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Technologies for Financial Inclusion in Nigeria

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Abstract
Nigeria is a key regional player in West Africa with approximately 202 million people: one of the largest populations of youth in the world. This is an enormous market for services. However, there is a low level of financial inclusion. A large proportion of the Nigerian population still live in areas where they do not have sufficient access to financial services like banks, and this makes them financially vulnerable. This working paper highlights how Nigerian banks are using technology to enhance financial inclusion in Nigeria. The paper aims to contribute to literature on financial inclusion, financial vulnerability and financial technology from the point of view of an emerging economy.

Keywords: Financial Technology, Financial Inclusion, Financial Vulnerability, Emerging Economy, Nigeria.

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Introduction

Nigeria is a key regional player in West Africa with approximately 202 million people: one of the largest populations of youth in the world (World Bank, 2020). This is an enormous market for services. However, there is a low level of financial inclusion (Demirgüç-Kunt, et al., 2018). A large proportion of the Nigerian population still live in areas where they do not have sufficient access to financial services like banks, and this makes them financially vulnerable. Mogaji (2020) recognises personal circumstances and market structure as two broad categories that affect consumer vulnerability, with these areas impacting on the financial vulnerability of customers, as well as their financial exclusion and inability to access financial services.

Market-specific vulnerability identifies certain market contexts that limit access to financial services (CMA, 2019). This includes underbanked populations around the world that do not have access to bank products or services, either due to their location or access to technology. Market-specific vulnerabilities affect the disadvantaged and low-income demographics of the global population who are left without (i.e. financially excluded) or have very limited access (i.e. financially underserved) to basic financial services, creating a critical equality deficit in different parts of the world (Salampasis & Mention, 2018).

While there is growth in Kenyan and South African financial services, this is not the case in Nigeria. Apart from the fact that Nigeria's population (over 200m) is almost four times that of Kenya and about three-and-a-half times that of South Africa, at about 54m and 59m respectively, internet access, Mobile Money, a cashless economy and other factors that aid financial inclusion are far more advanced in these countries than in Nigeria. Notwithstanding, these challenges present opportunities for Nigeria to grow its financial services provision, especially with the use of technology.

This working paper highlights how Nigerian banks are using technology to enhance financial inclusion in Nigeria. The paper recognises that if customers do not have access to smart phones and the internet, their engagement with financial services

providers may be limited. However, Nigerian banks and financial technologies (FinTech) are making efforts to improve their services and engage more with customers. Nigerian banks are aiming to ensure that more depositors' funds are in the banking system. Issues that relate to financial inclusion in Nigeria are rapidly improving based on data from Nigeria Inter-Bank Settlement System (NIBSS). In addition, the cashless policy of the Central Bank of Nigeria (CBN) is helping this shift towards greater financial inclusivity. In addition, there are growing efforts from the federal government to increase internet access and presence in the country, breaking the monopoly that used to exist with power (electricity) generation, transmission and distribution through privatisation and encouraging foreign investors.

Mogaji (2020) recognises the roles of financial policies, technology and education in overcoming the barriers of financial inclusion. This paper specially focuses on the use of financial technology for financial inclusion in Nigeria. The study provides a theoretical insight into the key technologies used in the Nigerian banking sector. In addition, the prospects and challenges of these technologies are discussed. The paper presents the managerial implications for bank managers and policy makers when developing technology to enhance financial inclusion. It aims to contribute to the academic literature on financial inclusion, financial vulnerability and financial technology from the point of view of an emerging economy.

The Technology

Technology can open up opportunities for financial inclusion, allowing people to engage in financial activities without the restrictions of physical location or social status. This section examines the different technological developments by Nigerian banks and other financial technology (FinTech) companies to increase financial inclusion in the country.

Mobile Apps

These are applications that have been developed by the banks to encourage online transactions. With these apps, consumers are expected to do most of their transactions online, meaning that they do not have to visit banks. It is anticipated that wherever customers live within the country, they should be able to access the mobile app and carry out transactions.

Acceptance of technology in this area is just starting to grow. This form of innovation to improve financial inclusion appeals more to millennials, Generation X and Generation Y, as these demographics are those that are more interested in using technology. This often excludes older consumers who still prefer physical cash instead of relying on an app to transfer money they cannot see.

The number of people that have a smart phone to download and use this app is lower than was initially anticipated, which is not ideal for the adoption of this technology. In addition, the memory size of the available smart phones also presents limitations regarding the number of applications that can be downloaded and used by customers.

