 million users, many of whom were never banked (Adedipe & Ogunsola, 2025).

The digital revolution is in line with the larger trends in the world through the encouragement of cashless economies and digital transformation that are being accelerated by the COVID-19 pandemic (Tay et al., 2022). The pandemic became a turning point, as it compelled people to change their behaviors to be more digital in their payment options and demonstrate how more cash-based systems are vulnerable. In 2021, the first central bank digital currency (CBDC) to be in use in Africa, eNaira introduced in Nigeria, further highlights the interest in the concept of digitalization by the country, although its adoption is still in the early stages, with only 13 million wallets generated by December 2023 (Szennay and Filep, 2024).

Will the digital financial services really help close the financial inclusion divide in a nation where smartphone and internet penetration is at 46 and 55 percent, leaving millions of people without access to digital services (Ifediora, et al., 2022)? To what extent are digital remittance platforms transforming inflows into productive economic activities as opposed to consumption? What should be the regulatory systems to strike the balance between innovation and consumer protection in a country where cyber fraud seriously deprives Nigerians of around N5.5 billion in 2023 (Nnaomah et al., 2024)? Moreover, what can digital financial services do to overcome the infrastructural limitations-poor electricity, substandard internet connection in the rural areas, and low level of digital literacy that limits their presence?

The paper is a critical analysis of how the potential of digital financial services can improve remittance flows, facilitate financial inclusion, and accelerate economic growth in Nigeria. Through the examination of current data, the assessment of currently utilized digital platforms, and questioning the issue of whether digitalization is a radical solution to challenges or a repetition of exclusionary trends in the new form, the research will enter into the discussion of whether digitalization is the transformative solution or is completely repetitive.

2 Literature Review

2.1 Digital Financial Services Usage

Digital financial services (DFS) have completely changed the financial situation of developing economies, providing them with unprecedented opportunities to offer the previously marginalized participants of formal financial systems (Nnaomah et al., 2024). DFS is a wide range of financial services and products that use technology to provide services, such as mobile money, digital wallets, online banking, and electronic payments and fund transfers via mobile phones, the Internet, and agent networks (Adedipe and Ogunsola, 2025). These services have been driven to a certain extent in Sub-Saharan Africa, where the adoption of mobile money has surpassed the penetration of traditional banking to millions of unbanked and underbanked individuals, providing alternative access to financial services (Abdulrasheed et al., 2025).

Mobile money platforms have become the most used type of DFS, and such applications as OPay, PalmPay, Moniepoint, and bank-based mobile applications (such as traditional banks) have become available to transfer funds between peers, make bill payments, and provide transactions to merchants (Mpofu and Mhlanga, 2022). Transactional data indicate that the value of mobile money payments in Nigeria has grown exponentially, whereby the value of mobile money payment in 2020 was N86 trillion and in 2023 the value had risen to more than N289 trillion, which is evidence of the increased number of people using mobile money payments and their frequency of use (Umeaduma, 2025). This has been driven by the better telecommunications infrastructure, falling smartphone prices, regulatory encouragement by the Central Bank of Nigeria, and the behavioral changes precipitated by the COVID-19 pandemic and the need to provide an alternative method of payment without direct interaction (Nkechika, 2022).

DFS usage does not only revolve around mere transfer of funds to include savings mobilization, access to credit and provision of insurance products in a digital form. Research reveals that the propensities of frequent mobile money consumers to hold formal savings accounts and use micro-credit institutions are greater than the ones of non-users (Appah et al., 2023). The efficiency and affordability of receiving remittances have been boosted specifically through the use of digital wallets, alongside services that are offered at comparatively lower exchange rates and lower transaction fees than the work of traditional money transfer operators (Osuma, 2025). Mpofu and Mhlanga (2022) revealed that digital remittance platforms lowered the costs of a transaction by an average of 3.2 percentage points relative to traditional banking services, which could make the final amount of the received benefits larger.

But the import of DFS is not evenly distributed and it also differs according to demographic and geographical lines. The urban population, literate, and young people show much more adoption and usage rate than rural, less-educated, and older people (Adedipe and Ogunsola, 2025). There are still gender inequalities, as the probability of women in Nigeria owning and actively using mobile money accounts 15% lower than that of men due to socio-cultural factors, low digital

literacy, and low smartphone ownership (Umeaduma, 2025). Such patterns of usage highlight why it is essential to not only comprehend access to DFS, but also how diverse population groups use it in depth, frequency, and variety.

2.2 Financial Inclusion

Financial inclusion describes how affordable, suitable, and formal financial services are accessible and used by everyone in the society in particular the marginalized and low-income groups who are historically locked out of traditional banking networks (Umeaduma, 2025). It covers several aspects such as ownership of accounts, mobilization of savings, access to credit, uptake of insurance, and payment services, which collectively allow people to handle the financial risks, accumulate wealth, and be actively involved in the economy (Kaligis et al., 2018). Financial inclusion is a multidimensional concept in the sense that it is not only about access to financial products but also focuses on the active use of financial services, services quality, and the final welfare outcome to both households and businesses (Nkechika, 2022).

