



Keywords:

Point of Sales system,
Technology Adoption,
User's behaviour,
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Point-Of-Sale (POS) Adoption in Nigeria: An Analysis of Users' Behavioural Patterns Through the Lens of the Technology Adoption Model

Abstract

The adoption of financial technology (FinTech) options varies among stakeholders in the form of early minority and late majority, which is also dependent on several factors. Previous studies have focused on the process of business integration and the active use of point of sale (POS) terminals for daily operations, with limited evidence of how ease of use, perceived usefulness and social norms have influenced adoption. Therefore, this study seeks to investigate how perceived usefulness, perceived ease of use, social norms and perceived barriers influence the adoption of POS systems among diverse stakeholders in Nigeria's business environment. The study adopts a cross-sectional research design and obtains primary data from 258 participants using a validated questionnaire. The study is woven around the technology acceptance model and provides empirical explanations within the Nigerian context. The results show that most of the study participants (92.2%) are aware of point of sale (POS) technology, and most of them (95.3 %) have adopted the use of POS at one time or another. The analysis further shows that the majority (91.0 %) of participants reported that the utilisation of POS terminals substantially enhances their payment processes and eliminates the need to carry physical cash, suggesting greater convenience and security. The binary logistic regression revealed that perceived usefulness greatly influenced POS adoption among the participants. Although the perceived subjective norm posits a higher likelihood of influence on the adoption of POS, it was not statistically significant. The implications of the study were highlighted with appropriate recommendations for operators, policy and practice.

1. Introduction

The adoption of financial technology (FinTech) options has changed the narratives of conventional ways of transacting with businesses in Nigeria. The introduction of the cashless policy in 2012 by the Nigerian government paved the way for the emergence of the rapidly developing FinTech industry (Omotosho et al., 2012; Omotosho & Adelowo, 2016). The adoption became rapid after the second pilot phase, which took place in seven states of the Federation (Omotosho & Adelowo, 2016). The cashless policy seeks to reduce excessive cash transactions by adopting various electronic transaction (e-transact) channels such as POS, ATM, mobile banking and bank transfers, among others. While FinTech has created diverse business opportunities in the economy and limited crimes associated with carrying large amounts of cash, the policy is faced with perennial infrastructure, privacy and trust challenges. The government is making frantic efforts to buffer ICT infrastructure, including broadband access in public places, and cybersecurity to checkmate fraud and other illicit activities. Another beneficial dimension to the policy is the emergence of new business models and actors in the financial services sector. For instance, the approval and creation of diverse microfinance banks come with more versatile mobile applications for diverse alternative banking services to clients and more job opportunities for innovators/financiers.

The process of migration from traditional banking operations to digital ones is not without any challenges and, of course, benefits. For the customers, the need to adopt and adapt to digital delivery of banking services at the corner of their rooms is both exciting and challenging at the same time. It is exciting because it signals the end of daily experiences of rushing to beat traffic and long queues at the bank, while it is challenging because they may need to acquire a new phone that can accommodate mobile apps. Learning to use the apps and access services is another cost to cashless operations. In recent years, the rate and number of users appear to have risen to a new level due to emerging markets' adoption of a wider range of financial innovations and significant investments in new technologies – especially during and after the COVID-19 pandemic. The policy also provided a cushion during the COVID-19 containment and preventive measures, where people could only access essential commodities through online stores and rationed open markets (UNESCO, 2021).

Indeed, among stakeholders of FinTech (customers and operators), there are early minorities and late majorities, depending on several factors. Previous studies have focused on the process of business integration and the active use of point of sale (POS) terminals for daily operations. However, little is known about how adoption of FinTech has progressed in Nigeria over time, including its drivers and determinants; a few studies have focused on customers' level of satisfaction (Odia & Agbonifoh, 2022; Adeoti, 2011). Considering that there are limited studies on the drivers of FinTech adoption among Nigerians, this study therefore seeks to bridge the literature gap. In fact, documenting the rate of technology adoption in any system creates opportunities for understanding important drivers, trends, enablers and challenges for plausible policy interventions.

Why focus on POS? The POS terminal, which is the basic product used in driving a cashless initiative, plays a significant role due to its widespread availability, ease of use, and portability. POS terminals are found in various service centres, including stores, restaurants, hospitals, schools, and worship centres. Point of sale technology is one of the financial innovations that provides ease and efficiency in managing finances and stocking products for individuals and small and medium-sized enterprises (SMEs). Transactions through PoS were limited during the year when the cashless policy became operational across the country, but the value of transactions related to POS reached #18trillion in 2024 (FinTech Africa, 2025). An increase in the value of PoS transactions reflects increased adoption and compliance with government regulations. FinTech operators place a greater premium on mobile money and PoS transactions. This has also improved financial inclusion, as rural dwellers now have access to PoS terminals through FinTech agents. Therefore, unpacking the drivers of PoS adoption among different categories of people is important for policy and practice.

