



**POS AND FINANCIAL INCLUSION IN MAIDUGURI
METROPOLITAN COUNCIL, BORNO STATE, NIGERIA**

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Abstract

The advent of POS in the financial system heralded the decentralization of banks due to the several roles it plays. This study looks at one of such roles by assessing the effect of POS on financial inclusion in Nigeria. Specific objectives of the study include to assess the effect of POS on the affordability of financial services and to examine the effect of POS on accessing bank transactions by unbanked individuals. The population of the study were bank customers, which were 533, 418. Using Yamani formula, a sample size of 400 was arrived at. The study adopted convenient sampling as the method of sampling technique. It deployed Multiple linear regression to analyse the data using SPSS version 20. Findings of the study revealed that the presence of POS has significantly improved the availability of financial service in the city of Maiduguri. The study also showed that the presence of POS has significantly affected the affordability of financial service in the city of Maiduguri. The study therefore recommended that infrastructural architecture of the POS platforms nation-wide should be further revamped and spread to every part of the country as these will further attract people; especially the unbanked to the banking sector and Banks should further, work on reducing the numerous charges and deductions they engage in so as to reduce the perceived high cost of patronizing POS. This will encourage the low-income individuals to patronize POS terminals nationwide.

Key Words: *Point of sale (POS), Financial inclusion, Financial service, Financial innovation, Bank and Unbanked.*

INTRODUCTION

Background to the study

Financial inclusion is an initiative that aims to provide financial access to the unbanked population, promote economic growth, reduce poverty, and address social inequality. It involves developing financial management skills, promoting savings, and enabling individuals to make informed financial decisions. The banking industry is shifting towards a customer-centric

approach from operations-centric, and the delivery of services has moved from physical branches to branchless channels.

Agent banking, particularly through the use of point-of-sale (POS) devices, has emerged as an effective means of extending financial services to underserved populations. Agent banking leverages technology such as mobiles, ATMs, and POS devices, with agents located in retail outlets to facilitate financial transactions.

Financial inclusion encompasses easy access, affordability, and usage of formal financial systems, including banking, credit, and insurance products. It targets the unbanked and underbanked population, aiming to provide sustainable financial services. Achieving financial inclusion is crucial for promoting economic growth and development, and it has become a priority for many countries worldwide.

The Central Bank of Nigeria (CBN) initiated the Financial Inclusion strategy to ensure access, availability, and usage of the formal financial system for all individuals in the economy. Financial inclusion is globally recognized as a crucial factor in reducing poverty and promoting wealth by providing access to financial services such as credit, deposits, insurance, and payments at affordable costs. In Nigeria, financial inclusion is achieved when adults have easy access to a wide range of formal financial services that meet their needs. Technology and globalization have transformed the banking industry, leading to changing customer preferences and demands for quality, speed, and variety of services.

Statement of the Problem

One of the major problems/challenges faced by banks is capturing and tracking all types of transactions conducted by businesses and individuals, as well as the difficulty in providing round-the-clock banking services. To overcome this problem, banks introduced Point of Sale (POS) systems, which enable businesses to process purchases, store transaction data, and collect valuable information for business development. POS transactions have become a common and convenient method for conducting financial transactions, particularly for those seeking quick access to cash. The presence of POS centers in local neighborhoods has exposed people to the efficiency of banking operations and generated interest in banking services. However, it is unclear how many of the unbanked individuals who use POS services have transitioned into becoming permanently financially included.

In developing countries, a large portion of the population faces financial disadvantages due to limited access to banks, long queues, language barriers, and excessive paperwork. POS systems have the potential to address these challenges by providing specialized and affordable services to economically disadvantaged individuals at any time of the day. Shittu (2010) states that the increasing availability of internet access, smartphones, and social media has contributed to the preference for digital banking, as exemplified by the widespread presence of POS centers in neighborhoods. While many studies have used the agency banking model to extend financial

services (Soriano, 2017), there is a lack of empirical research specifically examining the impact of POS systems on the ease of access and availability of formal financial systems in Nigeria, which is crucial for achieving financial inclusion. Therefore, this study aims to fill the research gap by investigating the effect of POS systems on financial inclusion in Nigeria.

Objective of the Study

The main objective of the study is to assess the effect of POS on financial inclusion in Nigeria.

The specific objectives are to:

- i. examine the effect of POS on the availability of financial services;
- ii. assess the effect of POS on the affordability of access to financial services;
- iii. assess the effect of POS on accessing bank transactions by unbanked individuals;
- iv. examine the effect of POS on frequency of usage of financial innovations.

Research Questions

From the aforementioned objectives, the following research questions were formulated.

- i. How has POS assisted in making financial services available to everyone in the economy?
- ii. Has POS made banking services affordable to everyone in the society?
- iii. Has the presence of POS enhanced people's opportunity to access financial services?
- iv. Has the presence of POS increased the frequency of usage of most banking services?

Statement of Hypotheses:

The following Hypotheses will be tested:

H₀₁: the presence of POS has not significantly affected the availability of financial service

H₀₂: the presence of POS has not significantly affected the affordability of financial service

H₀₃: the presence of POS has not significantly motivated people to access financial service

H₀₄: POS platform have no significant effect on the frequency of usage of financial service innovation by the society.