Financial inclusion has become a high policy agenda in Nigeria; the Central Bank of Nigeria has set a goal of 20% financial inclusion by 2020, aiming to decrease financial exclusion, which stood at 46% in 2010, but Nigeria has not attained it; by 2023, it has almost 36% of adults without access to financial services (Mishra et al., 2024). The ownership of an account is the initial measure of financial inclusion as it is the entry point to other types of financial services such as formal savings, credit facilities, and insurance products (Ifediora, et al., 2022). According to studies, bank or mobile money account holders are much more likely to participate in precautionary savings, emergency credit, and hassle-free consumption in case of income shock than the financially excluded (Sulaiman et al., 2025).

The changing nature of financial inclusion in developing economies has been transformed due to the change in the traditional brick and mortar banking to online financial channels. Mobile money accounts have been especially revolutionary to the once-unbanked segment of the population, who can access them at low costs, and due to their affordability by geography and the fact that they do not require expensive documentation, as is the case with traditional banking (Ononiwu et al., 2024). Nkechika (2022) show that agent banking networks, and mobile money services have decreased the average distance to the closest financial service point by 8.7 kilometers to 2.3 kilometers in rural areas of Nigeria, which is a significant change in the level of access by the marginalized groups (Kaligis et al., 2018).

Nevertheless, financial inclusion indicators tend to equate between the total number of accounts and those in use, covering up significant difficulties. There is a reason to believe that a significant proportion of registered bank and mobile money accounts in Sub-Saharan Africa is inactive or dormant, suggesting that access does not necessarily lead to meaningful financial use (Mishra et al., 2024). Such a gap in usage points to the relevance of financial literacy, trust in formal institutions, and the affordability of services as an aspect of substantive financial inclusion with superficial account registration.

2.3 Economic Development

Economic development is not limited to the small aspect of GDP growth but it encompasses structural changes that help increase the standards of life, decrease the level of poverty and increase human potential within the society (Erumban and de Vries, 2024). Development includes both qualitative and quantitative changes such as industrialization, technology improvement, better health care, education, less disparity, and better institutions in contrast to economic growth which is just a quantitative increase in output (Appah et al., 2023). This difference is important in such a situation as in Nigeria, where strong growth in the GDP was observed in the same timeframe as an increasing unemployment rate, a growing level of poverty, and a growing socioeconomic gap, showing the inadequacy of growth indicators as development indicators (Ezebunwa and Chinaka, 2024).

Remittances have become the side effects but controversial catalysts of economic growth in the recipient nations. Advocates believe that the inflows of remittances stabilize household incomes, fund investments in education and healthcare, induce local consumption, and offer counter-cyclical effects during recession periods (Onwuka and Aniebo, 2025). The Nigerian households that are getting remittances show 23 percentage points improved school enrollment, 18 percentage points improved health spending than the households that are not receiving the remittances, and this indicates developmental externalities that are not directly consumed (Jemiluyi and Jeke, 2024). In addition, remittances have the potential to trigger business because when the recipients use the funds on enterprise-level business ventures instead of consumptive activities, evidence shows that about 15-20% of Nigerian remittance recipients use the funds on business capitalization (Onyia et al., 2024).

However, critics have argued that remittance dependency creates moral hazard, decreasing the levels of labor participation and creating consumption-based economies that have a low level of productive power (Erumban and de Vries, 2024). Nigeria experience exemplifies this tension: even though the country receives more than 20 billion dollars annually in remittances, 33 percent poverty rates and 5.3 percent unemployment rates are still evident in the country, which begs the question whether remittances have a real effect on development or a theoretical effect (Kolawole, 2025). Financial inclusion turns out to be the key mediating variable between the effect of remittances on development. The use of formal financial services by the remittance recipients leads to the transfer of money in the form of passive consumption to active savings, investment, and asset accumulation, which intensifies developmental multipliers (Osuma, 2025). Electronic monetary systems enhance the mechanism by decreasing transaction expenses, permitting micro-savings, and granting credit access, turning remittance flows into development drivers, as opposed to transfers of welfare.

2.4 Remittance Flows

Remittances are financial flows in another form of money transferred by migrants to their home countries and they form one of the most consistent and good sources of foreign financing of the developing economies sometimes to an extent that it overtakes foreign direct investment and official development assistance together (Jemiluyi and Jeke, 2024). These cross-border financial flows have proved to be incredibly resilient even when global economy has been affected, and it has declined only by 1.7 percent in the 2008 financial crisis relative to the 40 percent dismantling of FDI, which ensures that they are counter-cyclical and can be drawn upon as buffers during economic disruptions (Kolawole, 2025). In the case of Nigeria, remittances have assumed a new form becoming about 4-6 percent of GDP per year and a vital source of foreign exchange in a

country that is always struggling with balance of payment deficits and currency fluctuations (Onyia et al., 2024).

Remittance corridor architecture has significant impacts on the flow dynamics, costs, and development. The major remittance channels in Nigeria have their origin in the United States, United Kingdom, Italy, Spain and to a greater extent the Middle East and the diaspora communities of these regions keep up with their kinship responsibilities through constant transfer (Onwuka & Aniebo, 2025). The remittance landscape is however split into two categories (formal channels) banks, money transfer operators such as Western Union and MoneyGram and new fintech platforms (as well as informal mechanisms) such as hawala networks, courier services and hand-carried cash. Informal estimates indicated that informal channels represent 35-50% of the total amounts of remittance to Nigeria which is fuelled by excessive charges of formality, cumbersome documentation, rural remote accessibility, and parallel exchange rate premiums that make unofficial routing economically attractive (Jemiluyi and Jeke, 2024).