It should be noted that technological implementation alone does not guarantee successful digital adoption. Instead, individuals' readiness to change their behaviours and adapt is what propels digital transformation. The success of a new technology depends largely on how well it is accepted by intended users. Many technologies face the problem of low adoption rates despite the benefits. An understanding of what makes people accept or reject a new technology can help speed up the adoption rate.

The most relevant theoretical framing for this study was derived from the technology acceptance model (TAM), which emphasises perceived usefulness and perceived ease of use as critical components of using a new technology when newly introduced to a market (Davis, 1989; Awoniyi, 2022). Perceived usefulness (PU) is a concept used to describe an individual's evaluation of the benefits of a new technology. PU defines the extent to which a new technology meets market needs or resolves specific/identifiable problems. Perceived ease of use (PEU), on the other hand, describes an individual's evaluation of how simplistic or complex a new technology is for immediate adoption. In this case, a technology that is not complex in nature can be easily adopted by users, considering also that the price is within reach. These terms have been studied across different fields to examine how these concepts influence the use or intention to use a technology or adopt a new device.

Given the introduction and widespread use of point-of-sale technology in Nigeria, it is crucial to understand the pattern of adoption to infer user behaviour and identify potential risks and challenges preventing others from adopting the technology. The study will draw important lessons for technology adoption in Nigeria in the future, especially now that artificial intelligence, blockchain technologies, and machine learning are fast disrupting the global technological landscape. Therefore, this study uses the technology acceptance model (TAM) to examine the adoption of POS machines vis-à-vis the influence of perceived usefulness and perceived ease of use on adoption and challenges faced by users and potential users of POS machines.

The study proceeds as follows: The second section gives an explanation of the interaction perspective and the proposed framework for technology adoption. It also explains the major concepts of this study as well as gives an empirical analysis of the study's variables. The third section presents the methodology and the fourth the findings and discussion. Section 5 presents the conclusion and implications of the study.

2. Literature review

2.1 Theoretical review

The technology acceptance model (TAM) is a framework developed by Davis (1989), an extension of the theory of reasoned action (Fishbein & Ajzen, 1975), with a strong assertion that consumers' intentions to adopt a technology are mainly determined by two factors, namely perceived ease of use (PEOU) and perceived usefulness (PU). These two factors have been extensively researched across different fields and on different technologies, including in ICT. Perceived ease of use, which can also be referred to as simplicity of operation, refers to the extent to which individuals believe that using a particular technology will be effortless and uncomplicated. On the other hand, perceived usefulness or perceived efficacy refers to the belief around the effectiveness of the technology in enhancing users' productivity or performance or experience. In terms of perceived usefulness, scales such as speed and accuracy of tasks completed are used, while employee efficiency, productivity, and effectiveness are used to measure perceived usefulness (Omotayo & Dahunsi, 2015). The technology's controllability, clarity, and understandability are among the factors that determine perceived usefulness (Olaiya & Adeleke, 2019). The rational decision-making of adopters who have or plan to adopt technology is assumed by the technology acceptance theory (Awoniyi, 2022). According to Obi-Nwosu et al. (2021), enhancing societal acceptance of technology is the most effective approach to augment its usage. In other words, this model suggests that when users are presented with a new technology, a number of factors influence their decision on whether, how and when they will use it.

Within the context of this study, TAM serves as the lens for examining how merchants and customers perceive social norms, perceived ease of use and usefulness as predictors of POS adoption in Nigeria.

Venkatesh and Davis (2000) revealed that TAM consistently explains an average of the discrepancy in usage intentions and behaviour. Nonetheless, a primary critique of technology acceptance theory is its disregard for the expenses associated with obtaining new technologies. This is due to the possibility that people who are open to adopting innovative technology may not have the resources needed to acquire it (Asidok & Micheal, 2018). The impact of point-of-sale adoption and associated difficulties on the Nigerian banking system can be explained by this theory. This is because adopting POS technology is encouraged by the many benefits of using POS terminals, including convenience and ease of payment (Morufu, 2016; Omotosho & Adelowo, 2016).

The model is pictorially displayed in Figure 1, indicating that perceived ease of use has a reported direct effect on both perceived usefulness and actual use of the technology (Davis 1989; Venkatesh et al., 2003).