Limited access to the internet in Nigeria presents a huge challenge to consumers relying on their bank's mobile app for financial transactions. Consumers may be interested in using the app but discouraged because they often do not have regular enough internet access for usage of the app to be feasible.

Unstructured Supplementary Services Data (USSD)

With a growing number of Global System for Mobile Communications (GSM) users in Nigeria, USSD has become an alternative means of enabling financial transactions and financial inclusion. USSD, sometimes referred to as 'Quick Codes' or 'Feature codes', is a GSM service that allows high-speed interactive communication between subscribers and applications (in this case, banks) across a GSM Network (Dabas & Dabas, 2009). The banks have different codes that allow consumers to carry out financial transactions

on their mobile phones. Some examples of these codes are First Bank *894#, First City Monument Bank (FCMB) *389*214# and Guaranty Trust Bank (GTB) *737#

The primary benefits of USSD are that it is cheaper than existing methods and that it allows for rapid communication between the user and an application, giving the system real-time characteristics (Dabas & Dabas, 2009). In addition, this technology is available every hour of the day, provided that customers have credit and internet access on their phones. This provides an easy and convenient mode for many customers in rural areas who may not have access to home internet or banks.

USSD does not rely on the internet but GSM technology, which makes it more suitable than using a mobile app in a country where there is limited access to the internet. This also means that those who do not have internet access but do have the GSM network on their phone can make and receive calls as well as carry out financial transactions. This is also beneficial to those in the rural areas where there may not be internet facilities, as they can rely on their GSM network.

For users without a smartphone, USSD still enables financial inclusion, as the codes are not just limited to smartphones. The codes can be used on any type of mobile phone. For those who do not have smartphones, they will still able to use their classic mobile phones to make transactions. Even though these phones have less-advanced features and generally focus on their ease of use, they can still be used for USSD transactions. This makes financial services inclusive for those customers who do not have or cannot operate a smart phone.

The banks' charges, however, present a challenge. The customers are charged to use this service and it presents a limitation. There is a monthly charge for customers to use the code and concerns around the reasons for this charge. Consumers feel banks should spend money building banks closer to them and not charge them to access their money. This perspective persists even though, globally, Nigeria included, fewer and fewer banks are spending a lot of money on building physical locations, as technology is making it possible for people to conduct their transactions without them.

While bank branches may no longer be built, consumers still look for alternatives to bank fees, which may mean travelling to the bank to carry out transactions. It should be noted that USSD is accessible to financial service providers, which includes banks, Mobile Money operators and payment service suppliers, and there is no universal standard for all these channels. This opens the potential for security breaches, which may make consumers vulnerable.

Theft of mobile phones and SIM cards poses a challenge for full adoption of this technology, as these devices are usually connected to bank accounts or provide customer details. Stolen SIM cards and phones can be used to gain access to accounts and defraud users. Another situation that has exposed the security shortcomings of the USSD system is SIM swaps. A SIM swap is when a network user replaces their SIM with a new SIM, moving their data or existing number to this new SIM. The problem with SIM swaps is that someone that does not own the phone can go to a mobile centre for a SIM swap and access the owner's data, including their bank account information (Salaudeen, 2018).

Mobile Banking Technology

Mobile banking technology is used by individuals and small business owners that have been accredited by financial service providers in Nigeria to carry out transactions on behalf of the banks and other financial service providers using FinTech. This is also described as agency banking, which is a dispersed and more mobile nature of ensuring deepened financial inclusion for the unbanked (Akinpelu, 2018). Agency banking is known by different names in different countries, such as correspondent banks, non-bank correspondents and non-bank agents.

This technology serves as a hub that brings the bank together with the customer through the assistance of a Mobile Money agent. Many banks in Nigeria, like First Bank, Eco Bank and Stanbic IBTC are considering these money agents as an alternative to opening bank branches in many areas around the country. Considering the growing

population of Nigeria, there are concerns about new bank branches, such as whether the number of branches will be enough to meet the needs of the customers. However, it is essential to recognise that technology is cheaper and easier to maintain if banks want to increase their access to customers and enhance financial inclusion. This has therefore presented a range of possibilities for individuals and small business owners to become Mobile Money agents, strategically located in places that do not have bank branches or ATMs.