LITERATURE REVIEW

Conceptual Review

The study looked at three concepts in-depth, due to their wider and core relevance to it. These concepts are: Financial inclusion, Point of Sale and financially included person.

Financial Inclusion

Financial inclusion refers to a situation where all members of the economy have easy access to formal financial systems, can afford credit, and can use financial products and facilities without difficulty (Adesina, 2020). It involves providing access to basic financial services, such as banking, insurance, and financial literacy, and enabling individuals to manage their resources effectively (Clifford-Chance, 2021). Financial inclusion is a multidimensional concept that

encompasses access to and use of various financial services. Nguyen, (2021) asserted that to ensure that all individuals, including the poor and marginalized populations, have access to quality financial services at affordable prices. Currently, a significant portion of the global population remains underbanked or financially excluded, posing challenges for small and medium-sized businesses as well.

Financial inclusion is particularly crucial for developing economies like Nigeria, where social-economic inequality and poverty levels are high. It involves delivering basic banking services to all sections of society, especially disadvantaged and low-income groups, and providing timely and adequate credit at affordable costs (Oumarou & Celestin, 2021). Adesina (2020) defines financial inclusion as extending banking benefits to those who are currently excluded, ensuring access, fairness, equity, and safety in the financial system. It involves coordinated efforts by governments to deepen financial services and provide low-cost, fair, and safe financial products and instruments, including bank accounts, credit, savings schemes, insurance, and payment facilities.

This study sees financial inclusion as the provision of affordable financial services through account opening, access to payments and remittance facilities, savings, loans and insurance services by the formal financial system to those who tend to be excluded. Rhyne, (2020) made it clear why most economies must engage in Financial Inclusion drive. He stated that majority of the population mostly people living in the rural areas do not have access to financial services delivered by regulated financial institutions. As a result, being included in the financial system helps people to:

- a. Make day to day transaction such as; sending and receiving money,
- b. Boost/safeguard saving,
- c. Plan and pay for recurring expenses such as school fees and other bills,
- d. Improve their overall welfare,
- e. Handle uncertainties that require unexpected payment.

He also stated that the targets of Financial Inclusion in Nigeria is to reduce financial exclusion to 20 percent by 2025 from the 2012 level of 46.3 percent. (i.e to reduce the total number of people who are unbanked by 20 percent.). Also, financial inclusion aims at making banking services accessible by the unbanked and underprivileged population/citizen of a country, through consumer protection and awareness.

Point of Sale (POS)

Point of Sale (POS) also sometimes referred to as Point of Purchase (POP) checkout is the location where a transaction occurs. A "checkout" refers to a POS terminal or more generally to the hardware and software used for checkouts, the equivalent of an electronic cash register. A POS terminal manages the selling process by a sales person accessible interface. The same system allows the creation and printing of the receipt (Shittu, 2010). The term "Point of Sale

(POS)" or "Point of Purchase (POP)" refers to the location and time where a retail transaction is completed (Okeke, Nwatu & Ezech, 2017). The POS terminal is also known as a POP terminal and is used for instant payment of goods and services, as it is user-friendly, easy to operate, and has multi-functional capabilities (Altunbas and Thornton, 2019). POS terminals allow customers to access their linked bank accounts in real-time through debit or credit cards (Iwedi, 2017). They are considered by Awoniyi (2022) as a virtual replacement for cash transactions. The terminal keeps a record of customer purchases and deposit transactions, allowing customers to check their balance, pay for items, and perform funds transfer transactions without the need for physical cash (Ikpefan, Akpan, Godswill, Evbuomwan, Ndigwe, 2018). In other words, the POS terminal facilitates virtual movement of funds to support merchants in monitoring their customers' transactions (Agbaje and Ayanbadejo, 2013). A POS terminal is a device deployed in a merchant location that allows users to swipe their electronic cards to make payments instead of using physical cash (Williams, Olalekan & Timothy, 2018). The adoption of POS terminals has significantly reduced the volume of cash-based transactions, as such adoption of POS technology allows cardholders to make payments at sales or purchase outlets without the need for physical cash (Osang, 2017). The terminal offers many advantages, including ease of payments, convenience, and security (Morufu, 2016).

Financially Included Person.

According to Anyanwu & Anumaka (2020), financial inclusion is defined as an individuals being legally captured in the banking system and owning at least one bank account. Despite progress, almost half of young people aged 15-24 are still financially excluded (OECD, 2020). Digitalization and access to digital financial services can help overcome barriers to youth accessing and using financial services, such as physical infrastructure limitations and high costs. Digital financial services offer convenient, fast, secure, and customizable transactions, contributing to the resilience of both the financial sector and individuals (Demirguc-Kunt and Klapper, 2012).

According to the World Bank (2021) forum, Children and young people, often referred to as "digital natives," having early access to personal digital devices, creating opportunities for financial institutions and Fintech companies to develop digital products and services tailored to their needs (Didenko and Buckley, 2021). Digital innovation should consider broader contextual factors affecting financial inclusion to bring youth into the formal financial sector in an age-sensitive and appropriate manner (Iwedi, 2017).