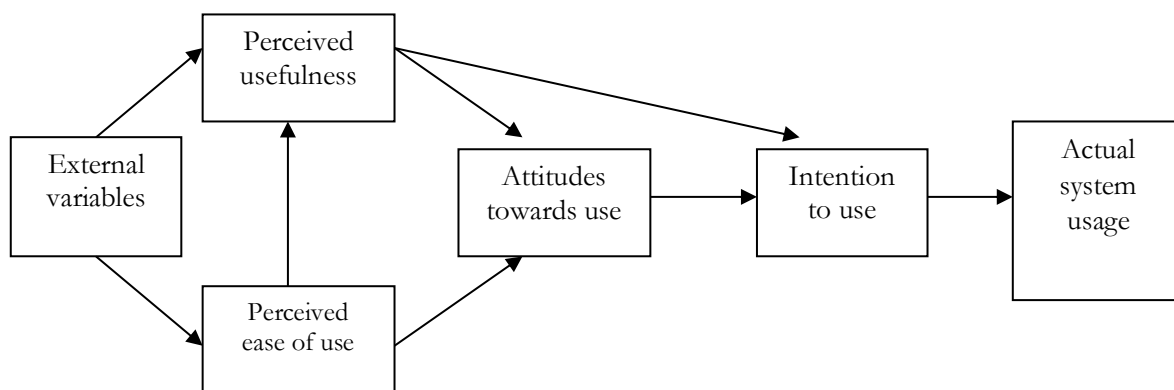


Figure 1: Technology acceptance model

More so, it was observed that users' attitudes and intentions to employ technology are related to their perceptions about its utility (Davis, 1989). However, compared to other factors described in the study, perceived usefulness shows a greater and more consistent connection with utilisation. Furthermore, even if a person dislikes using technology, they may still adopt it if they believe it to be useful, helpful, and socially acceptable (Saga & Zmud, 1994). Therefore, there may be a chance that beliefs and goals are directly related. The question of attitude toward technology adoption may have been subsumed in the two core components of the adoption model; that is, perceived ease of use and perceived usefulness. Moreover, there was empirical evidence that the attitude factor did not fully mediate the effect of perceived usefulness on intention to use. (Venkatesh, 2000); therefore, they modified the technology acceptance model and suggested that the mediating influence of attitude may be eliminated, as depicted in Figure 2.

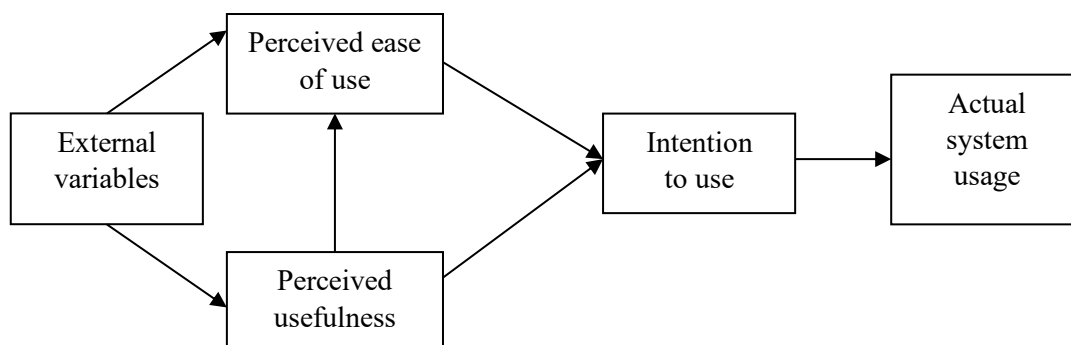


Figure 2: Refined technology acceptance model (refined TAM) (Venkatesh, 2000)

2.2 The adoption of technology in emerging markets

The adoption of technology in emerging markets has become a focal point for researchers, policymakers, and businesses alike. Emerging markets, characterised by their dynamic economic growth and increasing middle-class populations, present unique opportunities and challenges for technology adoption. Emerging markets, such as Nigeria, often experience a rapid pace of technological change due to factors such as globalisation, urbanisation, and an increased demand for modern conveniences (Omotosho and Adelowo, 2016). This environment creates a fertile ground for the introduction of innovative technologies such as point of sale (POS) machines. However, the adoption of such technologies is not without hurdles. One critical factor influencing technology adoption in emerging markets remains affordability and accessibility (Adeoti, 2011). Many consumers and small businesses may lack the financial resources to invest in expensive technology solutions. Within this context, affordable and user-friendly POS systems gain prominence, as they bridge the gap between traditional cash-based transactions and digital payments (Sunardi and Tatariyanto, 2023).

Moreover, the regulatory environment plays a pivotal role in technology adoption within emerging markets. Government policies and regulations can either facilitate or hinder the deployment of innovative solutions. For example, favourable regulations that promote digital financial services can accelerate the adoption of electronic banking, as seen in Nigeria with the Central Bank's policies supporting cashless initiatives (Omotosho et al., 2012). However, government regulation against the adoption of cryptocurrency limited its use in Nigeria, with negative consequences on the e-naira initiative. This further demonstrated that inadequate regulations or bureaucratic barriers can impede technology adoption in any system. Additionally, infrastructure challenges, especially access to stable internet connectivity and reliable power sources, are critical considerations in emerging markets.

The social and cultural context within emerging markets also significantly impacts technology adoption. Social norms, trust in technology, and the role of intermediaries can influence individuals' and business owners' willingness to embrace new technologies (Dwivedi et al., 2019). In Nigeria, for instance, where face-to-face interactions hold cultural significance, the adoption of digital or virtual banking services may require building trust and demonstrating the security and reliability of these services (Igudia, 2017). In fact, most traditional banking and FinTech operators have leveraged existing communication networks to deliver services to their customers, thereby bridging infrastructural issues.

