



# FINANCIAL TECHNOLOGY IN SMART PHONES AND EFFECTS OF FINANCIAL INCLUSION: A LOOK AT THE NIGERIAN MARKET

<sup>1</sup> Alfred, Ambe Neba.\*, <sup>2</sup> Usman Isa, & <sup>3</sup> Abubakar Ibrahim Abubakar.

\*Corresponding authors' email: [ambeneba@gsu.edu.ng](mailto:ambeneba@gsu.edu.ng)

<sup>1-3</sup> Department of Accounting, Faculty of Social and Management Science,  
Gombe State University, Gombe - Nigeria

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## ABSTRACT

*There is no doubt that financial technology has had tremendous effect on the structure of financial inclusion in Africa especially in the Nigerian context. Most of this growth has been fueled by financial technology in smart phones. More is still unfolding in this aspect of the market and in research and it is therefore, pertinent to have a lot of well researched information to help financial institutions have a good grasp of how to face the immediate future of their industry, as well as governments that want to involve the unbanked sector in their programs. Trends analyses were used in this study which drew its data from the Global Findex Database for the purpose of assessing trends in fintech, growth in smart phones and the changing structure of financial inclusion. Analyses showed that the growth in the use of financial technology was greatly enhanced by the growth in the demand of smart phones being replicated in the growth in financial inclusion. As individuals and small and medium scale businesses embrace more and more financial technology through smart phones for their activities, financial institutions were found to be experiencing an increase in their customer base. Necessary considerations on these, need to be made when drawing up policies regarding financial technology that should benefit majority of the populace. Overall, the analyses proved that fintech is positively and rapidly changing the pattern of financial inclusion in Nigeria, especially in providing digital platforms for easy conduct of financial services. In the center of it, the emergence of smart phones was seen to be facilitating fintech's positive contribution to financial inclusion through improving access, but not all attempts translated into adoption and usage. It was recommended for government and organizational policies to among others address demand side issues in fintech as well as trust-deficit issues among smart phone owning bank customers.*

**Keywords:** Ecosystem, Financial inclusion, Financial technology, Market

**JEl Code:** L25, J24, H25, O47

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## 1.0 Introduction

The appearance of financial technology in its revolutionary form has caused a rapid growth of the market of financial services in the country. Firms that have embraced it have propelled themselves to the forefront of financial services due to the effect of financial technology (Fintech). Prior to this revolutionary phase, Nigeria had a large but under-developed financial sector, with approximately 60% of the adult population lacking access to traditional financial services (IFC, 2018; Ernst & Young, 2019). This high percentage came from the unbanked and under-banked citizens, combined with a 44 per cent mobile penetration rate. This indicates that the ground has been fertile for Fintech expansion in Nigeria. With that high rate of penetration, financial technology has become the major driver of financial inclusion in the

country (Ernst & Young, 2019), as well as an innovation catalyst in other sectors by the efficiency it brings in the financial services value chain (IMF, 2018).

It follows that the introduction and expansion of digital financial services has allowed greater access by the population to smart phones and more financial services. Nigeria has Africa's largest digital financial services deployments, which account for nearly a tenth of the world's nearly 700 million individual users (IFC, 2018) due to rapid penetration. This rapid penetration of Nigeria's financial services over the years among potential users has been noteworthy, and the increasing ownership of smart phones, especially among the low-income groups, is deemed to have been instrumental in reforming the financial services ecosystem. The provision of technology in financial services involves the participation and interactions of various players, as well as the regulatory environment, which poses some complexities to all participants and thus negates the gains in financial inclusion. But because technology is a versatile and ever-changing phenomenon, it necessitates ongoing re-evaluation to ensure that empirical evidence remains relevant. This is the *raison d'être* of this research. This research therefore, assesses the fintech in the environment of smart phones and the changing pattern of financial inclusion in Nigeria.