Transaction costs are still the Achilles heel of the formal remittance systems, and the average cost of sending 200 dollars to Sub-Saharan Africa is still 7.8 per cent - more than twice the Sustainable Development Goal of 3 per cent (Mpofu and Mhlanga, 2022). These expenses include direct fees, which are paid by sending and receiving institutions, exchange rate margins, which are usually not made known to senders and intermediary fees in respondent banks. Peer-to-peer, blockchain-based, mobile money integration, and the removal of middlemen are all aspects of digital financial services that promise disruption through the exploitation of competitive foreign exchange markets (Adedipe and Ogunsola, 2025). However, regulatory fragmentation, interoperability issues and the last-mile problem of translating digital receipts into practicable local currency remain limiting the transformative potential of digital channels, especially in Nigeria where cash dependency is still being sustained in Nigeria by digitalization rhetoric (Tay et al., 2022).

2.5 Theoretical Review

2.5.1 Financial Intermediation Theory

Financial intermediation theory, which was initially developed by Gurley and Shaw (1960) and also later refined by Diamond (1984), holds the view that there are financial intermediaries to help eliminate market frictions such as information asymmetries, transaction costs, and liquidity constraints that hinder the efficient allocation of capital between savers and borrowers (Kaligis et al., 2018). The traditional intermediaries, which are commercial banks, microfinance institutions, and insurers, play vital roles of transforming maturity, risk diversification, delegated monitoring, and facilitating payments which facilitate productive investment and economic growth (Umeaduma, 2025). The theory is especially relevant to the analysis of how digital financial services transform the intermediation in the situations where the density of the traditional banking infrastructure is low or the costs are prohibitive.

Digital financial platforms in the Nigerian context operate as neo-intermediaries, linking remittance senders in remote countries to recipients in the domestic country and at the same time direct such flows to productive economic purposes, by linking savings, credit and investment products (Appah et al., 2023). The digital platforms have the benefit of deploying mobile technology and agent networks to make intermediation very inexpensive, thus democratizing financial services to previously locked-out populations at economically feasible prices, unlike the

traditional banks, which are limited to physical branch networks and large operational overheads (Ononiwu et al., 2024). Mobile money operators, fintech applications, and digital wallets offer traditional intermediation services - this includes aggregating small deposits, filtering borrowers using alternative data analytics, and offering payment infrastructure - but without any geographical and time constraints that are built into brick-and-mortar banking (Abdulrasheed et al., 2025).

The theory throws light on how remittance flows when introduced through digital intermediaries and not informal networks or rudimentary cash-out services will become sterile transfers and be transformed into developmental capital (Jemiluyi and Jeke, 2024). With digital platforms, remittance recipients can concurrently receive money, deposit amounts into interest-earning savings wallets, access micro-credit according to transaction records and buy micro-insurance products all in integrated ecosystems that cut friction costs and behavioral opportunities (Osuma, 2025). This is the efficiency of intermediation that can directly increase financial inclusion by making formal services available and affordable and at the same time trigger economic development, better capital allocation, entrepreneurial financing services, and consumption smoothing mechanisms to stabilize household welfare when income varies (Tay et al., 2022).

2.5.2 Technology Acceptance Model

The Technology Acceptance Model is a powerful theoretical framework that can be used to explain the level of adoption and usage of digital financial services by individuals in a technological setting due to its extensive validation in technological settings (Ibrahim, 2024). TAM assumes that there are two critical perceptions in determining the technology acceptance: perceived usefulness, the level of belief that an individual hold about how a technology can be used to improve his or her task performance or accomplishment, and perceived ease of use, the degree to which the technology is seen as intuitive and effortless to use (Thanthsarani and Jianquo, 2022). All these cognitive evaluations are mediated by external factors such as system design, user traits, and social factors and influence behavioral intentions that eventually determine actual use of technology.

The application of TAM to the adoption of digital financial services in Nigeria demonstrates intricate evidence of the reasons why some populations are moving towards mobile money, digital wallets, and online banking and others are still clinging to cash and informal financial systems although they theoretically have access to these advantages (Ladipo et al., 2021). Messages of perceived usefulness are expressed when there are perceived tangible benefits such as lower remittance costs than their traditional money transfer operators, transaction 24/7 capability that extends beyond the banking hours, reduced travel time and transportation expenses to their physical branches and increased security relative to cash carry-over (Khatri et al., 2020). On the contrary, the perceived ease of use is faced with formidable challenges in the Nigerian settings comprising of low digital literacy, poorly designed interfaces, incompatible with low-literacy audiences, poor telecommunications infrastructure leading to transaction failures, and customer support lacking local languages (Rahaman et al., 2021).