Although the technology acceptance model has been widely used in financial technologies in experimental research, there are still gaps in the application of the technology acceptance model in POS adoption, and this is specifically true in developing economies such as Nigeria. To begin with, the current model focuses excessively on the role of cognitive beliefs in the explanation of technology adoption. TAM presupposes rational consideration (perceived usefulness and perceived ease); however, adoption of POS in informal environments, according to this research, is frequently influenced by trust, fear of fraud or chargeback, network instability, regulatory uncertainty, attitudinal preference and culture preferences of cash. These are contextual and systemic factors and not cognitive perceptions. Innovations in infrastructure, including electricity, internet connectivity, cash crises in the banking sector, etc., are also significant factors in adoption in emerging markets. The macro-level structural limitations are not explicitly incorporated in TAM. It is rather strong in volatile economies, where the use of technology is frequently perceived as a risk mitigation or survival approach, but not performance improvement. As an example, the usage of point-of-sale machines might be accommodated by the insufficiency of cash, and it can also be opposed by the fear of failure in making a transaction. Overall, the current literature on TAM-based POS gives little consideration to the dual role of transactional risk and adaptive economic resilience and, therefore, contains a limited capacity to explain phenomena in developing economies.

Similarly, trust and confidentiality remain important barriers to be cracked by operators and government regulations. More so, in studying the adoption of point-of-sale machines in emerging markets like Nigeria,

it is crucial to consider the interplay of these factors, alongside the unique socio-economic conditions and cultural nuances of the specific region.

2.3 Point-of-sale (POS) machines

The introduction of POS machines in Nigeria represents a transformative shift in the way businesses and individuals conduct financial transactions. These devices have gained significant attention worldwide, revolutionising payment processes, enhancing efficiency, and contributing to the transition towards cashless economies (FinTech Africa, 2025). POS machine adoption is propelled by various factors, with convenience being a paramount driver. As consumers increasingly seek swift and hassle-free payment methods, businesses are compelled to offer POS payment options to cater to their preferences (Hussain et al., 2018). The convenience of card payments not only streamlines transactions but also offers consumers greater security by reducing the need to carry large amounts of cash (Raj et al., 2024).

Moreover, the adoption of POS machines is intrinsically linked to the evolving regulatory environment. Government policies and financial regulations play a key role in shaping the adoption landscape (Omotosho & Adelowo, 2016). In many countries, including Nigeria, regulatory bodies have introduced incentives and initiatives to promote digital payments and cashless transactions. These policies encourage businesses to embrace POS technology (Awolaye, 2021). The Central Bank of Nigeria's cashless policy, for example, has been a pivotal driver in fostering the adoption of POS machines in the country (Olusegun et al., 2020).

Another fundamental factor in POS machine adoption is trust. Consumers and businesses need to have confidence in the reliability and security of the devices and platforms to facilitate utilisation. Trust in POS technology is built through secure transactions, data protection measures, and effective fraud prevention mechanisms (Rabbani et al., 2024). Ensuring the security of financial transactions is paramount in fostering widespread adoption. Furthermore, the adoption of POS machines varies across industries and regions. While businesses in the retail, hospitality, and service sectors are more likely to adopt POS technology, its adoption in rural areas may lag due to infrastructure challenges, such as limited access to electricity and internet connectivity (Awolaye, 2021; Rabbani et al., 2024). Understanding the industry-specific and geographical nuances of POS machine adoption is crucial for policymakers and businesses alike.

2.4 Empirical review

A number of studies have investigated factors influencing the adoption of e-payment technology among the general population in Nigeria. For instance, Omotayo and Dahunsi (2015) used the technology acceptance model as the theoretical framework to investigate the factors affecting the adoption of POS by organisations in the Lagos and Ibadan metropolises, Nigeria. The study's findings indicate that the adoption of POS machines by organisations is significantly influenced by subjective norms and perceived ease of use. Nonetheless, there is no discernible correlation between the adoption of POS and the attributes of the organisation, its reputation, or its perceived utility. The report offers banks guidance on the things to think about when implementing point-of-sale systems.

Akerejola et al. (2018) examined customer trust and POS adoption among business organisations in Lagos and found that the adoption of POS by a subset of chosen business organisations was significantly and favourably correlated with customer trust. Others have also found that perceived ease of use and perceived usefulness can predict a user's attitude and behaviour toward using the device both at present and in the future. Awoniyi (2022) used the technology acceptance model (TAM) to measure perceived usage, security, ease of use, and banking regulations, and the variables all had a major influence on the motivation for digital banking adoption, both online and mobile banking.

Furthermore, Nwude, Igweoji, and Udeh (2020) employed a longitudinal research design to examine data gathered between 2007 and 2017 from the World Bank's economic indicators, the Central Bank of Nigeria, and the National Financial Inclusion Strategy Bulletin to examine financial inclusion in Nigeria. Their findings indicate that the use of point-of-sale terminals has helped to advance financial inclusion in Nigeria.