## Structure

Current progress in practice and in the literature on financial inclusion and the relationships between them are exposed in this work. The article has five (5) sections. Section 1 introduces the work while section 2 reviews related literature on smart phones, fintech and waves of development in financial inclusion. Section 3 describes the data and methodology while section 4 presents Global Findex Data and discusses the analyses of it. Section 5 summarizes and concludes the work, at the same time suggesting major policy direction for success.

The industrial sector in Nigeria, comprises manufacturing, mining, and utilities which accounts for little proportion of the economy activity of about 6% with the manufacturing sector contributing 4% to GDP in 2011 (Chete *et al.*, 2014). With all these, the economic policy transformation agenda, known as the vision 2020, sets the direction for the current industrial policy in Nigeria. These industrialization strategies aim at achieving greater global competitiveness in the production of manufactured goods by linking industrial activities with the primary sector, domestic and foreign trade, and service activities in order to achieve economic growth in Nigeria.

## 2.0 Review of Literature

Literature on financial technology and how it has aided financial inclusion abound but the fintech ecosystem is presently experiencing an unusual surge in activities due to the revolution taking place in portable wireless technology. This transformation shaped by fintech, presents a significant window that has greatly broadened financial inclusion, eliciting research into the trends in them.

### 2.1 Financial Inclusion

The term financial inclusion is more readily used to highlight financial exclusion because for developing nations, financial exclusion is a more common problem, especially among the low-income group of the population (Koku, 2015). Financial exclusion connotes having very limited access (or complete lack of it) to financial services. This has tended to be a problem to governments that want to empower their citizens financially. It has also been a problem to both individuals and small and medium scale businesses that wish to access funds from donors or from financial institutions. Simply put, financial inclusion is the flip-side of financial

exclusion. Demirguc-Kunt, et al., (2017), has observed that despite the fact that a plethora of studies have emerged in this field since the early 2000s, the area still remains under-researched. Financial inclusion entails having access to a basic bank account, which serves as a foundation for other financial services (Neelamegam, 2016). According to the World Bank (2017), financial inclusion is 'the process by which individuals and businesses have access to sustainable financial services for the purpose of transactions, payments, savings, credit, and insurance. Therefore, by financial inclusion banking services are extended to the excluded.

By financial inclusion, the total and partial financially excluded have access to formal financial services (CBN, 2013). Ene (2019) says that such inclusivity is facilitated by making banking services affordable, particularly to the disadvantaged and less wealthy who are outside the formal banking system. Accordingly, Diniz et al. (2012) justify the words of Ene (2019) by saying that in some places, access has not been accompanied by affordability thereby denying access to financial services by the same people for whom financial inclusion was meant. Therefore, access alone to financial services is insufficient to improve consumers' lives (Murthy, et al., 2019). Other things that hinder persons having access to fintech from enjoying the benefits of the expansion of digital services are found in digital credits such as late payments, high indebtedness as well as payment defaults, particularly among the most vulnerable.

## 2.2 Financial Technology (FinTech)

The concept of Financial Technology is a very significant development that occurred in the banking industry of the twenty-first century. Banking now takes place outside traditional banking locations using technological and smart devices such as mobile phones, the automated teller machines (ATMs), point-of-sale (POS) systems, computers and tablets, among other devices. Activities involved are fund transfers and receipts, balance inquiries, airtime purchases, bill payments, and account opening, (Moddibo, 2018). The coinage fintech, from financial technology is widely credited with a Citigroup project in the early 1990s (Gimpel et al., 2018). Gimpel et al (2018) call fintech as, "digital technologies such as the internet, mobile computing and data analytics, used in innovating or disrupting financial services.

