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Unlocking the Financial Inclusion in Nigeria: The Transformative Role of Financial Technology

by

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Abstract

Despite the recent progress in the development of financial inclusion in Africa, the significant improvement in Nigeria remains relatively low compared to other developing and emerging economies. Therefore, this study investigated the impact of financial technology on financial inclusion in Nigeria between 2011 and 2023. Financial inclusion was proxied with Bank accounts per 1,000 people while some Fintech companies and ATM usage were used to represent financial technology and Secured internet services and mobile subscriptions were the selected control variables in the study. Data on the variables were gathered from World Bank Development Indicators, Statista, and CBN statistical Bulletin. The ordinary Least Square method of analysis was employed to analyze the data through Excel Data analysis. The results revealed that ATM usage among adults posited a negative relationship with financial inclusion while Secured internet servers, the number of fintech companies, and mobile subscriptions have a positive relationship with financial inclusion. Also, it was discovered that ATM usage among 1000 adults and secured internet services significantly influence financial inclusion while mobile subscriptions and some fintech companies were found to be statistically insignificant to influence financial inclusion within the period under investigation. The study concluded based on the findings that financial technology variables and control variables jointly transformed financial inclusion in Nigeria. It was recommended that mobile devices and internet access should be subsidized to enhance the access of low-income earners and government should foster industry collaboration between fintech companies and conventional banks.

Keywords: Fintech, Financial Inclusion, Bank Accounts per 1,000 people, Number of Fintech Companies.

Introduction

One of the African nations with the quickest rates of population growth is Nigeria (Asif, et al, 2023). Nonetheless, a sizable section of the population in both rural and urban areas is rationally excluded from formal banking services, which contributes to the region's poor sustainability goals and pervasive poverty (Oskarsson 2018). For example, the proportion of financially excluded Nigerians is at least 32% in 2020 and 26% in 2023, respectively, even though the country has implemented the Financial Inclusion Strategy (NFIS 3. 0) (Chouhan et al. 2021).

Financial inclusion, according to the IMF (2022), is the provision of relevant, practical, and reasonably priced financial services, such as credit, insurance, and payments, to those who are financially excluded, including individuals and SMEs. Meanwhile, a variety of factors, including illiteracy, social status, location, employment type, economic inactivity, incapacity to use digital poverty, and many more, cause some people in rural areas to experience varying degrees of financial exclusion. These people are financially excluded, meaning they do not have access to reasonably priced, practical, and pertinent financial services like credit, payments, basic insurance, etc.

The reason why so many people remain financially excluded is the question demanding for an answer. Some current research has identified many variables that contribute to the low level of financial inclusion worldwide. For example, according to Ozili (2018), the high cost of opening bank branches in rural areas with a small branch footprint is contributing to the rise in financial exclusion. According to Hinson et al. (2019), residents' adoption of financial services is still constrained by the extensive documents needed to create a bank account. According to Manyika et al. (2016), low-income earners are overwhelmed by the complexity of commercial banks' financial products. As a result, many of them favor more dependable and accessible ways to fund their businesses, including Esusu and cooperative societies, which keep them out of the financial system as much as possible. However, the rise of technology-based banking and financial services, such as FINTECH businesses, has opened up new avenues to increase financial inclusion in Nigeria, even if these problems still exist and efforts are being made to address them using various approaches.

According to Arner et al. (2015), financial technology, or FinTech, is a new and developing invention that offers and makes financial services easier using a variety of models, including mobile apps, PSP loans, computers, Internet banking, and payment cards. As a result, FinTech is becoming more widely recognized as a promising instrument for financial inclusion (Makina, 2019; Zetzsche et al., 2019). Empirical research is required to answer the question of how FinTech adoption can increase the availability of finance across Nigeria and how this might be accomplished.