In addition, Ibrahim and Daniel (2019) explored the influence of electronic banking on the evolution of the banking sector in Nigeria. The study reported a significant positive impact of electronic banking on the banking system in Nigeria, suggesting that the adoption of electronic banking technologies has contributed to the overall development and efficiency of the country's banking sector.

Perceived challenges and POS machine utilisation: In terms of challenges with the usage of POS terminals in the Nigerian banking sector, Nworie and Okafor, (2023) reported that exorbitant transaction costs, inadequate infrastructural facilities required to run POS, weak internet connectivity that wears away user trust, and the security of network communications were highlighted. The study suggested regulating the costs and fees associated with using point-of-sale (POS) terminals to prevent deterring both banked and unbanked individuals from using the channel to transact with financial businesses.

Akerejola et al., (2019) provides strong evidence on the relationship between consumer trust, POS technology adoption, and POS security among some business organisations in Lagos, Nigeria. The study showed a significant positive correlation between customer trust and POS adoption and reported a positive correlation between POS security and POS adoption. Similarly, Iluno, Farouk, and Saheed (2018) reported positive correlations between customers' satisfaction and the increased patronage of electronic banking services in Kaduna, Nigeria. Additionally, inadequate infrastructure needed to operate point-of-sale systems (POS), erratic network connectivity that undermines user confidence, and network communication security all contribute to a decrease in the perceived utility of POS terminals, which, in turn, leads to a low adoption and utilisation rate (Akerejola et al., 2019 and Adeoti (2011).

In summary, this review has provided key insights into the adoption of point-of-sale (POS) machines within the Nigerian financial landscape. The review highlighted the significance of contextual elements, such as economic conditions and regulatory policies, which can influence the perceived utility and ease of adopting POS machines in an emerging market like Nigeria. However, there remains a gap in understanding how these factors collectively influence POS machine adoption among individuals, whether employed, unemployed, or running small businesses. The integration of these theoretical constructs informs the hypotheses of this study and provides a strong foundation for empirical investigation. This study will build upon the theoretical foundations and empirical findings to provide insights into how social norms, perceived ease of use, and perceived usefulness influence the adoption of point-of-sale technology in Nigeria.

Against this background, this paper adds to the growing literature on technology adoption among cross-sectional groups of individuals. Building upon recent studies (Adeoti, 2011), the study utilised more recent data to address the specific question of how social norms, perceived usefulness and perceived ease of use jointly predict POS machine adoption in Nigeria.

3. Data and methodology

This section outlines the approach to research design, data collection and analysis. It describes the sample selection process, data collection methods and statistical techniques employed for data analysis. The study employed a descriptive research design with the use of data obtained from individuals and business owners from two regional locations in Nigeria. The target population consisted of individuals and micro-business owners operating in purposively selected business clusters in Osun State and the Federal Capital Territory in Abuja.

Table 1: Questionnaire distribution and response rate

Location	Administered	Returned	Response rate (%)
FCT Abuja	180	158	87.8
Osun	100	100	100
Total	280	258	92.1

Source: Field survey 2023

About 258 business owners were sampled across four low-income settlements in Gwagwalada, Bwari, Ile-Ife, and Modakeke. These locations are suburbs in FCT and Osun State and are different from previous

studies that focused on megacities such as Lagos and Ibadan. The specific variables of interest in this study are the adoption of point-of-sale machines, perceived usefulness, perceived ease of use, gender, highest level of education and social norms. This study used a questionnaire to elicit relevant information from respondents to address the study objectives.

The first part of this section examined the socio-demographic characteristics of respondents, comprising gender, state of residence, educational level, and monthly income. The second part investigated awareness and extent of adoption of POS machines in respective study areas. These variables were measured using items such as awareness of POS machines, source of awareness, usage experience, frequency of usage, and duration of usage, among others. The third part established respondents' level of perceived usefulness and perceived ease of use of POS machines using validated five-point Likert scale items. The fourth part considered the extent to which social norms such as friends, families, and community members influenced the adoption of POS machines among respondents, using a three-point Likert scale. The final part measured the perceived challenges hindering the adoption of the technology (POS machines), and these factors are largely grouped as technological factors, social factors, financial factors, discomfort and trust issues. All the variables and how they were measured are presented in Table 2 below. Univariate analysis (descriptive) and bivariate analysis (binary logistic regression) were used to test the associations and relationships among the variables of concern. Table 2 provides information about key variables.

Table 2: Key variables and their characteristics

Variables	Scale	Measurement	Cronbach's alpha
Dependent variable			
Utilisation of POS technology	Binary	0--No 1--Yes	
Independent variables			
Perceived usefulness (7 items)	5-point Likert scale	Sum of scale	0.89
Perceived ease of use (6 items)	5-point Likert scale	Sum of scale	0.78
Social norms (9 items)	3-point Likert scale	Mean of scale	0.65
Challenges associated with use (8 items)	3-point Likert scale	Composite mean	0.6

4. Results

In this section, important results associated with the determinants of POS adoption among the participants in the study areas were presented, including the basic demographic information.