These money agents are mobile, suggesting they can move around their area to provide banking services. In some cases, the agents can be in a shop or kiosk within the area. The shops can be branded with the bank's name and logo in order to signify that they are a Mobile Money agent. It enables different branchless banking services, as the agents can provide access to many banks. This is closely related to the idea of Post Office Banks in the UK and Ecobank: Nigeria's post office locations at the University of Lagos Post Office, the Marina Post Office and other areas. The agents are provided with mobile point-of-sale technology (Mobile POS) and PIN pads that are connected via the internet or Bluetooth to a mobile phone. The PIN pad only allows cardholders to insert their card and enter a PIN. Consumers can walk up to these agents and use their ATM cards to deposit and withdraw cash, pay their bills and buy credit for their mobile phones.

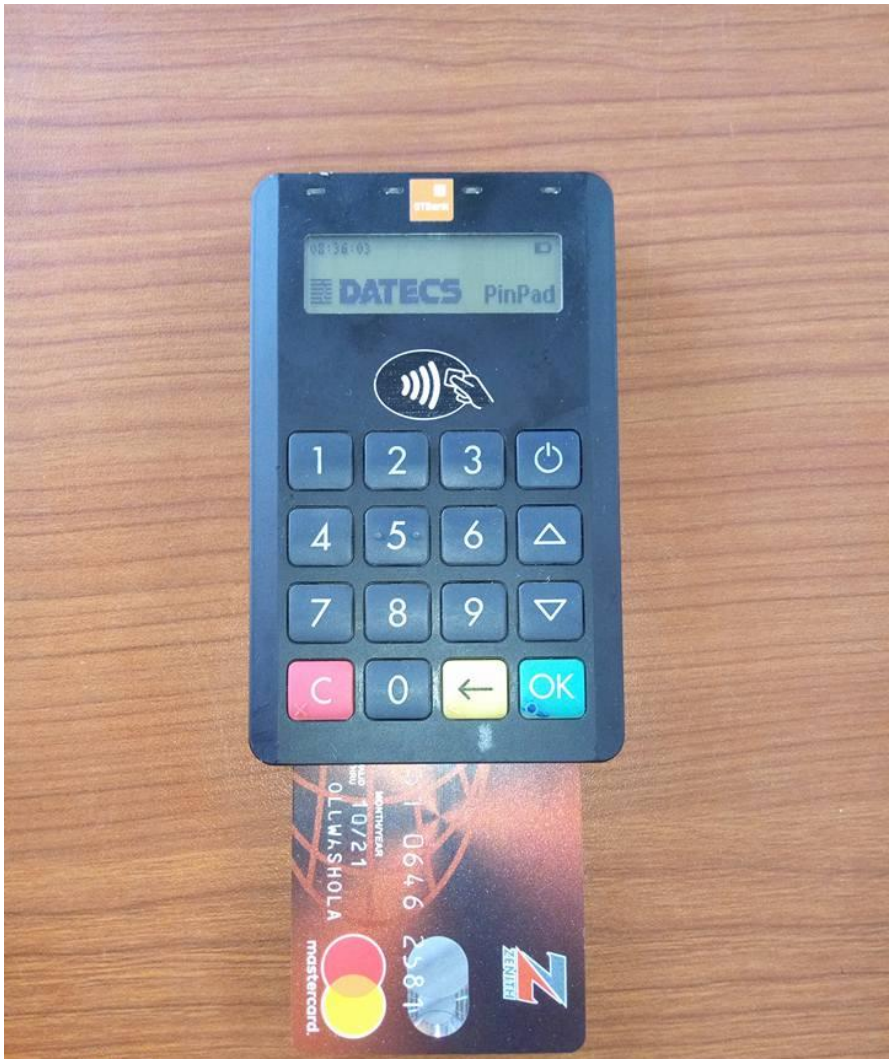

Figure 1: PIN pad being used at a Mobile Money agent. Source: Nairaland

This mobile banking technology is not limited to banks. Telecommunications companies are also coming on board to work with mobile banking agents to reach out to consumers. Globacom's Glo Xchange (Figure 2) is the first Super-Agency Network licensed by CBN as a Mobile Money operator in Nigeria. MTN Nigeria has announced that its subsidiary, Yello Digital Financial Services Limited (YDFS), has been granted a full Super-Agent licence by the CBN (MTN, 2019). These telecommunication companies can integrate these mobile banking technologies into their existing telecommunication networks. Consumers can use this mobile banking technology irrespective of which type of mobile phone they gave, and this gives the telecommunication companies an added advantage to reach out to their customers.