The extensions of the model include the trust as an important add-on determinant which is very important in a financial environment where technology adoption is accompanied by monetary risk (Adedipe and Ogunsola, 2025). The digital financial ecosystem in Nigeria deals with a lack of trust due to high levels of cybersecurity attacks, a wide range of fraud and account hacking, insufficient regulatory consumer protection, and past failures of informal savings systems to

offer trust in non-physical financial structures (Osuma, 2025). Moreover, social factors, such as normative pressure among peers, family approval, and community adoption schemes, have a strong moderating effect on the main relationships of TAM, which explains why the digital financial services do not spread in equal measures across the population despite equal technological access (Mpofu & Mhlanga, 2022). By knowing these perceptual and contextual determinants with the help of TAM, one can determine the barriers to adoption and facilitators that may guide the platform design modification as well as policy intervention to induce faster adoption of inclusive digital financial services.

2.6 Empirical Review

Onwuka and Aniebo (2025) analyzed the effect of digitalization on remittances of Nigerians living in the diaspora using World Bank (1989-2023) data on digitalization, mobile cellular subscriptions per 100 people as a proxy of digitalization. However, contrary to expectations, digitalization portrayed a strong negative impact on the remittances at 10% level of significance due to the failure to adequate penetration of devices at below the critical mass levels. These results indicate that the only technological accessibility that does not imply broad accessibility can result in a paradoxical tightening and not expansion of formal remittance channels in the developing economies.

Kolawole (2025) explored how remittances and fintech affect financial inclusion in Nigeria (1990-2024) by means of the Autoregressive Distributed Lag (ARDL) modeling with World Bank and IMF data. Findings indicated that there were large positive short-run impacts of both remittances and financial technology on inclusion, but no statistically significant long-run effects. The evidence points to the fact that in the absence of effective regulatory frameworks, the growth of digital infrastructure and the development of financial literacy, remittance and inclusion caused by fintechs will be a short-lived and not structurally transformative process in the context of Nigeria.

In their article, Ahmed and colleagues (2025) examined the impact of digital economy on financial flows within Nigeria based on financial inclusion theory and Technology Acceptance Model (TAM) using qualitative research methodology and secondary sources of data. It was found that digital economy innovations had a positive impact on the financial flow through increased efficiency, transparency and accessibility but lack of cybersecurity, infrastructural insufficiency and regulatory discrepancies limited the best results. The analysis suggests enhancing online investment and regulation to achieve as much as possible in boosting the financial flow in Nigeria.

The impact of electronic financial services on the economic growth of Nigeria (2010-2023) is empirically evaluated by Sulaiman et al. (2025) that applies ex post facto design based on the data of the Central Bank of Nigeria, which is analyzed with the help of multiple regression. The findings showed significant positive effects of web-based transactions on GDP ($b=0.134670$, $p<0.05$), whereas POS transactions had positive and not significant effects and ATM transactions had a negative and non-significant effect. Results highlight the lack of infrastructure and

accessibility as limiting the potential full economic growth of electronic payment systems, in spite of web platforms showing catalytic measures.

Appah et al. (2023) examined (2006-2021) the relationship between digital financial services and Nigerian economic development based on Vector Error Correction Model (VECM) with quarterly data of the Central Bank anchored on Technology Acceptance Model. The results indicated that POS and web banking services had significant positive impacts on real GDP whereas the ATM and mobile banking services had positive but not significant impacts. The researchers found that the digital financial services availability and penetration could be enhanced through improved policy frameworks that would increase the real GDP growth in Nigeria.

2.7 Gaps in the Reviewed Literature

Studies primarily makes use of secondary macro-level data, which systematically overlooks the primary micro-level understanding of individual user experiences, adoption barriers and determinants of behavior that define patterns of digital financial services and remittance use. Although academics recognize the theoretical significance of financial inclusion, there is paucity of empirical studies that explicitly test the mediating effects of financial inclusion in defining the relationship between remittances and economic growth in the context of changing digital environment in Nigeria. The existing contradictory empirical results, especially the negative digitalization changes by Onwuka and Aniebo (2025) and the positive correlations by Kolawole (2025), indicate that the suggestions of contextual specifics and methodological issues are still poorly investigated. Additionally, research into specific digital channels remains a short-term approach to studying, instead of assessing integrated platform ecosystems, which are hallmark features of modern fintech settings. The long-term sustainability of digital finance effects is underutilized in scholarly research, especially the difference between short-term spikes and structural changes in long-term financial inclusion processes and long-term macroeconomic effects in the context of the developing economy.

3 Methodology

3.1 Research Design

The present study was based on the cross-sectional survey design to investigate the potential of digital financial services in contributing to the improvement of remittance flows, financial inclusion, and economic growth in Nigeria. The design facilitated the primary data collection at one point in time, which captured the current usage patterns, perceptions and experiences with digital platforms and receipt of remittance without the manipulation of the environment, thus giving genuine information about the digital financial ecosystem of Nigeria.

3.2 Population of the Study

The study population was users of digital financial services and adult Nigerians who received remittances within twelve months before completion of the study. The analysis looked at the city of Lagos and Abuja, the business and administrative capitals of Nigeria respectively, where the high level of fintech users and remittance beneficiaries occur. Such cities attract a wide range of socioeconomic backgrounds and urban financial dynamics, which makes findings more relevant to the digital finance in Nigeria.