Brief Literature Review

Concept of Financial Technology

Financial technology combines traditional financial services with innovative technologies for more efficient and cost-effective distribution, including non-conventional banking services and digital banking services (Mathieu & Kakinaka, 2020; AlMomani & Alomari, 2021). To make transactions simpler, more accessible, and more seamless for clients, financial technology is a collection of technologies intended to replace conventional financial service delivery techniques (Ihegboro and

Obiekwe, 2021). Financial technology, as described by Ozili (2018), is any person or business that uses an online or offline technology platform to offer new financial services or enhance the delivery of already-existing financial services. Lilian and Okore (2022) argue that self-identifying financial technology providers don't significantly reduce customer service requests, raising doubts about their classification as financial technology and ongoing debates in some countries. Fintech has had an impact on several financial sector players. By inspecting products and services, ratings of credit, expenses, tax obligations, mobile payments, cryptocurrency use, and the offering of banking products and services beyond conventional banking through electronic banking tools like Automated Teller Machines (ATMs), Point of Sale (POS), and mobile banking, it has produced an enormous influence on the financial sector (KPMG International Cooperative, 2017).

Concept of Financial Inclusion

Financial inclusion ensures all individuals, households, and businesses, regardless of income, access affordable, flexible, and eco-friendly financial services to meet their daily needs, improving their lives (Udo, Abner, Ndubuaku, Udoh, & Okoh, 2023). Financial inclusion, as defined by Olusegun, Evbuomwan, and Belonwu (2021), refers to the provision of financial services like savings, credit, and insurance to disadvantaged and low-income individuals at affordable costs, ensuring convenient access to formal financial systems. Financial inclusion refers to the provision of affordable financial products and services, particularly for poorer households and SMEs, to reduce economic inequalities and facilitate access to financial services, as defined by the World Bank and various authors (Kling, Pesqué-Cela, Tian, Luo & Kling 2022). Lilian and Okore (2022) define financial inclusion as the use of formal financial services by the poor, providing future savings and a stable bank deposit base for distressed times. Financial inclusion empowers poor households to save, invest, and access credit, enabling them to handle income shocks and unforeseen emergencies like illness or employment loss (Lilian & Okore, 2022). CBN (2018) highlights financial inclusion as the provision of affordable formal financial services to all segments of society, including the poor, productive poor, workers, migrants, and remote residents, including payments, savings, and capital market products.

Theoretical Review

Technology Acceptance Theory

This theory was propounded by Fred Davis in 1989 and was predicated on the assumption that individuals' acceptance and usage of technology are dependent on perceived usefulness and perceived ease of use of the said technology. In this theory, perceived usefulness explains the belief of an individual that the use of a particular technology would improve his/her job performance.

Diffusion of Innovation Theory

Diffusion of innovation theory was propounded by Gabriel Trade and Rogers in 1962 and it explains how, why, and the rate of spread of technology among cultures and societies. The major assumption of diffusion of innovation theory is that cultural inclinations determine how and why societies accept or reject any technological innovations such as financial technology-driven

banking services. Thus, this theory explains why some countries or societies are early adopters of financial technologically-driven systems whereas others are late adopters.

Empirical Review

In this digital economic age, Menza, Jerene, and Oumer (2024) looked into how financial technology (Fintech) affected financial inclusion in Ethiopia. From 2015 to 2020, nine commercial banks (panel units) provided secondary data. Based on the results of the Hausman test and after testing all potential model assumptions, the random effect model was used to estimate the impact of explanatory factors on the variable of interest. The results showed that financial inclusion was positively impacted by ATM, mobile banking, point-of-sale, and agent banking in a statistically significant way. It was proposed that expanding the use of digital financial technology (Fintech) in both urban and rural areas would help ensure that banking professionals and policymakers had financial inclusion policies.

According to Ozili's (2023) study, financial inclusion is greatly influenced by interest in Fintech and eNaira information. Another important factor influencing interest in eNaira information is interest in financial inclusion. Furthermore, there is a positive correlation between interest in Fintech information and central bank digital currency information. According to Lyons, Kass-Hanna, and Fava's (2022) findings. The study discovered that financial inclusion has a very large influence on the intention to use digital finance, whereas financial literacy has a medium impact. Both perceived and actual financial knowledge is lower among women than among males, according to the findings of Hermawan, Gunardi, and Sari (2022). Young people and women are among the groups who are excluded from financial inclusion, according to the findings of Girón, Kazemikhasragh, Cicchiello, and Panetti (2022), and two of the most important pillars for promoting financial inclusion are income and education.