POS and availability of Financial Services

According to Nguyen (2021) entails how consumers in the united states of America in southern California, have embraced concept of availability in banking as initiated POS, inside selected supermarkets operated by Ralph's Grocery company. This means convenience for customers

and profitability for the banker, shoppers at mega stores, groceries can conduct banking at their convenience. Study conducted in the USA found out 63% of US adults would have to use POS due to availability, convenience, subsequently globally banks are becoming more innovative as per another study commissioned by Infosys and conducted by Efma, surveyed 148 banks in 66 countries, the study revealed that as global economy recovers many banks are turning to innovations as means of raising revenue, cutting costs thus creating convenience for the customer (Teller Vision, 2014).

In Africa the case for availability would arise based on cost of building, unsteady incomes, unemployment, distance to bank branches and maintaining branches in rural areas thus the need to adapt low-value, high volume transactional environment with numerous points of access, (Financial Services Survey in Nigeria, 2010). Fenuga (2010) emphasize that agents offer similar services as banks which range from cash deposits, withdrawals, disbursement, loan repayment, salary payment, transfer of funds, mini bank statements, balance inquiry, cash payment of bills and cash deposits. Survey conducted by Nnamani & Makwe (2019) found out that 99 percent of respondents said that they still use branches, however ATM's are becoming important in African banking systems; 85% respondents say they use ATM's and saying that they use them on weekly basis. Alternative channels have also attracted customer participation of point of sale (POS) enjoys 69% usage, conclusion is that the acceptance of POS across Africa is increasing in most markets.

POS and Affordability of Access to Financial Services

Claessens (2006) in their analysis of the causal relationship between quality, customer satisfaction and purchase intention found that service quality was an antecedent of consumer satisfaction, consumer satisfaction had significant effect on purchase intention. In analysis this then means that high service and customer satisfaction results in high level of purchase intentions. Nguyen (2021) says that the heart of service is in the value it gives to the stakeholders. The sustainability of service has two dimensions of core value; which is the fundamental nature of that service and super value; replacing other solutions by a more appropriate one. For example when one to travel he has choice of using train, 'bodaboda', taxi or doing it by self. Shifting the service boundary direction either to self-service or super service will effect changes in the resource arrangement and effort of running the change, however it may not change the service core business, (Irvin, Lain and Vishwanath, 2021). This is to say that when the Kenya Commercial Bank is effecting change in using agent banking to its clients this doesn't affect the banks core values but will affect resources being used to effect the change. Both the service provider and customer have to be responsible in discharging this relationship for example the customer is expected to have in mind his/her economic, social, political, ecological state while the provider has to outline the areas being covered by the service, (Claessens, 2006).

POS and Accessing Bank Transactions by Unbanked Individuals

Study done by Akileng et al. (2018) on service quality established ten parameters (reliability, responsiveness, competence, access, courtesy, communication, credibility, security, understanding and tangibles) but later research by them, established five key areas from the ten; tangibles, reliability, responsiveness, assurance and empathy. Result found out that the five ranked in this order; reliability, responsiveness, assurance and empathy but according to Johnson & Scholes (2003) identified accessibility as the vital service quality factor. Irvin, Lain and Vishwanath, (2021) identified employees willingness to respond to problems and employee responsiveness to customer needs as key to service delivery. Thus objectives of accessible banking service shall cut customer waiting time, real time, relevancy, reduce transaction time, cut costs and wastes through reduction in idle time, wastes and inefficiencies. The intention of responsive banking is to help prevent loss of customers by elimination of inefficiencies.

POS and Frequency of Usage of Financial Innovations.

The pursuit of digital currency, such as POS, is driven by the goal of redesigning a citizen-friendly and inclusive financial system. As Yuhelson et al. (2020) shows the utilization of digital currency has the potential to expand access to financial services across borders. It has been successful in increasing formal financial users in countries like India (Mobile Solutions Technical Assistance and Research (mSTAR), 2019).

The adoption of POS for financial inclusion is expected to aid the economic recovery of the poor, both in rural and urban areas, especially in the post-COVID-19 era. Financial inclusion is recognized globally as a catalyst for sustainable development, contributing to several of the United Nations' Sustainable Development Goals. It is also crucial for achieving equitable wealth distribution, social inclusion, justice, and security (World Bank, 2018).

Financial exclusion hampers the quality of life and economic growth, particularly in economies with low financial inclusion. Access to financial services is vital for individuals and small businesses to make timely plans, investments, and pursue growth opportunities, leading to reduced income inequality and faster economic growth. The G20 group of developed economies has shown interest in advancing global access to finance through high-level principles for financial inclusion (Demirguc-Kunt and Klapper, 2012).