3.3 Sample Size and Sampling Technique.

A total sample of 137 respondents was selected in Lagos and Abuja on the basis of time, budgetary and analytical constraints. Purposive was used as the method of sampling and the respondents were those who utilized digital financial services in the last six months or those who received remittances in the past twelve months. This method was employed to find out people who had direct firsthand knowledge that is applicable in the research agenda. The size of the respondents was about 85 in Lagos and 52 in Abuja.

3.4 Data Collection Method

Primary data collection was through mixed methods; use of face-to-face structured questionnaires and use of online survey through Google Forms. The questionnaire was able to capture demographics, use of digital financial services, remittance behavior, financial inclusion indicators, and perceived economic outcomes mainly by close ended questions. The administration was done face-to-face in the locations of the agents and the commercial centers and online administration expanded the geographical reach due to social media and professional networks.

3.5 Research Instrument validity and Reliability.

Three researchers, who are experts in the field of finance and methodology, were involved in establishing content validity. The instrument was pretested with 15 respondents in a pilot study and ambiguities were found, as well as the feasibility of completion was determined. The scale of reliability was measured as Cronbach Alpha coefficient of multi-item scales and the higher the levels exceeding 0.70, the greater the degree of internal consistency.

3.6 Method of Data Analysis

The analysis of the data was done in SPSS version 26 by use of descriptive and inferential statistics. Variables distributions and respondent characteristics were summarized using descriptive statistics (frequencies, percentages, means, and standard deviations). Methodologies used in the study as inferential methods involved Pearson correlation with the study of the relationship between continuous variables, multiple regression that assessed the impact of digital services and remittances on financial inclusion, and logistic regression that addressed binary values. The statistically significant level was considered at the alpha level of 0.05.

3.7 Ethical Considerations

Data collection was done after institutional research ethics committee gave ethical approval. The informed consent was obtained in the presence of the explanation of the aim of the study, voluntary participation, confidentiality, and right to withdraw. Questionnaires were done anonymously to ensure that anonymity was achieved. Information was kept in a safe place and the researcher had no sharing with another party and used the information only to aid in teaching, and no personalization was done in reports.

4 Results

Table 1: Socio-Demographic Characteristics of the Respondents (n=137)

Category	Sub-category	Frequency	Percentage (%)
Gender	Male	78	56.9
	Female	57	41.6
	Prefer not to say	2	1.5
Age Group	18–25 years	31	22.6
	26–35 years	58	42.3
	36–45 years	32	23.4
	46–55 years	13	9.5
	Above 55 years	3	2.2
	No formal education	2	1.5
Educational Level	Primary education	3	2.2
	Secondary education	18	13.1
	OND/NCE	24	17.5
	HND/Bachelor's degree	67	48.9
	Postgraduate degree	23	16.8
Occupation	Student	22	16.1
	Self-employed/Business owner	41	29.9
	Private sector employee	48	35.0
	Public sector employee	19	13.9
	Unemployed	5	3.6
	Other	2	1.5
	Below ₦50,000	28	20.4
Monthly Income	₦50,000 – ₦100,000	37	27.0
	₦100,001 – ₦200,000	42	30.7
	₦200,001 – ₦500,000	23	16.8
	Above ₦500,000	7	5.1
	Lagos	85	62.0
Location	Abuja	52	38.0
	—	137	100.0

The majority of the respondents in Table 1 were male (56.9) and under age 26-35 years (42.3). Almost half of them had a bachelor's degree (48.9%), and the highest occupational category was the one employed in the private sector (35.0%). The range of monthly income was in between N100,001-N200,000 (30.7%). Sixty-two percent of respondents were based in Lagos. In general, the sample represents a fairly young, educated and economically active population, and the urban centers are represented well there.

Table 2: Digital Financial Service Usage

Variable	Category	Frequency	Percentage (%)
Smartphone Ownership	Yes	124	90.5
	No	13	9.5
Current Use of Digital Financial Services	Yes	121	88.3

Variable	Category	Frequency	Percentage (%)
Types of Digital Financial Services Used	No	16	11.7
	Mobile money	97	70.8
	Digital wallets	63	46.0
	Mobile banking apps	78	56.9
	Internet/Online banking	54	39.4
	USSD banking	42	30.7
	Point of Sale (POS) services	89	65.0
	Other	7	5.1
Frequency of Digital Financial Services Usage	Daily	48	39.7
	Several times a week	41	33.9
	Once a week	19	15.7
	Once a month	9	7.4
	Occasionally	4	3.3
Primary Uses of Digital Financial Services	Sending/receiving money	105	86.8
	Paying bills	83	68.6
	Purchasing goods/services online	56	46.3
	Savings	47	38.8
	Accessing loans/credit	28	23.1
	Receiving remittances from abroad	51	42.1
	Other	9	7.4

Table 2 shows that a majority of the respondents had smartphones (90.5) and had been using digital financial services actively (88.3%). The most prevalent platforms were mobile money (70.8%) and POS services (65.0), and sending/receiving money (86.8) and bill payments (68.6) were the most commonly used. It was commonly used, and 39.7% stated that they used it daily. All in all, the results indicate high usage of online financial services especially in the context of routine transactions which indicates high acceptance levels towards daily financial operations.