## 2.3 FinTech and Financial Inclusion

Fintech can influence financial inclusion, depending on a variety of factors such as the type of technology, infrastructure, target market, and geographic location. Fintech's effects on financial inclusion, on the other hand, are more pronounced in developing countries due to the significant population of the unbanked or under-banked persons. Fintech has the potential to enable financial inclusion in emerging markets. There are three domains where Fintech can have potential impact on financial inclusion. Firstly, fintech can capture the cohorts of people without a bank account in the traditional financial market. Secondly, fintech can reduce costs of financial services due to increased competition. Financial inclusion in an economy is influenced by innovations. Both financial and telecommunications innovations are central to this. Agent banking and mobile banking, in particular, have been identified as financial inclusion facilitators. Furthermore, innovative services are being accelerated by ICT. ICT infrastructure is making innovative services possible at a faster rate than ever before (Joia and Cordeirov, 2021). In these, the increased penetration of mobile phones is one very dominant aspect of ICT in the context of Fintech. As more people acquire mobile phones and internet access, a variety of fintech solutions have emerged, including mobile money, which allow users to send money, save money, and make payments using their phones (Gabor and Brooks 2017).

### 3.0 Data and Methodology

The focus of this study is to analyse trends in financial inclusion in Nigeria and how Fintech via smart phones is contributing to its changing structure over time. As such, the study uses descriptive analysis approach leveraging on available survey data on the subject matter. The most comprehensive available secondary dataset for examining trends in financial inclusion is the Global Findex data sets collected by the World Bank. These are survey data that have been collected in three rounds of surveys in 2011, 2014 and 2017.

However, the latest round, conducted in 2017, consists of indicators that better capture the extent of usage of digital financial services, a proxy for financial technologies (Fintech). The data sets also capture financial inclusion variables such as the ownership of financial accounts. Others include, the extent of usage of these accounts, measured by formal/informal savings and borrowings indicators, and channels used to send and receive remittances. Respondents who reported having no financial account were further asked to provide reason for not owning an account. Furthermore, indicators for capturing respondents' usage of digital financial services cover using phones or internet to perform basic financial transactions such as to monitor their financial accounts or check account balances, send money online, pay bills or make purchases online, and digital payment of utility bills. These statistics provided across a wide range of demographic characteristics are useful for generalization. Exploring this data set deeply and identifying indicators that better capture the research interest well was key to this research. Average statistics across the periods regarding Nigeria exposed the grounds for discussions. The averages were derived from 10 years' study with available indicators. The measure of financial inclusion covered both accessibility and usability of the financial services. Access was captured using level of ownership of financial accounts including both traditional bank accounts and mobile money accounts. Indicators for usage of financial services included respondents' savings and borrowing behaviours (whether they saved and borrowed money using formal and informal channels) as well as using financial technology services (accessing their accounts using phones or internet, sent money online, paid bills or bought something online). Analyzing these statistics using content descriptive statistics showed the nature of the trends of interest in the study. From the responses some percentages are calculated. These statistics are presented using tables, with a focus on trends across the years covered. Extensive discussions follow such presentations.

The limitations in the data are: the absence of consistent data for most of the indices queried within the period especially at the early years. Also, the latest developments in this field are not covered and issues that relate to the COVID-19 pandemic on the use of fintech were not also treated. But the data gives clear evidence of the dynamics of fintech and financial inclusion with the help of smart phones in Nigeria.

### 4.0 Pattern of Financial Inclusion in Nigeria

The table below summarizes the financial inclusion pattern in Nigeria. Average for 2011 to 2021 the table shows the level and pace at which citizens and businesses hitherto excluded from financial system are being integrated into it. Inclusiveness is helping individuals and businesses in Nigeria connect with their local economies as well as globally. This has greatly increased the potential of growth for businesses, improvements in livelihoods, employment generation, as well as poverty eradication. Undoubtedly, one of the first basic steps in getting included in the financial system is registering and owning a financial account. Owning an account is a prerequisite to being able to operate in the financial space to save money, access credit, save and receive money, pay utility bills and perform all other financial transactions outside the traditional physical monetary exchange. The account could be a financial account

in regular banks and other financial institutions, and it could be a mobile money account made possible by the advent of financial technologies.