Figure 2: Advertisement on Glo's website inviting prospective entrepreneurs to be a Mobile Money Agent. Source: Glo

Mobile Money agents bring the bank to the consumers, especially those in rural areas where there is no bank branch or ATM to access their money. These money agents can assist these consumers to receive money without going to an ATM. They can also make payments and transfer money using the agents. This business structure creates jobs for many people within the banking industry. These agents work on their own within their allocated territory, and they get commission on different transactions. There are also possibilities for business-to-business transactions such as bus ticket personnel on the Bus Rapid Transit (BRT) allocated to bus stops based on shifts (with limitations). However, money agencies are becoming a lucrative business, and this shift could lead to a concentration of agents within an area, while other customers are still left underserved.

Their services, however, rely on equipment, mobile networks and internet connectivity to function independently. They need the internet to access customers' accounts, record deposits and carry out other transactions. In situations and locations where there is no internet, these transactions may not be completed, and consumers will not have alternative options other than USSD or to travel to the bank to use an ATM. This can lead to customer dissatisfaction. Furthermore, the money agent may not be able to solve the problems customers encounter, as they are simply an agent. The consumer–bank relationship here becomes weakened as consumers may want to engage with the banks holding their money instead of an agent who is serving a variety of banks and FinTech companies.

The bank charges for the services these money agents provide, which also introduces a barrier against its adoption and integration. Bank charges are shared between the agent and the bank. In addition, some money agents might charge their own fees for certain transactions. These businesses see this as a fee for providing their services, especially in rural areas. For example, a money agent who has to boost their internet connection to allow faster service might charge additional fees. These customers often have no choice as it may be cheaper to pay the money agent an additional fee than travelling to use an ATM.

Security concerns are also a limitation. There is an implication that the money agents might be robbed because they are seen as a 'bank' but have limited security. Likewise, consumers may be prone to fraud. ATM cards can be taken to a money agent without an identity card or any form of identification. These ATM cards and their PIN may have been forcefully taken by thieves and the agent may have no way of stopping such transactions.

Third Party Payment Apps

These are apps provided by FinTech companies that have been approved by the Central Bank of Nigeria and licensed as Mobile Money operators to provide financial services. The apps are a hybrid of mobile apps from banks, using USSD for transactions and services from Mobile Money agents. These apps allow consumers to send money to anyone in Nigeria with a phone number or email address. Interswitch, founded in 2002 by Mitchell Elegbe, is considered the unicorn of this sector as Visa acquired a minority equity stake in the firm (Bright, 2019). Interswitch pioneered the infrastructure to digitalise Nigeria's then predominantly paper-ledger and cash-based economy. Other players include Palmpay, oPay, Paystack and Paga.

Third-party apps also offer a wallet service. This is closely related to the idea of PayPal. Consumers can transfer money from their other accounts into their wallets, and they can link their bank account(s) and debit card (popularly known as ATM cards in Nigeria)

to their wallet. Consumers can also pay for services using money from their wallet. For example, Oride is a ride-hailing app and OFood is a food-hailing app, both owned by Opera. Opera also owns OPay, which is a mobile payment app with wallets. Consumers can add money to their OPay wallet and use it to pay for their transportation (on Oride) and food (on OFood) without transactions through their banks or using their debit cards. Consumers can also receive money to their wallet. An example of how this can occur is the service justpaga.me, which creates unique links that customers can share allowing them to receive money from anyone, including customers.

These third-party payment apps are competing with, yet also complementing, the efforts of banks toward financial inclusion (EFInA, 2015). FinTech companies rely on banks, telecommunication companies and other stakeholders to meet their objectives. They are making efforts to become a one-stop hub for financial transactions. This involves the use of wallets, mobile banking agents and opportunities for individuals to pay for services through their platforms.