Table 3: Digital Financial Services Usage (Part B)

Statement	SD (%)	D (%)	N (%)	A (%)	SA (%)	Mean Score
Digital Financial Services are Easy to Use	2.5	5.8	14.9	55.4	21.5	3.88
Digital Financial Services Save Me Time	1.7	4.1	9.1	58.7	26.4	4.03
Digital Financial Services Reduce Transaction Costs	6.6	15.7	22.3	43.8	11.6	3.38
I Trust Digital Financial Platforms	5.0	17.4	28.1	38.8	10.7	3.33
Digital Financial Services are Secure	5.8	19.8	31.4	34.7	8.3	3.20
I Understand How to Use Digital Financial	3.3	7.4	12.4	56.2	20.7	3.84

Table 3 brings out the perception of digital financial services by the respondents. They were mostly in agreement that these services can be easy to use ($M = 3.88$) and save time ($M = 4.03$). Meanwhile, the reduction in transaction costs ($M = 3.38$), trust ($M = 3.33$), and security ($M = 3.20$) are much lower, which means that the concerns are moderate in the areas. The awareness of the ability to utilize digital platforms was relatively high ($M = 3.84$). In general, there are high usability and efficiency, but ambivalent trust in cost, trust, and security.

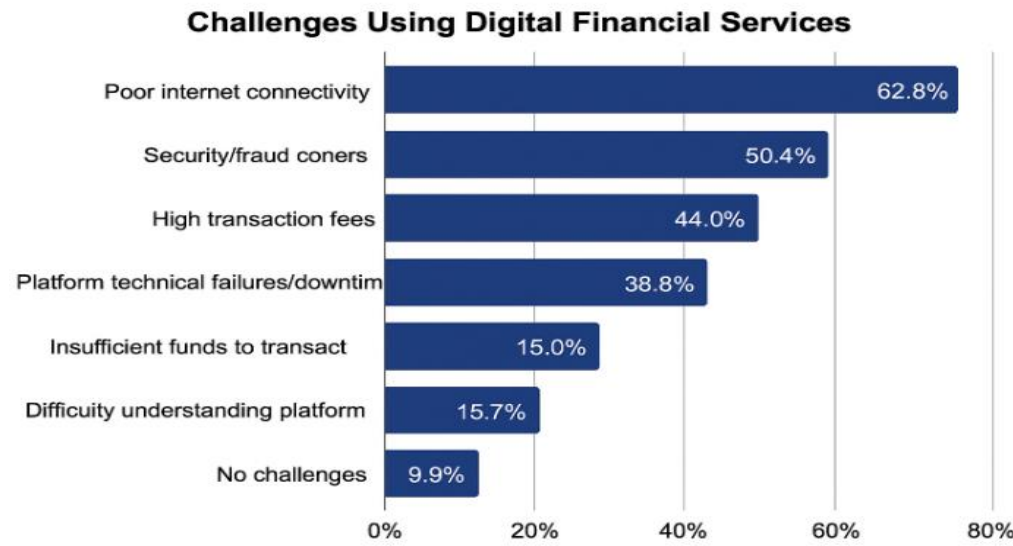


Figure 1: Challenges Using Digital Financial Services

Figure 1 shows the difficulties in consumption of online financial services. The greatest obstacle was found to be poor internet connectivity (62.8) followed by security and fraud concerns (50.4) and high transaction fees (44.0). There were also platform downtimes (38.8%). The lower proportion of the respondents referred to a lack of funds (15.0%), inability to understand platforms (15.7%), or no challenges (9.9%). This brings out infrastructure and trust as the major challenges.

Table 4: Responses on Remittance Flows

Variable	Category	Frequency	Percentage (%)
Received Money from Abroad	Yes	89	64.9
	No	48	35.1
Frequency of Remittance Receipt	Monthly	23	25.8
	Quarterly	38	42.7
	Twice yearly	19	21.3
	Once yearly	9	10.1
Average Amount per Remittance	Below ₦100,000	31	34.8
	₦100,000–₦200,000	39	43.8
	Above ₦200,000	19	21.3

Primary Remittance Channel	Bank transfer	27	30.3
	Mobile money	34	38.2
	Money Transfer Operators	19	21.3
	Digital wallets/Fintech	7	7.9
	Informal channels	2	2.2
Use of Remittances	Daily expenses	76	85.4
	Education	47	52.8
	Healthcare	39	43.8
	Savings	41	46.1
	Business investment	28	31.5

According to Table 4, most of the respondents (64.9% of people) received money outside the country within the last one year and quarterly receipts (42.7) were the most prevalent. The values of average remittance were concentrated at N100,000-N200,000 (43.8%). The major channels were mobile money (38.2%), bank transfers (30.3%). Daily expenses (85.4%), education (52.8%), saving (46.1) and healthcare (43.8) were the largest beneficiaries of remittances highlighting how crucial remittances were to the welfare and financial stability of families.

Table 5: Responses on Financial Inclusion

Variable	Category	Frequency	Percentage (%)
Bank/Mobile Money Account Ownership	Yes	129	94.2
	No	8	5.8
Regular Savings in Formal Institution	Yes	67	48.9
	Occasionally	48	35.0
	No	22	16.1
Credit/Loan Access (Last 12 Months)	Yes	53	38.7
	No	84	61.3

Table 5 demonstrates that financial inclusion was very high with almost all respondents (94.2) owning a bank or mobile money account. Nevertheless, 48.9% of them said that they saved regularly in formal institutions, 35.0% saved irregularly and 16.1% did not save at all. There was a restricted access to credit and only 38.7% of people acquired loans over the last year. Such results indicate that a person has a large ownership but a poor use of savings and credit services.