Table 1: Reviewed indices

Year	Own a debit or credit card (% age 15+)	Use a debit or credit card (% age 15+)	Uses a debit or credit card: in-store (% age 15+)	Used a debit or credit card: who use a credit or debit card, age 15+)	Used a mobile phone or the internet to check account balance (% age 15+)	Used a mobile phone or the internet to check account balance (% with a financial institution account, age 15+)	Use a mobile phone or the internet to make payments, buy things, or to send or receive money using a financial institution account (% age 15+)	Use a mobile phone or the internet to make payments, buy things, or to send or receive money using a financial institution account (% with a financial institution account, age 15+)	Made a deposit (% with a financial institution account, age 15+)	Has an inactive account (% age 15+)	Has an inactive account (% with an account, age 15+)	Deposited money into a financial institution account 2 or more times a month (% age 15+)	Deposited money into a financial institution account 2 or more times a month (% who had deposited money, age 15+)	Made a withdrawal (% with a financial institution account, age 15+)
	A	B	C	D	E	F	G	H	I	J	K	L	M	N
2011	19%													
2014	36%	15%							75%	4%	9%			76%
2017	32%	10%			11%	28%			78%	4%	10%			77%
2021	36%	13%	6%	49%	22%	48%	15%	32%	74%	4%	10%	22%	66%	79%
*SSA														
2011	15%													
20	18%	9%							68%	2%	7%			66%

14														
2017	19%	7%		10%	31%			62%	4%	8%				59%
2021	25%	12%	8%	66%	19%	47%	15%	38%	62%	3%	5%	14%	55%	63%

**Source:** Extracted from Global Findex Database, 2022

\*SSAS = Sub-Saharan Africa

#### 4.1 Discussion

From table 1 above, it can be seen that, concerning account ownership over the period of ten (10) years, 2011 to 2021, the result shows that there is a growth from 19% to 36% of people reported to have opened an account in a bank or other financial institution. The increase of 5% to 36% was attained in 2014 and has remained about the same percentage to date 2021/2022. On the other hand, considering the use of mobile phones, the data showed that while the percentage of persons who used cards was 15% in 2014 and fell to 13% in 2021 (see column E), the percentage of those who used smart phones rose from 28% in 2017 to 48% in 2021 i.e. a 71.4% increase! (See column E). The situation is even more emphatic when we look at column E for Nigeria where the rise is 100% (from 11% to 22%). (Data for early years 2011 and 2014 are not completely available, as per Global Findex, 2022).

Like Nigeria, like Sub-Saharan Africa, the informal methods of saving, sending and receiving monies are still very active and highly patronized having a more than 50% patronage on the Global Findex data. This is because out of those who owned an account, only an insignificant few used either credit/debit cards or mobile/internet banking to conduct transactions, (highest is 12% for the use of cards and 19% for the use of smart phones and internet; columns B and E). But a closer look at the smart phone and internet banking for the region is equally very revealing – that smart phone and internet banking rose from 10% to 19%; i.e. a 90% increase (see column E), which shows the potential in smart phones' and internet banking to push the boundaries of banking into the hitherto unbanked territory.

The Nigerian situation concerning ownership of bank accounts is peculiar in that it showed a deep or a reversal of gains in the ownership of accounts in formal banks. This coincided with the period of high inflation in the country. Therefore, with the rising prices and soaring interest rates, people were withdrawing from formal channels of saving and transacting in money by preferring to trust their own guts in personally navigating the crisis in the financial system in this period, than to rely on banks. This shows a trust deficit and an alarming situation because it entails that there can be a lot of people with bank accounts but who do not save money in them.

A recovery in formal financial patronage is reported and reveals a coincidence with the drive by the central bank of Nigeria through deposit money banks and other financial institutions for the growth of mobile banking and internet banking. Therefore, this recovery is easily the result of that effort in spite of the existing inflation.

These analyses give an indication that while there has been more ownership of financial accounts as a result of fintech, the same cannot be said of operating the accounts, especially to save and borrow money. This further reinforces the increased reliance on traditional informal arrangements for saving and borrowing in developing countries.