Nigeria's Position on Financial Inclusion

Nigeria is one of the regions in Sub-Saharan Africa with a highly unbanked population (Akileng, Lawino & Nzibonera, 2018). It is estimated that over 60% of her over 206.1 million population are excluded from the banking system (Global Finance, 2021). This is not surprising given that currency outside the banking system continues to rise year on year and citizens tends to be comfortable living their lives without any noticeable relationship with the banking system. Currency outside the banking system grew by more than 50% between 2015 and 2020 from

1.46 trillion naira to 2.3 trillion naira, respectively (CBN, 2021). This moved the year-on-year growth rate from 12% in 2016 to 25% in 2020 Central Bank of Nigeria (CBN), 2021. Attributed to two episodes of currency depreciation of 2016 and 2020, whose effect is shown in rising inflation, this has caused many Nigerians to be further drifted away from financial inclusion services. Furthermore, available data show that the financial inclusion stance for Nigeria is low. As shown in Table 1, Nigeria is one of the regions in Sub-Saharan Africa with a high unbanked population with 60% unbanked population. This is disturbing economically when compared..

Table 1: Showing World most Unbanked Countries

Country	Total pop. (Mill)	Unbanked pop. (%)	Cash trans. (%)	Card Trans. (%)	Internet penetra. (%)	No. of ATMs per 100,000 adults
Morocco	36.9	71	41	21	62	28.6
Egypt	102.3	67	55	27	45	20.1
Nigeria	206.1	60	24	27	70	16.9
Mexico	128.9	63	21	44	66	61.5
Vietnam	97.3	69	26	35	66	25.9
Philippines	109.6	66	37	22	60	29.0
Indonesia	273.5	51	13	34	55	53.3
Kenya	53.8	44	40	25	83	7.7
Brazil	212.6	30	18	62	67	101.7
India	1,380	20	17	32	34	21.0
China	1439.3	20	6	22	54	95.6
USA	331	7	4	59	89	NA

Source(s): Extracted from [Global Finance \(2021\)](#)

With other developing countries with similar populations; for instance, Brazil with only 30% unbanked population, India with only 20% unbanked population and Indonesia with 51% unbanked population. This may be a direct result of dismal access to digital currency channels like automated teller machines (ATMs) in Nigeria compared to other developing countries. As shown in Table 1, ATMs penetration per thousand declined in Nigeria (16.9%) compared with a similar counterpart in Africa (notably Morocco (28.6%) and Egypt (20.1%); and in other regions across the world (for instance Brazil with 101.7%, Indonesia with 53.3% and India with 21.0%) in 2021.

Table 1 shows that a lot is still lacking in deepening financial inclusion in Nigeria and investigation into the role of digital finances in fulfilling this role is more than ripped. Incidentally, discussion on digital finances is rather recent and empirical investigation into how this impact on financial inclusion is also scanty, more so, for developing economies such as Nigeria. We expand the literature at this pace. We use quarterly data from the Nigerian sub-region to show that digital currency development can deepen financial inclusion in developing economies (Nguyen, 2021; Ohiani, 2021)

Additionally, transaction cost in servicing economic production with cash is on the rise in Nigeria. For instance, the CBN in 2009 pegged the cost of handling cash in the financial system to be 114bn naira and projected the cost to rise geometrically to 1992bn naira in 2012 (Agbaje and Ayanbadejo, 2013). There is no likelihood that this cash-cost-related geometric progression will change in recent history. It could even be argued that this cost divests funds that hitherto would be channeled into profitable production and slowed the economic process. This argument lay by the reconsideration of POS development as cost-effective derivatives in the financial system for accelerated financial and growth inclusion in Nigeria by way of job creation and supporting e-transactions.

EMPIRICAL REVIEW

Several empirical studies were reviewed based on the specific objectives of the study.

Effect of POS on the availability of financial services.

Risman et al. (2021) considered the effect of POS and the risk involved in financial stability in the pursuit of digital finance for financial inclusion for 10year period (2010–2019) in a panel framework for the Indonesian economy. In their study, over 120 sample data were collected from the Indonesian banking system for the risk assessment. Relying on the power of what they called Moderating Regression Analysis under the Multiple Linear Regression technique, they found supportive evidence that market risk arising from the deployment of the POS platform can actually moderate the influence of digital finance on financial availability and stability. The implication is that if systematic banking risk increases, then digital finance for financial inclusion will reduce and vice versa and this will have implications for the overall stability of the financial system over time. Taken by itself, digital finance increases the stability of the financial system at last by 18% but when the risk factor is included, the result was an inverse relationship.

Akileng et al. (2018) looked at the effect of financial inclusion and entrepreneurship creation among agency banking. Empirical investigation of point of sale (pos) card acceptance operators in Nigeria: special reference to Lagos metropolis. The study aims to evaluate the link between inclusive finance and entrepreneurship creation among banking agency, with specific reference to point of sale (POS) operators in Nigeria. Therefore, the study anchored on the special agent theory of financial inclusion. The novelty of this research is the inclusion of Khan Measurement variables and methods for evaluating financial inclusion (FI), who proposed the use of the FI index to measure banking penetration, availability and accessibility of service/product and usage of banking system/technology. Another novelty is financial inclusion in the entrepreneurial paradigm, which is a model of an inclusive financial channel for startup businesses and entrepreneurship creation. This model provides a basis for financial solutions for struggling startups in agency banking. 204 copies of the questionnaire were retrieved from the respondents out of 399 distributed to POS operators and two agent banks using the Yamane statistical method. Descriptive statistics were used to analyze the questions from each variable, while

regression statistical analysis was employed to test the hypotheses. The findings revealed that banking penetration has a significant positive relationship with entrepreneurship creation of services, financial products/services has a significant positive relationship with entrepreneurship creation, and usage of banking services was significantly and positively related to entrepreneurship creation among Lagos POS operators. Practical application is for POS operators and agent banks used to promote financial inclusion and job creation. Therefore, it is imperative that agency banking should provide more financial incentives to POS and mobile banking operators to encourage them to have access to funds.