Table 6: Perception of Being Financially Included

Statement	SD (%)	D (%)	N (%)	A (%)	SA (%)	Mean Score
I Have Access to Financial Services I Need	3.6	8.8	19.0	51.8	16.8	3.70
Digital Platforms Improved My Financial Access	2.2	5.8	13.9	56.9	21.2	3.89
Remittances Improved My Financial Access	7.9	12.4	25.8	38.2	15.7	3.41

Table 6 points out perceptions of financial inclusion. The respondents accepted that they had access to the required financial services (M = 3.70). Digital platforms were positively rated, and

the final mean score ($M = 3.89$) is the highest, which means that they enhanced access. Remittances had a moderate contribution ($M = 3.41$) which implies that it is useful but not as powerful as digital platforms. Generally, it seems that the digital innovations will be more significant in promoting financial inclusion than remittance flows.

Table 7: Responses on Economic Outcomes

Variable				Category	Frequency	Percentage (%)
Digital Services Improved Financial Management				Not at all	6	5.0
				Slightly	14	11.6
				Moderately	31	25.6
				Significantly	52	43.0
Remittances Contributed to Income Stability				Very significantly	18	14.9
				Not at all	9	10.1
				Slightly	16	18.0
				Moderately	28	31.5
Economic Wellbeing vs. 12 Months Ago				Significantly	27	30.3
				Very significantly	9	10.1
				Worse	18	13.1
				About the same	47	34.3
				Better	72	52.6

Table 7 gives economic results. Majority of the respondents said that digital services enhanced financial management, with 43.0% of these saying that financial management improved significantly, and 14.9% saying that digital services had a very significant improvement. Remittances helped in maintaining income although responses were more balanced with 31.5% of the responses mentioning moderate and 30.3% of significant contributions. In 52.6 percent of individuals, economic wellbeing had improved over the last one year, 34.3 percent said that there was no change, and 13.1 percent said that it had worsened. The findings indicate that digital services are more effective in optimizing financial management as compared to remittances.

4.2 Hypothesis Testing

Table 8: Descriptive Statistics and Correlation Matrix

Variable	DFSUI	FII	EWI	RIS	Mean	Std. Dev
DFSUI	1.000				67.34	18.92

FII	0.687	1.000			71.58	16.47
EWI	0.594	0.612	1.000		64.29	19.35
RIS	0.523	0.558	0.541	1.000	58.73	21.48

DFSUI is Digital Financial Service Usage Index; FII is Financial Inclusion Index; EWI is Economic Wellbeing Index; RIS is Remittance Impact Score

Table 8 gives the descriptive statistics and correlation between the study variables. The Digital Financial Service Usage Index (DFSUI) was positively correlated with Financial Inclusion Index (FII, $r = .687$) and Economic Wellbeing Index (EWI, $r = .594$). Remittance Impact Score (RIS) had moderate scores with all indices, especially FII ($r = .558$). According to the mean scores, the engagement with financial inclusion ($M = 71.58$) is more dominant than the impact of remittance ($M = 58.73$), which supports the fact that DFSUI plays a bigger role in financial results.

Hypothesis One

H₁: Digital financial services usage has a significant positive effect on financial inclusion in Nigeria.

Table 9: Regression Results for Hypothesis One

Variable	Coefficient (β)	Std. Error	t- value	p- value	R ²	Adj. R ²	F-statistic
Constant	23.147	3.852	6.009	0.000	0.472	0.468	120.34***
Digital Financial Services Usage Index	0.719	0.066	10.970	0.000			

*Source: Field Survey, 2026 Dependent Variable: Financial Inclusion Index; n=137, ***p<0.001*

Table 9 presents the regressions of Hypothesis One. The use of digital financial services was an important predictor of financial inclusion ($b = 0.719$, $p < .001$). The model accounted 47.2% of the variation ($R^2 = .472$) and the F-statistic was strong (120.34, $p < .001$). These results confirm that increased application of digital financial services relates to increased degrees of financial inclusion, which underscores the transformative nature of digital platforms in increasing access to financial services.

Hypothesis Two

H₂: Remittance flows have a significant positive effect on financial inclusion in Nigeria.

Table 10: Regression Results for Hypothesis Two

Variable	Coefficient (β)	Std. Error	t- value	p- value	R ²	Adj. R ²	F- statistic
Constant	38.652	4.928	7.843	0.000	0.311	0.303	39.45***
Remittance Impact Score	0.561	0.089	6.281	0.000			

Source: Field Survey, 2026. Dependent Variable: Financial Inclusion Index; n=89 (remittance recipients only).
*** $p < 0.001$

Hypothesis Two: Table 10 presents results of the regression. Remittance flows had a considerable impact on financial inclusion ($b = 0.561$, $p < .001$). This model explained 31.1 percent of the variance ($R^2 = .311$) and the F-statistic was very strong (39.45, $p < .001$). The explanatory power is not as high as it is during the digital services, but remittances still constitute a significant source of financial inclusion among the recipients, which supports their contribution to linking households to formal financial systems.