4.1 Descriptive/demographic information

The demographic information of the study participants, as presented in Table 3, shows that most of them (63.2%) are males. The result is a clear indication that most POS adopters, whether for personal or business transactions, are males, while a few females also adopt the technology. Conversely, a study by Oluwatusin and Olofinsao (2020) in Lagos State showed that POS adoption is more prevalent among females. In fact, most business kiosk operators in Lagos own POS services where they dispense and receive cash for fund transfers. This may be due to location and cultural differences. The results further showed that the majority of the participants are employed (45.7%), of whom 11.2% are either civil or public servants. In addition, about 38.8% are self-employed, while 8.9% and 6.2% fall within the categories of students and unemployed, respectively. Most (53.9%) of the participants had a tertiary education. About 35.7% had a secondary education, while a paltry 3.9% of them do not have any formal education. The level of education plays a critical role in the knowledge, awareness, and adoption of technology-driven financial services like the POS machines (Qi et al., 2024). This suggests that individuals with formal education are more likely to adopt point-of-sale (POS) machines than those without any formal education. The implication of this observation

is that formal education confers an advantage upon POS machine adopters and users, enabling them to effectively engage with or deploy the technology.

Table 3: Socio-demographics of respondents

VARIABLES	(N)	(%)
Gender		
Male	163	63.2
Female	95	36.8
Total	258	100
Occupation		
Unemployed	16	6.2
Student	23	8.9
Civil/public servant	29	11.2
Self-employed	100	38.8
Employed	89	34.5
Total	258	100
Educational attainment		
No formal education	10	3.9
Primary education	17	6.6
Secondary education	92	35.7
Tertiary education	139	53.9
Total	258	100

Source: Field survey 2023

Section 2: Awareness, level and frequency of adoption of POS

Within the context of POS machine adoption, the results show that most of the study participants (92.2%) are clearly aware of point-of-sale (POS) technology, while a few of them (7.4%) claimed that they are not aware of the technology. Field observation also revealed possible reasons for the lack of awareness, as those concerned did not have formal education. Given that the majority are aware of the technology, it further demonstrates that the adoption and utilisation of POS technology have permeated diverse segments of Nigeria's population. Moreso, during a cash crisis leading to the general election in the country, the activities of POS operators have become a prominent alternative to banks and ATMs, as they were not loaded with sufficient cash. On the rate of adoption, the results show that the majority of the study participants, 95.3 %, have adopted the use of POS at one time or another while only a few of them have never used it. This result suggests that more participants used the POS machine than those who are aware of the technology. This could probably be due to a lack of formal education among the adopters, especially those who could not differentiate between awareness and adoption of technology. Majorly, it can be argued that the level of awareness significantly influences the propensity of adoption of any technology, including the POS. Other results, as presented in Table 4, further show that the prevailing beliefs of the participants support the adoption of point-of-sale (POS) machines. Most of the participants (68.2%) affirmed that their beliefs align with the adoption of POS technology, while about 17.1% of them are indifferent. In contrast, a smaller proportion (14.3%) claims that their beliefs do not endorse the utilisation of POS machines, although no specific reasons were provided in these instances. Additionally, the results showed that the majority (91.0 %) of participants affirmed that the utilisation of POS terminals substantially enhances their payment processes and eliminates the need to carry physical cash, resulting in greater convenience. This corroborates the findings by Anyanwu and Anumaka (2020), where it was reported that the adoption of POS facilitated effective transactions without carrying cash around, thereby contributing positively to the formulation of cashless policies in Nigeria. On the frequency of POS use among the participants, about 38% of them use the POS machine more regularly, while about 34% rarely use it.

Table 4: Extent of adoption

Variables	Frequency	Percentage (%)
Awareness/knowledge of POS machine		
Yes	238	92.2
No	19	7.4

Total	257	99.6
Ever used POS machine		
Yes	246	95.3
No	12	4.7
Total	258	100
Frequency of use		
Rarely	84	34
Often	92	38
Most times	69	28
Total	245	100
Belief about POS use		
Yes	176	68.5
No	37	14.4
Indifference	44	17.1
Total	257	100
Ease of payment		
Yes	232	91.0
No	23	9

Source: Field survey 2023

Moreover, the study examined important challenges faced by the participants as they chose to adopt POS (Table 5). The results showed that personal data insecurity, lack of trust in POS operators and lack of trust in the machines were ranked highly, although ease of processing transactions ranked third. Other important challenges include financial illiteracy, transaction costs and poor knowledge of how the POS operates. All stakeholders' hands must be on deck to address these challenges and provide adequate enablement for the smooth adoption of POS technology across all and sundry in Nigeria.