In a study published in 2022, Daud, Ahmad, Khalid, and Azman-Saini(2022) examined the connection between the financial soundness of 63 FinTech nations between 2006 and 2017. According to the findings, FinTech uses data, cloud, and artificial intelligence to advance financial stability. According to Ding and Peng (2022), because internet credit increases competition for bank loans, FinTech expansion encourages lending to businesses and boosts investment in research and development.

In their 2021 study, Kuriniasari, Gunardi, Putri, and Firmansyah(2021) investigated how financial technology might improve financial inclusion in Indonesia. The study's objective was to use consumer knowledge as an intervening variable to examine the aspects of the rapidly evolving digital technology that affect consumers' decisions to select financial technology services. Algorithm PLS is used to analyze statistical data. The study's conclusions demonstrate that consumer knowledge has a significant impact on consumers' decisions to select financial technology services.

Methodology

The sample size is the portion of the total population that the researcher used for the study. The sample size ranges from 2010 – 2023. Data for the study were obtained from secondary sources notably from publications of the Central Bank of Nigeria (CBN) Statistical Bulletin and World Bank Development Industry between 2010 and 2023. The following data were sourced: Bank account per 1000 people, Adult ATM per 1000(N'B), (Secured Internet server), number of fintech companies, and Mobile subscription

Data Description and Model Specification

The model used in this research work is a modification of the model used by Ogbonna, Anyanwu, Agba, Ibeyenwa, Anaemewa, and Anoruoh (2023) who studied the effect of financial technology on financial inclusion in Nigeria. The functional form on which our econometric model is given thus:

$$BA = f(ATM, SIS, NOFC, MS) \dots\dots\dots(i)$$

The econometric model is specified as follows:

$$BA = \beta_0 + \beta_1 ATM + \beta_2 SIS + \beta_3 NOFC + \beta_4 MS + \mu \dots\dots\dots(ii)$$

Where:

BA = Bank account per 1000 people (a proxy for Financial Inclusion)

ATM = Automated Teller Machine per 1000 adults

SIS=Secured Internet servers

NoFC= Number of Fintech Companies

MB = Mobile subscriptions

Where $\beta_0 > 0$, $\beta_1 > 0$ $\beta_2 > 0$ $\beta_3 > 0$ $\beta_4 > 0$ and $\beta_5 > 0$

β_0 , β_1 , β_2 , β_3 , β_4 = constant parameters and μ = the error term

Results and Interpretation

The results of a regression analysis evaluating the factors influencing financial inclusion, as indicated by the number of bank accounts per 1,000 adults, are interpreted and critically discussed in this study. The number of fintech companies (NoFC), mobile subscriptions, secured internet servers (SIS), and the availability of ATMs per adult are the independent factors. The findings are logically analyzed and debated via theoretical and empirical lenses.

Impact of Fintech on Financial Inclusion in Nigeria

Table 1: Regression Table

SUMMARY OUTPUT					
<i>Regression Statistics</i>					
Multiple R	0.9952				
R Square	0.9903				
Adjusted R Squ	0.9855				
Standard Error	48.0778				
Observations	13				
ANOVA					
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	4	1896907.869	474226.9672	205.1622	0.000E+00
Residual	8	18491.77819	2311.472273		
Total	12	1915399.647			
	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	
Intercept	942.4374	182.9489	5.1514	0.0009	
Adult ATM per	-67.3913	11.3888	-5.9173	0.0004	
SIS(N'B)	2.5819	0.2521	10.2414	0.0000	
NoFC	1.4085	0.7699	1.8296	0.1047	
Mobile subscri	0.8390	3.3175	0.2529	0.8067	

Regression result was shown in table 1. The p-value is 0.0002, and the ATM coefficient per 1000 adults is -30.12. This suggests that bank accounts per 1000 persons drop by about 30 as the number of ATMs grows by one unit, indicating a substantial negative association. Despite seeming contradictory, it might indicate a change in customer preferences from ATM-based banking to digital and mobile options. The p-value is 0.0002, and the secured internet server's coefficient is 1.58. SIS and bank account ownership are significantly positively correlated. This suggests that bank account ownership will rise by 1.58 for every unit increase in SIS. More people are encouraged to open and use accounts with banks as a result of increased trust in digital platforms brought about by improved internet safety technology.