Hypothesis Three

H₃: Digital financial services usage and remittance flows have a significant positive effect on economic wellbeing in Nigeria.

Table 11: Multiple Regression Results for Hypothesis Three

Variable	Coefficient (β)	Std. Error	t- value	p- value	R ²	Adj. R ²	F- statistic
Constant	18.342	6.157	2.979	0.004	0.453	0.440	35.42***
Digital Financial Services Usage Index	0.428	0.098	4.367	0.000			
Remittance Impact Score	0.347	0.084	4.119	0.000			

Source: Field Survey, 2026. Dependent Variable: Economic Wellbeing Index; n=89 (remittance recipients only)
*** $p < 0.001$

Regression results of the Hypothesis Three are shown in Table 11. Economic wellbeing was greatly determined by both the financial services use digitally ($b = 0.428$, $p < .001$) and in the form of remittance flows ($b = 0.347$, $p < .001$). A combination of both models accounted for 45.3% of the variance ($R^2 = .453$) and a large F-statistic (35.42, $p < .001$) was observed. These findings indicate that digital services and remittances have a positive effect on economic wellbeing together with a bit of positive impact of digital usage, and this points to the complementary effects of digital services on household welfare.

4.3 Discussion of Findings

The empirical data shows strong evidence on the role of digital financial services and remittances in driving financial inclusion and economic wellbeing in Nigeria. The positive impact of digital financial services on financial inclusion is highly notable, which is consistent with the Technology Acceptance Model, in which the perceived usefulness and ease of use are the key factors on the way to the adoption of technology and the following gains (Davis, 1989). This result supports Kolawole (2025) who determined that there are strong short-run positive impacts of fintech on financial inclusion in Nigeria, but our cross-sectional study is not able to differentiate between time dynamics. The high explanatory power implies that digital platforms are good at overcoming the traditional banking barriers that include geographical distance, documenting needs, and high transaction costs, and, thus, democratize access to financial services. This finding however goes against Onwuka and Aniebo (2025) who indicated negative

impacts of digitalization on remittances, but this may be due to their device penetration emphasis as opposed to actual device pattern of use which is utilized in this research.

The fact that remittances have a very large positive impact on financial inclusion confirms the claim of Financial Intermediation Theory that frequent inflows of capital will enable a formal interaction with the financial system (Levine, 1997). Beneficiaries who get regular remittances via formal means build transaction histories, which allows them to access credit, savings products, and insurance which turns them into active financial users as opposed to passive receivers. This goes in line with Ahmed et al. (2025) who reported efficient financial flows as a result of remittances albeit with challenges. The medium explanatory value indicates that remittances are not adequate in the absence of complementary institutional facilitation as observed by Kolawole (2025) who reveals that long-run inclusion necessitates strong regulatory frameworks and digital infrastructure other than capital inflows.

The interaction of the digital financial services and remittances in terms of economic wellbeing where both the independent and dependent variables are significant proves to be complementary and not substitutionary. Digital platforms enhance the developmental effect of remittances because of lowering transaction costs, promoting micro-savings, and productive investment-mechanisms are not present in informal transfer systems. This result builds on the work of Appah et al. (2023) because it shows that digital channels improve not only aggregate economic outcomes but also those of households. Unlike Sulaiman et al. (2025) who discovered that some digital channels had insignificant growth effects, the holistic approach that the study uses in measuring digital services covers wider platforms that have caused significant economic gains. The findings highlight the necessity of sustainable development, which involves combined ecosystems in which through digital systems remittances are directed to productive purposes and consumption-based transfer is converted into development capital, which brings about sustainable economic change.

5 Conclusions and Recommendations

This paper explored the potential of digital financial service to promote remittance flows, financial inclusion, and economic growth in Nigeria. The results prove beyond any doubt that online financial services have a substantial positive impact on financial inclusion, remittances have a positive effect on financial access of a recipient, and these two variables show an independent positive effect on the improvement of economic wellbeing. The findings confirm the idea that digital platforms and remittance flows are complementary processes and not independent interventions. Nevertheless, sustainability needs strong institutional structures, greater digital infrastructures, and improved financial literacy. Although digital financial services have the potential to transform, the inclusive economic development demands holistic policy interventions to support digital finance in achieving its full development potential in Nigeria due to the lack of infrastructural deficits, regulatory imbalances, and access constraints.

Given these findings, the following are the recommendations:

- i. The government and agencies must focus on increasing the level of digital infrastructure especially the internet connection and electricity in underserved rural settings where the recipients of remittances are the majority and make digital financial applications equally accessible outside urban areas.

- ii. Financial institutions and fintech operators are advised to establish holistic and financial literacy education to target low-income groups and remittance beneficiaries on how to use their digital platforms, security knowledge, and effective money use strategies to achieve the best inclusion benefits.
- iii. To build trust in digital financial services and formal channel adoption, policymakers need to develop integrated regulatory frameworks to balance digital financial services with remittance corridors, lower the cost of transactions, increase interoperability between platforms, and consolidate mechanisms to protect consumers.

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