Global Findex Database respondents who reported having no account gave reasons among which cost-related issues ranked highest, 73% of respondents in sub-Saharan Africa (on average) reported that they do not have an account because of insufficient funds, while 27% reported that financial services are too expensive. About 27% of respondents also ascribed their non-ownership of financial account to the far distances of their residences from financial institutions, while 25% do not have an account because they do not have the required documents.

In general, the results show that, while advanced fintech ecosystems can bring higher financial inclusion by increasing accessibility to financial technology services, it may not directly lead to adoption and usage of those services. This is supported by the findings of Kumar et al.,



(2019) who emphasizes that demand-side issues that affect adoption and usage of financial services are even more critical than supply-side efforts (through fintech) to ensure availability of and accessibility to financial services.

This study notes groups that may still struggle with financial inclusion and usage of financial technology services. These are vulnerable persons because they are poorer, older people, disabled persons, too young, people with low education and most females are found to have a lower chance of being financially included than their counterparts because they are less likely to own and operate bank accounts. In an emergency, they are less likely to raise funds or access credit or even make or receive remittances. This result tallies with that of Zins & Weill, (2016), Allen, et al., (2016) and Datta & Singh, (2019). So the less educated and the poorest are more disadvantaged in the use of fintech services and are less likely to access their financial accounts on smart phones (because they do not have) neither can they make digital payments, or make online purchases nor can they receive digital payments. The poor and the less educated are less likely to send and receive remittances, which could be explained by the fact that they have fewer finances and possess less human capital. The younger population match up well with their older counterparts in usage of fintech services explainable by their exposure to information and communication technology.

Lack of trust (trust deficit) in the conventional system of banking and new fintech remains a serious factor and still causes low levels of account ownership and usage of already opened accounts. (There can be a high level of account ownership but with very low savings level due to a trust deficit in the system.) If not for the compelling traditions of many organizations for employees to own bank accounts, this could result in a drastic fall in bank account ownership or operation. The numerous bank charges and deductions are not helping matters. There is now low levels of formal savings, attributable to low level of trust and confidence in the financial system. There is persistent usage of cash as the major channel of delivering remittances rather than through financial accounts. Also, people in Nigeria and countries of the sub-region continue to rely on informal channels for borrowings, which could be attributed to high cost of borrowing and maintenance of financial accounts.

4.2 Pattern of Usage of FinTech Services in Nigeria

Table 2: Pattern of Usage of FinTech Services in Nigeria SSS (2011, 2014 & 2016)

	A	B	C	D	E	F	G	H	I	J	K	L	M
Year	Mobile money account (% age 15+)	Use a mobile money account two or more times a month (% age 15+)	Use a mobile money account two or more times a month (% with a mobile money account, age 15+)	Store money using a mobile money account (% age 15+)	Store money using a mobile money account (% with a mobile money account, age 15+)	Can use a mobile money account without help from anyone, including a mobile money agent (% age 15+)	Can use a mobile money account no help from anyone, including a mobile money agent (% with a mobile money account, age 15+)	Store money using a financial institution or a mobile money account (% age 15+)	Store money using a financial institution or a mobile money account (% with an account, age 15+)	Has access to the internet (% age 15+)	Own a mobile phone (% age 15+)	Saved money using a mobile money account (% age 15+)	Saved at a financial institution or using a mobile money account (% age 15+)
2011													
2014	2%												
2017	2%												
2021	2%							31%	67%	25%	73%	2%	18%
<b>*SSA</b>													
2011													
2014	12%												
2017	21%												
2021	33%	22%	65%	18%	53%	27%	69%	35%	63%	34%	75%	15%	26%

Source: Extracted from Global Findex Database, 2022

\*SSAS=Sub-SaharanAfrica

Table 2 above presents the pattern of usage of financial technology services in Nigeria. Specifically, the table shows the extent of usage of digital channels to perform basic financial transactions such as accessing accounts on phone, online purchase or payment of bills, receiving remittances into accounts instead of in cash and making withdrawals using the ATM instead of bank tellers. The results show increasing usage of financial technology services. The percentage of respondents who reported to have made an online payment increased from 23% in 2014 to 39% in 2017, and 46% in 2021, while those who either paid bills or bought something online also increased from 2% to 15% between 2014 and 2021. The share of respondents who reported receipt of remittances into account also increased from 37% in 2014 to 65% in 2021, while those who got remittances in cash fell from 39% to 22% within the period. Usage of bank tellers to make withdrawals is also becoming less popular in Nigeria as respondents who reported using bank tellers for withdrawal dropped from 43% in 2011 to 30% in 2021, while usage of Automated Teller Machine (ATM) increased, although marginally, from 51% to 54% between 2011 and 2014.