Table 5: Challenges of POS Adoption among the Participants

Variables	Large extent (%)	Moderate extent (%)	Low extent (%)	Mean	Ranking
Location of the POS operator	31.4	26.3	42.4	1.89	8
Transaction cost	33.5	25.2	41.3	1.92	7
Inability to understand the POS operation	29.4	45.1	25.5	2.03	6
Financial illiteracy	43.1	22.4	34.5	2.08	5
Lack of trust in the machine	43.1	29.4	27.5	2.15	4
Ease of processing	40.0	40.0	20.0	2.20	3
Lack of trust in the POS operator	50.2	27.8	22.0	2.28	2
Personal Data insecurity	54.2	21.1	24.7	2.29	1

Source: Field survey 2023

Reliability of the variables

Technology adoption is a function of perceived usefulness, ease of use, and perceived social norms (Davis, 1989; Amaduche, Adesanya & Adediji, 2020). The degree to which some preliminary challenges in the adoption process could be surmounted is also critical to its use. These variables were captured using multi-item Likert scales of between '1' and '5', indicating strongly disagree and strongly agree, respectively. Seven items were used to capture the perceived usefulness of POS technology among the participants. The items produced a Cronbach's alpha of 0.89 with a mean of 3.27, which the study considered to be high. Secondly, perceived ease of use was elicited using six items with robust Cronbach's alphas (0.78) and mean averages of 3.16. The third component considered is the perceived social norms, with nine items used. Six of the items were measured using three Likert rating scale of 'low', 'moderate' and 'high'. Its Cronbach's alpha was 0.6 with a mean of 2.2. The rating scale may account for the low Cronbach alpha but nonetheless are still

within the acceptable limit. These three items were used in the regression analysis to identify the key determinants of POS adoption among the participants. Given that the dependent variable is binary, a binary logistic regression was adopted for the estimation, and the results are presented in the next section.

Drivers of POS adoption among the study participants

The main theory being tested in this study is the technology acceptance model, with special interest in the perceived usefulness, perceived ease of use and perceived social norms. The binary logistic regression revealed that perceived subjective norms and perceived ease of use are not significantly likely to motivate the propensity of POS adoption among the study participants. However, perceived subjective norms are most likely to influence the adoption rate by 28%. This result contradicts results from mainstream studies where perceived ease of use has been validated to influence technology adoption (Adeoti, 2011). Considering a policy shift in Nigeria where businesses and individuals are left with no option but to patronise POS operators, the narrative of perceived ease of use may not hold. A policy regulation from the Central Bank on the compulsory implementation of the cashless policy may account for the widespread adoption without recourse to ease of use. The result further shows that perceived usefulness is significantly and highly likely to influence POS adoption among participants. The result suggests that the main benefits of adopting technology have to be considered before adoption can be guaranteed. Several studies have identified that the perceived usefulness of a technology greatly influences its adoption (Nwankwo & Agbo, 2021). In general, independent variables explained a meagre 8.2% of the factors that drive technology adoption in the study area. This result may be insignificant, since most factors are outside the scope of the study, but it is sufficient to appreciate the relevance of perceived usefulness of technology adoption in the study area. As noted earlier, cashless policy dynamics played critical roles in the adoption of diverse financial technologies (Fintech) in Nigeria, but more importantly, other factors, such as perceived usefulness and subjective norms, contributed to it, especially in the study areas.

Table 6: Binary logistic regression results

Independent variables	B	Sig.	Exp(B)
Perceived subjective norms	.250	.555	1.284
Perceived usefulness	.072	.012	1.075
Perceived ease of use	-2.474	.376	.084
Constant	2.510	.089	12.306
Cox & Snell R square	0.026		
Nagelkerke R square	0.082		
Hosmer and Lemeshow	4.33*		

* $p > 0.05$

Dependent variable: POS adoption

5. Discussion and conclusion

This study examined users' behavioural patterns in the adoption of POS technologies in Nigeria using the technology adoption model. The study established a gap in the literature as the rate of POS adoption and its key determinants were scanty and limited. In fact, most studies that exist in the literature centred around e-commerce and the use of ICTs in the banking sector, especially during the early years of national cashless policies of the Central Bank of Nigeria (Omotosho et al., 2012; Omotosho & Adelowo, 2016). Moreso, the use of POS in recent times has also skyrocketed in the country to the point that associated transactions were reported to the tune of over #18 trillion in 2024 (FinTech Africa, 2025). The study adopted a cross-sectional design, where data was collected from 258 participants through the use of a validated questionnaire. These participants were drawn from diverse sectors of the economy, including the informal sector, employees, small business operators and civil servants. Unlike other studies that were conducted in megacities such as Lagos and Port-Harcourt, the present study's locations are Gwagwalada and Bwari in Abuja, and Ile-Ife and

Modakeke Axis in Osun State, which are peri-urban areas in Nigeria. From the analysis and discussion of results, it is clear that perceived usefulness presents a vital ground for the adoption of POS among the participants in the study. However, perceived subjective norms also demonstrated greater influence on POS adoption, but the result was statistically insignificant. Within this context, the benefits of adoption are predominant factors that explain the behaviour of participants. The benefits, coupled with a regulatory campaign by the government, could be working together as authorities are pushing for complete cashless economic systems in the country. Moreso, the subjective norms explain a deep-rooted acceptance of government policy to push for a cashless economy, especially as it checks the rate of armed robbery, especially in Nigerian banks and homes. It is surprising to see that perceived ease of use is less likely to contribute to PoS adoption in the study area. This could be attributed to the need for citizens to comply with the government's cashless policy, which raised the necessity to learn. Since compliance is compulsory, people have to learn and acquire skills that will allow them to transact or operate within the policy environment. The study also highlighted important barriers to the adoption of PoS technology among users, especially the issue of personal data insecurity, lack of trust and cybersecurity, and ease of transaction processing. Transaction cost and financial illiteracy are also important barriers that require attention while pursuing improved adoption of PoS technology. The location of the PoS operators also matters, especially in peri-urban study areas. The closer the operators are to the people, the more easily accessible the services are, and this could improve the likelihood of improved adoption.