Effect of POS on the affordability of access to financial services

Ekong and Mbobo (2021) looked at Digital Currency and Financial Inclusion in Nigeria: lessons for Development. This study aims to empirically investigate the effect of the cost of digital currency development (digital finance) on financial inclusion in Nigeria for the period. According to the Duo, Nigeria undertook her digital currency development to reap the benefits of financial inclusion, safer remittances and exchange rate regularization among others. The researchers developed high-frequency quarterly data for the analysis from 2006 to 2020 in a weighted stepwise forward regression. A model similar to the one used by Demir et al. (2020) and Altunbas and Thornton (2019) with some modifications developed. Findings suggest that: a unit rise in the usage of Point of Sales by citizens spontaneously raised the cost of financial inclusion in a quarter in Nigeria by 0.012 units and were statistically significant; a percentage rise in the use of point of sales transaction by citizens in the country also raised financial inclusion in Nigeria by approximately 1%; a percentage increase by mobile payment users in Nigeria will spontaneously increase financial inclusion by at least 0.4%; a percentage rise in web payment services reduces financial inclusion by 22% in Nigeria; Cumulative positive effect of digital finances on financial inclusion in Nigeria was approximately 7%. For Practical implications; the researches show, using in-sample forecast, that while financial inclusion will grow in Nigeria, it will not be without systemic fluctuations. Based on the outcome, it is proposed that if the present digital currency penetration for the country is sustained at the present growth rate, the country may be more financially inclusive by 2% additionally by 2025 and 4% more by 2030. Originally, the study found that digital currency development are positive derivatives for financial inclusion in Nigeria. Cumulatively, the effect of digital finances on financial inclusion in Nigeria is approximately 7% positive.

Yuhelson et al. (2020) examined the impact of charges from electronic banking on financial inclusion in Zimbabwe, with a focus on Point of Sales in the Masvingo province. The research adopted a qualitative research methodology and a survey design. They argued that the charges from electronic banking significantly impacts financial inclusion in Zimbabwe. Their results show that low-income people are willing to adopt mobile banking, thereby enhancing financial inclusion. The reason they argued in this line is that mobile banking is easily accessible,

convenient, cheaper, easy to use and secure (Yuhelson et al. (2019). Although they adopted an admissible methodology, it could be observed that the scope of their study is too narrow since they under understudied only a province as against the entire country which would have produced a more robust analysis.

Effect of POS on accessing bank transactions by unbanked individuals

Soriano (2017) investigated the role of digital finance in financial inclusion from the perspective of new financial technology ventures serving the world's underbanked and unbanked in two key regions of the world – Africa and Asia. His study included a total of about 7,370 data points collected on 63 different fintech firms that have been involved in business startups before 2017, notably from 2004 to 2017. Applying multi-variate regression and binomial logit techniques on the primary data collected for the purpose, he showed that fintech startups with long years of experience in financial services, the degree of customer centrality to the business location and startup and the strategic collaboration of fintech firms with other financial institutions and e-commerce enterprises exerted a strong, significant and positive correlation with financial inclusion and by extension financial performance. He thus argued that digital technologies such as mobile phones, cloud computing, data analytics and blockchain are necessary ingredients of financial inclusion to make the economically underserved and unserved population financially active.

The study of Oumarou and Celestin, (2021) examined the relationship between selected financial inclusion/technology variables and banks' performance in Nigeria for the period of ten years with specific objective of determining the extent to which financial inclusion/technology has deepened the performance of banks in Nigeria. The study relied on Point of Sales (POS) Transactions, Automated Teller Machine (ATM) Transaction, Mobile Bank Payment (MBP) Transactions and Bank liquidity (BLQ) as control variable. Return-on-Asset (ROA) was proxied for bank performance. Semi-annual data were sourced from the Central Bank of Nigeria (CBN) statistical bulletin for the period 2009 to 2019. The study employed the Autoregressive Distributed Lag (ARDL) modelling technique. Empirical results from the study revealed that financial technology variables (POS, ATM) had positive effect on bank performance in the long-run. While mobile banking payment (MBP) has negative and significant effect on bank performance, POS was significant, ATM was not significant in the long-run. In the short-run, empirical result showed that financial technology was highly significant in determining bank performance in Nigeria. The study therefore recommends that the Central Bank of Nigeria (CBN) should put in place policies that drive financial inclusion through banks products and services that are digitally enhanced, hence, providing high returns on investment.

Effect of POS on frequency of usage of financial innovations.