Although there are missing data for some countries, but respondents in Kenya have the highest rates of usage of financial technology services in SSA (Global Findex, 2017). They are the most likely to connect with their financial accounts using phone or the internet. They also have the highest likelihood of making online payments or purchases. Furthermore, respondents in Kenya also receive remittances into their account more frequently. Coincidentally, the country also has one of the highest rates of national identity card ownership, a strong requirement for opening financial accounts, both in regular banks and on mobile money devices. Across all the countries, it is not unexpected that online purchases and payment of bills recorded the least usage of fintech services. It goes to underscore that there is still higher preference for physical shopping and in-person payment of bills in sub-Saharan Africa. Unsurprisingly, countries with the least account ownership statistics such as Burundi, Central African Republic and Madagascar are also the least likely to use financial technology services (Global Findex, 2017). They are the least likely to make digital money transfer, online purchases and payment of bills and receipt of remittances into financial accounts. It is however surprising to find that Madagascar has one of the highest rates of ownership of national identity cards but lowest access and usage of financial accounts, which means that these countries are still underserved in terms of financial technology services.

## 5.0 Conclusion:

It is very indicative that the period chosen for the study used the latest Global Findex data to explain trends in fintech and the changing structure of financial inclusion in Nigeria. Overall, the analyses proved that fintech is positively changing the pattern of financial inclusion in Nigeria, especially in providing digital platforms for easy conduct of financial services. Results show that the emergence of smart phones is facilitating fintech in contributing positively to financial inclusion through improving access, though this is not directly translating into adoption and usage. Many of the barriers to financial inclusion have been addressed by the emergence of smart phones and their financial technologies. However, some demand-side issues are hampering the level at which these financial technologies are improving adoption and use of financial services.

Serious trust-deficits were found so urgent policy intervention measures that will address these bottlenecks in this regard need to be undertaken, including issues of cost and knowledge. The problems of the vulnerable groups must be addressed in policies. Furthermore, personal beliefs also deter people from operating financial accounts. It is a pointer that policy interventions by governments and players in the sector should take these heterogeneities into account in developing measures to improve and deepen financial inclusion led by smart phones in Nigeria and even in the sub-region.

It is widely suggested that from the perspective of cost, a plausible option is to increase competition among providers of financial services by enabling entrance of new players in the financial space. This must be done without weakening controls over quality of entrants and services during their admission. This is because it is easy to reduce entry barriers to ensure easy entry of new financial services via smart-phone providers which will result in increased competition and broader range of innovative financial services. This should have a wider reach, even at reduced cost. In addition to diversification of financial service providers, interventions should also include stronger safety measures for increased consumer protection to improve trust in the financial system by ensuring that information and assets of customers are kept safe. Of particular importance is the protection vulnerable people and those who are very susceptible to fraud and scam. This can also be done by the involvement of those who provide financial services through smart phones to organize financial literacy programs for customers about the usage of digital financial services. Such programs should target improving ability to make sound and objective financial decisions, choosing appropriate financial service products to improve financial security and resilience. This would also be particularly useful for the less educated and other disadvantaged groups in overcoming their trust issues in the financial system and in dropping some of their personal beliefs against the use of financial services.

It is believed that if policy makers, smart-phone and Fintech players (companies) factor these matters addressed in this study into their plans and activities, then the drive to more financial inclusion should bear great results and smart-phone and fintech companies as well as financial institutions should achieve their full potential as they make great gains.

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