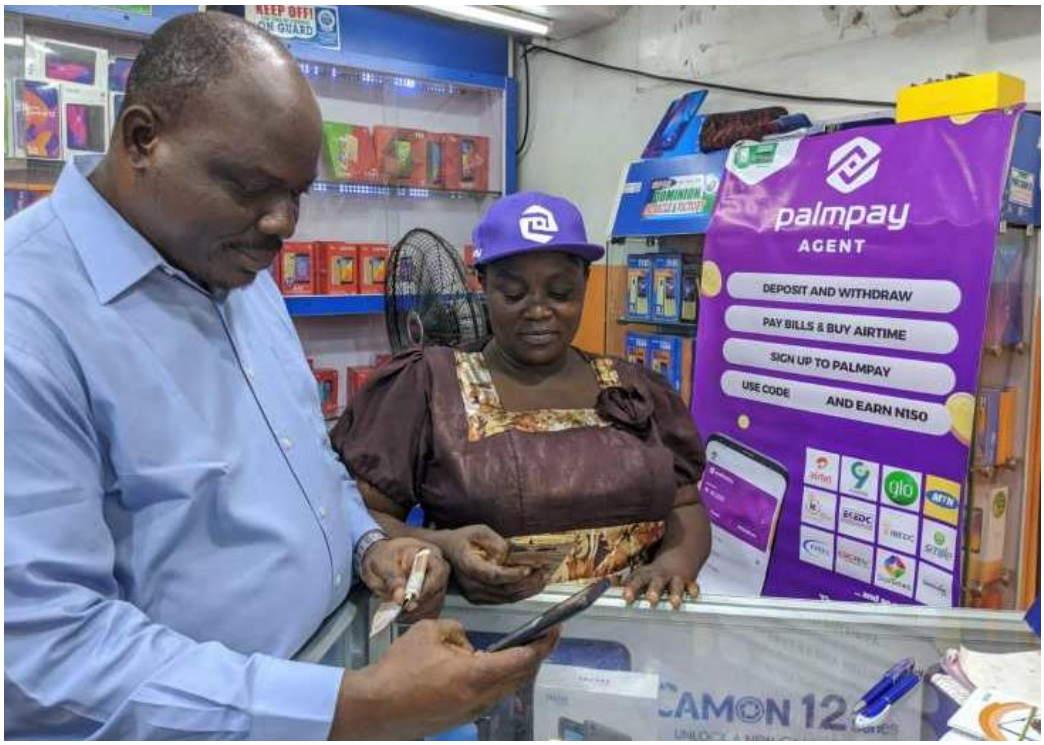

Figure 2: Customer making financial transaction at a Palmpay Mobile Money agent. Source: TechCrunch

Discussion

Financial inclusion is essential to the economic wellbeing of the country. With Nigeria's ever-growing population, there are concerns about the level of financial inclusion and accessibility to financial services, especially to those who do not have the access to and knowledge of technology, as well as those who live in rural areas with limited access to bank branches and ATMs.

There are also underbanked and unbanked customers who should be engaging with financial services. This paper has highlighted three key strategies adopted by Nigerian banks to reach these potential customers. While they all rely on technology to bridge this financial gap, there are possibilities that make it feasible to meet the needs of these demographics.

Technological infrastructure, customers' acceptance of technology, access to internet, and bank branch availability will always shape the adoption of these technologies. In addition, bank charges pose a barrier to financial inclusion. Valid and legitimate concerns remain around who should be paying for these charges. On one hand, there is the argument that banks should provide bank branches and ATMs instead of charging the consumers. On the other hand, there is the argument that this infrastructure needs to be maintained and supported, and surely someone needs to pay for it.

This study highlights theoretical and managerial implications for academic research, policy makers, financial services marketers and managers. The paper has been able to present the technology adopted in Nigeria to bridge the financial inclusion gap. While recognising there are challenges with access to internet and smartphones, there are indications that Nigerian banks are rapidly adopting FinTech to ensure that consumers within the country have access to financial services. These innovations recognise the limitations in accessing bank branches and ATMs and have provided Mobile Money agents to bring the bank closer to consumers. USSD can work on any mobile phone

and does not require the internet. These efforts are commendable. However, there are still many more things to do to enhance financial inclusion in Nigeria

There is the need for these services to be well-communicated to the consumers. While the banks are trying to raise awareness, there is still room for improvements, especially in locations where consumers may not have access to technology. In such cases, traditional forms of advertising and demonstration of the technology are important. This should align with the banks' corporate social responsibility aims and achieving the Sustainable Development Goal (SDG) to reduce poverty. Other regulatory agencies and policy makers such as CBN, NIBSS, Nigeria Deposit Insurance Corporation (NDIC) and other financial institutions (OFIs) have a role to play in terms of raising awareness and informing the general public about their roles in ensuring financial inclusivity.

In a country with over 500 languages (WorldAtlas, 2020), these technologies allow consumers to conduct banking transactions using their language without being restricted to the country's official language, i.e. English. Consumers can make financial transactions on USSD using their local language. In addition, for consumers in rural areas who may not understand English, they are able to converse and engage with their Mobile Money agents. These technologies are not only breaking the barriers put up by physical bank locations but also the language barrier, therefore making financial services more assessible to many individuals.