Azeez and Akhtar (2021) identified a preliminary impediment to digital currency usage for financial inclusion in rural communities. In their study of the determinants of digital financial literacy, they showed that inability to use digital finance is a result of limited skills, awareness and the knowledge and attitude of users. They demonstrated this for the rural inhabitant of the Indian community using the socio-economic data of the respondents. Applying multiple regression analysis on the generated variables, they found that financial literacy is a major factor in digital currency for financial inclusion. In their conclusion, they argued that digital financial education should be the first and necessary step to consider in the digital currency– financial inclusion relationship for rural communities of India. This should be generally considered for not only the rural dwellers, but also for the urban dwellers as well.

Oumarou and Celestin (2021) investigated the determinant of financial inclusion in eight West African Economic and Monetary Union (WAEMU) member countries from 2004 to 2017. Their study included a set of digital finances parameters like mobile phone penetration and interbank credit transfers among other variables. They used panel ordinary least squares and generalized least squares techniques on the selected variables. Their results showed digital finances predicated by mobile money transfers significantly and positively aided financial inclusion in the WAEMU countries. The study further alluded that this positive effect is seen in the growth of financial inclusion in the region by over 50% in just 10 years from 2005 to 2015. Such determinant presents a window of opportunities to tap into digital financing for the growth of the region beyond the 21st century.

THEORETICAL REVIEW

The study reviewed a theory relevant to the study and most appropriate that best explain the objectives in the research. Generally, the study identified a theory that explain the financial inclusion and innovation.

Diffusion of Innovation Theory

The DOI theory developed by E. M. Rogers 1962, was proposed to describe how a concept or product obtains momentum and spreads or diffuses within a certain community or social system (Rogers, 2003). The DOI theory investigates how creative ideas are passed down from generation to generation. According to the DOI theory, an invention is continuously transmitted through numerous channels among people who have the same social beliefs (Yuhelson et al., 2020). The dispersion of innovation theory examines the rate at which new advancements spread and how and why they spread, intending to determine the factors that influence the selection of new data innovation advancements like the POS (Soriano, 2017).

The DOI theory aims to explain and illustrate the methods through which digital financial services innovations are adopted and implemented. There are five key elements that drive innovation adoption and each of these factors is present in the five adopter categories to varying degrees (Rogers, 2003):

- i. Relative advantage: The degree to which a new concept, program, or product like POS is regarded to be superior to the one it is intended.
- ii. Compatibility: How effectively the modification aligns to the beliefs, standards, and demands of the potential users.
- iii. Complexity - How complex it is to grasp and or apply the innovation.
- iv. Trial- The ability to test or experiment with an innovation before adopting.
- v. Observability - The degree to which the modification produces tangible outcomes.

Rogers' diffusion of innovations theory is useful for investigating the efficiency of agent banking as a financial inclusion technique because agent banking can be considered an innovation in itself. Additionally, Akileng et al. (2018) indicate that the DOI theory is a most familiar approach that has investigated factors influencing an individual's decision to accept new technology or innovation. DOI is an approach that attempts to explain why and how quickly new concepts and technologies circulate across civilization.

The study adopts the Diffusion of Innovation theory as it best explains the Nigerian factors as well as capturing the essence of the objectives of the study.

METHODOLOGY

The study area is the banking sector in Borno state and the patronage of the unbanked citizens who are above eighteen years of age and their attraction to the POS services. The POS services rendered by both commercial banks as well as agency institutions have become common place all over the city of Maiduguri. The city is one of the most vibrant in the north east with several start-ups in different sectors. Data for the study was gotten from both primary and secondary sources. The population of the study are customers of banks residing in Maiduguri Metropolis. These groups of people are in the best position to shed more light on how they manage to open a bank account as well as how the POS have been able to influence others to enroll into the banking system. From the available statistics, people who are of banking age who are within the financial system in Borno state are 533, 418 (CBN, 2022). This population is an estimate of economically viable adults above 18 years in the state who possess at least a bank account. The sample size was 400. The study used Yamane (1967) formula to calculate sample sizes at 95% confidence level.

$$n = \frac{N}{1 + N(e)^2}$$

Where n is the sample size,

N = is the population size,

e = is the level of precision.

When this formula is applied to the above population, we get

Where, N = 533418

$$\Rightarrow \frac{533418}{1 + 533418 (0.05)^2}$$

$$\Rightarrow \frac{533418}{1 + 533418 (0.0025)}$$

$$\Rightarrow \frac{533,418}{1,334.545}$$

$$\Rightarrow 399.7$$

$$N = 400$$

The study adopted convenient sampling as the method of sampling technique. This is because the administration of the questionnaire will be at specific locations as decided by the field research assistance in the field.

A semi-structured questionnaire was developed and used as the instrument of data collection. The questionnaire comprised of 2 major sections. Section one focused on bio-data. Section two focused on topical issues as reflected by the objectives of the study. The questionnaire was a closed ended one. It was patterned with a Liker scale of five (5) items ranging from strongly agreed to strongly disagreed. Multiple linear regression was used for data analysis.