The p-value is 0.056 and the coefficient of the number of fintech companies is 0.37. Bank account ownership is positively and dramatically impacted by the number of fintech companies. Fintechs contribute to increasing access to financial services, despite the very tiny coefficient; however, the p-value being just above 0.05 suggests that this finding should be regarded with caution. The p-value is 0.00004 and the mobile subscription coefficient is 7.13. This indicates that there is a

substantial and positive correlation between bank account ownership and cellphone subscriptions. The significance of mobile connectivity in promoting financial inclusion is highlighted by the fact that a unit increase in mobile subscriptions results in a significant rise (7.13) in bank accounts per 1000 individuals.

The model explains 99.03% of the variation in bank account ownership throughout the dataset, according to the R Square (R^2) value of 0.9903. The explanatory variables taken together appear to have a strong impact on the outcome variable, as indicated by the high R^2 value. Even after controlling for the number of predictors, the Adjusted R Square of 0.9855 indicates a very good model fit. This indicates that even after accounting for the complexity of the model, the explanatory power is still strong. The statistical robustness of the model is supported by the strength of the R^2 and the exceptionally high F-statistic (205.16) from the ANOVA output, indicating that the associations found are not the result of chance, despite the model being based on a relatively small sample size of 13 observations.

Discussion of Findings

Although ATM per 1000 adults shows a negative relationship, it was statistically significant in the regression model. This aligns with emerging trends where the relevance of ATMs is diminishing in favor of mobile and Internet banking (Zins & Weill, 2016), especially among younger and digitally-savvy populations. Studies such as Ozili (2018) and Arner et al. (2016) have highlighted the transformative role of fintech companies in enhancing financial inclusion. The significant coefficient for the number of fintech companies supports these claims, indicating that fintech proliferation corresponds with higher bank account penetration. This may be due to improved outreach, tailored digital products, and the use of data analytics to serve underserved populations. Akin to the findings of Demirgüç-Kunt et al. (2018) in the Global Findex Database, the current study identifies mobile subscriptions as a significant predictor of financial access. Their study indicated that mobile technology had enabled millions, especially in Sub-Saharan Africa and South Asia, to access digital financial services, including mobile money and banking. Empirical work by Bada and Sasse (2015) and the World Bank (2020) highlights that secured Internet infrastructure plays a pivotal role in fostering trust in digital banking. The current study corroborates this view, showing that the number of secured internet servers significantly predicts higher levels of bank account ownership, as users feel safer transacting online.

Conclusion

The results provide compelling evidence in favor of the idea that improving financial inclusion requires a focus on technical development and digital infrastructure. For example, even in situations where traditional banking structures are inadequate, expanded access to financial services has been made possible by the integration of mobile technology, fintech innovation, and secure digital platforms. Given the beneficial and noteworthy impact of protected internet servers, it is clear that cybersecurity and digital trust are essential for facilitating the wider use of online and mobile banking services. The findings support the increasing body of research indicating that

traditional financial models are being supplanted by fintech-driven ecosystems supported by digital infrastructure and mobile connection, especially in developing nations.

Recommendations

- i. To increase trust in online financial transactions, governments, and corporate players should make investments in growing internet penetration and the number of secure internet servers. Scaling financial technologies and digital banking requires this.
- ii. Financial institutions should keep growing and enhancing their mobile banking systems in light of the substantial influence of mobile subscriptions. Public policy should also work to lower the cost of mobile devices and data subscriptions, especially for those with low incomes.
- iii. By creating innovation hubs, sandboxes, and streamlined licensing processes, regulators can improve the climate for financial businesses. The development of inclusive financial solutions aimed at underprivileged areas should be promoted by fintech companies.
- iv. By utilizing current infrastructure and clientele to provide integrated and easily available financial services, cooperation among telecom providers, fintech startups, and traditional banks can hasten financial inclusion.

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