Policy makers, banks, telecommunication companies and other stakeholders within the financial services sector need to consider the implications of bank charges on financial inclusion. There are indications that these charges present a barrier and that efforts should be made to reduce these charges or cap them (Omole, 2019). Efforts by the CBN to present a fixed charge for consumers are welcomed, but there is still much more to be done with regards to open, transparent and clear information about charges.

While banks are pushing the use of technology for financial inclusion, it is important to get other partners and stakeholders involved, especially telecommunications companies and FinTechs. There is the Globacom's Glo Xchange and MTN's YDFS, but there is still room for improvement with regard to encouraging competition that will benefit the consumers and further enhance financial inclusion. There should also be different incentives and support options provided to new FinTech companies entering the market.

With new players coming into the financial services landscape, there should be guidelines and policies to ensure data protection and security for these technologies. Consumers should be reassured that their transactions are safe and that the banks are putting measures in place to ensure their data protection to avoid scams and fraud.

Trust is also an important consideration when using technology for financial inclusion. There may be those who do not trust the banks because they cannot access their physical money, or those who will not trust Mobile Money agents that their transaction has been completed because they have not seen the confirmation text message on their phone. This highlights implications for education and awareness for consumers and infrastructural development, as, when mobile networks do not offer instant confirmation for transactions, this can hinder trust.

There are also implications for data analytics and a better understanding of the consumers through consumers' engagement with these technologies (Dwivedi, et al., 2019). Banks can collect data from consumers and process it in other to serve them better. The vast amount of data being generated, increased use of mobile devices and USSD presents a significant development in and introduction to artificial intelligence (AI) to their services to better understand their customers and prospective customers (Cunneen, et al., 2019; Mogaji, 2018). This presents opportunities for more innovative and relevant product offerings in financial services (Mogaji, et al., 2020).

There should be an increase in financial education to further raise awareness about the prospects of financial capabilities and its dark sides, which include fraud and scams.

Banks should endeavour to educate their consumers about the benefits of technology for financial inclusion and on how to avoid being defrauded and scammed. This could even take the form of curriculum elements in financial education right from the level of secondary schools or by making it a general course in the first year of colleges, polytechnics and universities.

The management of money agents is also important for banks and FinTechs. The physical location of the agents should be known, even though they are mobile. This is to ensure that not too many agents are concentrated in a location while many other people remain unserved or underserved. Similarly, their security is important. Mobile agents may need to install CCTV and possibly ask for means of identification, matching the names (first and last) on the ATM cards/accounts with documents provided by the customers. This may not be well received, as ATMs do not ask for identification, but consumers need to be reassured for their safety and protection.

Mobile Money agents can metamorphosise into community banks, which can replicate the functions of commercial banks in rural areas. Adequate technology and infrastructural facilities for community banks will be better and more productive than commercial banks that operate in rural areas. This is, however, a recommendation that requires the input of policy makers, banks (commercial banks, microfinance, FinTech) and other stakeholders to evaluate its prospects and possibilities.

Conclusion

There are still many Nigerians that are financially excluded (Demirgüç-Kunt, et al., 2018). They do not have bank accounts and are limited in their financial transactions. Although banks have not been able to physically present themselves to those in rural areas in the form of bank branches and ATMs, technology offers an opportunity to close this financial gap by reducing the cost of providing financial services.

With a specific focus on Nigeria, the most populous nation in Africa, this study has highlighted key technologies used by banks and FinTech companies to provide financial services for their customers. The prospects are there, as consumers are

accepting and getting used to them. However, there are still many more things to do. The banks and other stakeholders need to create more awareness about these technologies, educate their consumers and reassure them that their money is safe. Consumer relationships in the adoption of these technologies is vital.

This study presents a theoretical contribution to financial services marketing, financial inclusion and FinTech from a developing country's point of view, recognising what the key players in Nigeria's financial services landscape are doing in the midst of their challenges on internet, security and devices. It also offers practical implications for marketers, managers and policy makers on how to develop the financial services landscape and increase the level of financial inclusion in Nigeria.

Limitations to this study are also recognised. The study focused solely on Nigeria and only provided an overview of the technology being used to increase financial inclusion. There are possibilities for many more forms of technology that may not have been considered or explored. This limitation therefore opens the opportunity for future research into these technologies, in order to have a holistic overview of the field of financial inclusion in developing countries. In addition, future studies can explore how these services are being communicated by banks and how consumers are engaging with these technologies. Findings from these researches will provide further insight into the industry and what needs to be improved to close the financial inclusion gap.

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