The model takes the following form;

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots \beta_n X_n + \varepsilon \dots\dots\dots 1$$

Multiple linear regression model for the study is given by;

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 \dots\dots\dots 2$$

Where;

Y = Financial Inclusion

β_0 = Constant of the equation

$\beta_1 - \beta_n$ = Regression Coefficients (The estimated change in the dependent variable for a unit change of the independent variable)

$X_1 - X_n$ = Independent variables

ε = Error term

$\beta_1 - \beta_4$ - Regression Coefficient for variables X1, X2 X3 X4

ε = Error term

DATA ANALYSIS AND PRESENTATION

Data Analysis

The study shows the data presentation, it analysed and interpreted the primary data which were obtained through the administration of questionnaires. A total number of 400 questionnaires were distributed to the respondents, of which 397 were completed and returned to the researcher due to the meticulous nature of training giving to the field assistants before deploying to the field. The researcher understands that to a large extent, the achievements of the study objectives depend on the careful presentation and analysis of data derived from the questionnaires using relevant mathematical and statistical tools as required.

Test of Hypotheses

H₀₁: the presence of POS has not significantly affected the availability of financial service

Table 2: R Square

Model	R	R Square	Adjusted R Square	Std. Error	p-value
1	0.816 ^a	0.666	0.665	0.60595	0.121
Predictors: (Constant), Point of Sales, Financial inclusion					

From table 2, shows the result of the regression analysis carried out on the effect of POS on the availability of financial services. The findings shows that coefficient determination $r=0.816$, meaning that the generated model can account for 81.6% of the observed variable. There is a significant effect of POS on the availability of financial services. A p-value of 0.121 was obtained. Therefore, it is higher than 0.05. Then the null hypothesis is rejected and the alternative hypotheses which says the presence of POS has significantly affected the availability of financial service in the city of Maiduguri.

H₀₂: the presence of POS has not significantly affected the affordability of financial service

Table 3: R Square

Model	R	R Square	Adjusted R Square	Std. Error	p-value
1	0.799 ^a	0.638	0.636	0.60595	0.327

Predictors: (Constant), Point of Sales, Financial inclusion

From table 3, shows the result of the regression analysis carried out on the effect of POS on the affordability of access to financial services. The findings shows that coefficient determination $r=0.799$, meaning that the generated model can account for 79.9% of the observed variable. There is a significant effect of POS on the affordability of financial services. A p-value of 0.327

was obtained. Therefore, it is higher than 0.05. Then the null hypothesis is rejected and the alternative hypotheses which says the presence of POS has significantly affected the affordability of financial service in the city of Maiduguri, Borno State.

H₀₃: the presence of POS has not significantly motivated people to access financial service

Table 4: R Square

Model	R	R Square	Adjusted R Square	Std. Error	p-value
1	0.917 ^a	0.842	0.841	0.60595	0.091

Predictors: (Constant), Point of Sales, Financial inclusion

Table 4, shows the result of the regression analysis carried out on the effect of POS on accessing bank transactions by unbanked individuals. The findings shows that coefficient determination $r=0.917$, meaning that the generated model can account for 91.7% of the observed variable. There is a significant effect of POS on accessing bank transactions by unbanked individuals. A p-value of 0.091 was obtained. Therefore, it is higher than 0.05. Then the null hypothesis which states that the presence of POS has not significantly motivated people to access financial service is rejected and the alternative hypotheses is accepted. Hence, the presence of POS has significantly motivated people to access financial service in the city of Maiduguri, Borno State.

H₀₄: POS platform have no significant effect on the frequency of usage of financial service innovation by the society

Table 5: R Square

Model	R	R Square	Adjusted R Square	Std. Error	p-value
1	0.833 ^a	0.694	0.693	0.60595	0.181

Predictors: (Constant), Point of Sales, Financial inclusion

Table 5, shows the result of the regression analysis carried out on the effect of POS on frequency of usage of financial innovations in the society. The findings shows that coefficient determination $r=0.833$, meaning that the generated model can account for 83.3% of the observed variable. There is a significant effect of POS on frequency of usage of financial innovations. A p-value of 0.181 was obtained. Therefore, this is higher than 0.05. Then the null hypothesis is rejected and the alternative hypotheses which says that the POS platform have significant effect on the frequency of usage of financial service innovation by the society.

DISCUSSION OF FINDINGS

The study found that the presence of POS has significantly affected the availability of financial service in the city of Maiduguri. This finding is similar to the study of Risman et al. (2021) considered the effect of POS and the risk involved in financial stability in the pursuit of digital finance for financial inclusion. They found supportive evidence that market risk arising from the

deployment of the POS platform can actually moderate the influence of digital finance on financial availability and stability. This outcome is in consonance with the study of Akileng et al. (2018). They found out that usage of banking services was significantly and positively related to entrepreneurship creation among Lagos POS operators. Practical application is for POS operators and agent banks used to promote financial inclusion and job creation. This was why 79% of respondents opined that they prefer using POS than going to banks as this reduce several physical risk factors in the banking processes as the POS is near home to them.

The study also found that the presence of POS has significantly affected the affordability of financial service in the city of Maiduguri. This finding is similar to that of Ekong and Mboobo (2021) whose Findings suggest that: a unit rise in the usage of Point of Sales by citizens spontaneously raised the cost of financial inclusion in a quarter in Nigeria by 0.012 units and were statistically significant; a percentage rise in the use of point of sales transaction by citizens in the country also raised financial inclusion in Nigeria by approximately 1%. However, respondents in Maiduguri feels that there is an overall reduction of cost. This position is similar to that of Nnamani and Makwe (2019) who submitted that low-income people are willing to adopt mobile banking, thereby enhancing financial inclusion. The reason they argued in this line is that mobile banking is easily accessible, convenient, cheaper, easy to use and secured.

The study also shows that the presence of POS has significantly motivated people to access financial service in the city of Maiduguri, Borno State. This fading is in consonance with the study of Soriano (2017) who found that digital finance enhanced financial inclusion. This position was supported y the study of Oumarou and Celestin, (2021).

The study further revealed that the POS platform have significant effect on the frequency of usage of financial service innovation by the society. This outcome further buttresses the study of Azeez and Akhtar (2021) who found out that the society will be versatile in patronizing POS if they are further educated deliberately. This point was further stressed by Demir et al. (2020).

CONCLUSION

It is clear that the ubiquitous nature of the POS has made it a major platform of the banking industry. Its relevance to all players of the industry has thrown up scholarly research in many fronts. This study is one of such; taking a look at the effect of POS on financial inclusion in Nigeria. This is especially as the banking industry is seeking to bring in several millions of unbanked Nigerians into the fold especially now that the federal government is pushing for a cashless society. This can be better achieved through improving the role this platform performs as shown in the study; where the presence of POS significantly affected the availability, affordability and motivating people to access financial service while encouraging both the bank and the unbanked to increase frequency of usage of financial service innovation.

POLICY RECOMMENDATIONS

Based on the findings of the study, it makes the following recommendations:

- i. The infrastructural architecture of the POS platforms nation-wide should be further revamped and spread to every part of the country. These will further attract people; especially the unbanked to the banking sector. This will improve remarkably the financial inclusion drive the nation is seeking.
- ii. Banks should further, work on reducing the numerous charges and deductions they engage in so as to reduce the perceive high cost of patronizing POS. this will encourage the low-income individuals to patronize POS more.
- iii. The society should watch in their neighborhood to make sure that only trusted people are allowed to hold public trust where money can be committed into the hands of the operators. This is to build trust in the system to avoid losses.

Due to the importance of the POS and other mobile technology been deployed in the nation's economy, there is a need for the nation, through a Public-Private Partnership (PPP) to deploy a low-level orbit satellite that will not only cover that entire nation as a whole but create enough bandwidth which will entertain all banking transactions without any glitch or hitches. This will boost the financial system and create seamless mobile banking atmosphere going forward.

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APPENDIX

QUESTIONNAIRE

Instruction: Please tick the appropriate answer []

Section A: Demographic Data.

1. Age: (a) 18-30 [] (b) 31-40 [] (c) 41-50 [] (d) 50 and above []

2. Sex: (a) Male [] (b) Female []
 3. Education Level: (a) Primary [] (b) Secondary [] (c) Degree [] (d) Postgraduate [] (e) none []
 4. Duration of Account: (a) Single [] (b) Married [] (c) Divorced [] (d) Widow/Widower

Key: SA (Strongly Agree); A (Agree); UD (Undecided); SD (Strongly Disagree); D (Disagree).

Section B:

examine the effect of POS on the availability of financial services.						
S/N	QUESTIONS	RESPONSE				
		SD	D	UD	A	SA
1	POS has played a role in you opening a bank account					
2	I prefer using POS centres than going to banks					
3	In my opinion POS agent has attracted most people to the banking sector					
4	In my opinion creating more POS business centres will attract more Nigerians into the banking sector					

assess the effect of POS on the affordability of access to financial services						
S/N	QUESTIONS	RESPONSE				
		SD	D	UD	A	SA
1	Generally, I can afford to use POS than going to the bank					
2	In my opinion, the charges by the POS agent encourage me to go to the bank instead					
3	I believe the advent of POS has increase the cost of banking transactions.					
4	In my opinion, due to the cheapness of using POS rather than going to the bank, more people will be encouraged to have bank accounts					

assess the effect of POS on accessing bank transactions by unbanked individuals						
S/N	QUESTION	RESPONSE				
		SD	D	UD	A	SA
1	From my experience, many people use POS transactions who do not have bank accounts					
2	I often send money to distant relative who do not have bank accounts via the POS platform					
3	In my views two or more people can engaged POS to complete their business transactions from end to end without either of them necessarily having a bank account					
4	Many Nigerians today enjoy financial services even though they do not possess a bank account					

examine the effect of POS on frequency of usage of financial innovations.						
S/N	QUESTION	RESPONSE				
		SD	D	UD	A	SA
1	Due to the availability of POS, you perform more frequent bank transactions than before the arrival of POS					
2	I believe POS has allowed massive daily banking transactions that were not possible before the arrival of POS					
3	If POS platforms were to e removed from the banking system today, your frequency of bank transaction will seriously reduce					
4	From your experience people who frequent POS daily in the city of Maiduguri are more than those who visits commercial banks					