Therefore, the paper has contributed to the understanding of the TAM model and its empirical explanation by shedding light on specific factors contributing to the adoption of PoS technology within a developing country context. The study also demonstrated that perceived usefulness and perceived subjective norms take precedence as major factors contributing to PoS technology adoption among the participants. A few policy suggestions to relevant stakeholders are therefore enumerated:

Firstly, the FinTech operators with PoS could improve adoption rates by educating and sensitising existing customers and the general public on the benefits of the active use of alternative transaction channels for financial services to attain the threshold for cashless policy implementation in the country. Painting a clear positive message that delivers effective financial services to the public through PoS could further reinforce existing benefits in the minds of customers while also serving as an attractive medium to potential customers. Moreso, all highlighted barriers to the adoption of PoS technology should be adequately addressed, especially by respecting customers' personal data, information and privacy. Also, except where customers subscribed to certain newsletters or news services, efforts should be made to ensure that unauthorised or unnecessary advertisements are not sent out to customers. The Fintech operators need to devise strategies to ease transaction processing mediums and demonstrate strong commitment to customers' trust in their services. This is clearly possible by demonstrating professionalism while handling customer complaints and requests.

Government could also bolster existing infrastructure, especially internet penetration and bandwidth expansion for seamless transactions over payment platforms, including PoS technology. Standard regulations for the PoS operators should be monitored for compliance by the Central Bank of Nigeria. This will further strengthen customers' confidence in the use of PoS channels across the country, in addition to increased patronage of banks' ATM and mobile banking. Appropriate data governance infrastructure could be established by appropriate government authority to manage and provide data security in Nigeria's financial institutions.

6. Limitations of the study

Although the methodological rigour that was applied in this study was taken into account, some limitations are nonetheless recognised. To begin with, binary logistic regression was used as the major analytical methodology in the study. The model was suitable in the case of the modelling of dichotomous outcome variables, although it showed mild explanatory power, as shown by the pseudo R^2 statistic of 8.3%. It implies that the percentage of the variation in outcome that is explained by the predictors in the model is significantly low. The fact that it has low explanatory power could possibly be because there are other

relevant variables that were not successfully captured in the study, and there could have been unobserved heterogeneity or there may be complex contextual effects that binary logistic regression was not able to adequately model. Secondly, the research was done in a rather narrow geographic region, which signals that the generalisation should be inferred with caution. The relationships observed can be influenced by socio-cultural, economic, and institutional features that are peculiar to the study area. With this, one should be careful regarding the generalisation of the results to larger populations or to other regional settings. Besides that, the purely quantitative design of the study inhibited the opportunities for deep contextual interpretation. A lack of qualitative data implies that the underlying motivations, perceptions, as well as the contextual dynamic that drives the outcome variable may not have been well captured. Combined, these limitations imply that although the results are valuable, empirical data shows an important contribution to the TAM model, especially in a developing country.

7. References

- Adeoti, O.O. (2011). Determinants of Consumers adoption of point of sales (POS) terminals in Lagos State
Published by Obafemi Awolowo University Repository.
<https://ir.oauife.edu.ng/handle/123456789/3883>
- Akerejola W.O., Asikhia O., and Soetan T., (2019). Consumer trust and adoption of point of Sales of selected business organizations in Lagos State, Nigeria. *International Journal of Applied Science, Research and Review* 05(02)
DOI: 10.21767/2394-9988.100069.
- Anyanwu, G. I., & Anumaka, C. I. (2020). Point of sale and cashless policy in Nigeria: Challenges and prospects. *Asian Journal of Economics, Business and Accounting*, 20(2), 42–57.
- Asidok, R., & Micheal, S. (2018). Mobile payment adoption in rural economies. *The Electronic Journal of Information Systems in Developing Countries*, 84(3), 45–60.
- Awolaye (2021) ICT-driven channels as innovative service delivery among selected banks in Southwestern Nigeria. *African Journal of Accounting, Auditing and Finance*, pp 386-408. <https://doi.org/10.1504/AJAAF.2021.119218>
- Awoniyi, O. (2022). Digital Banking Adoption in Nigeria: The Place of Technology Acceptance Model. *Asian Journal of Economics, Business and Accounting*, 22(7), 59-72.
- Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology, *MIS Quarterly* 13(3), 319– 340.
- Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1989). User acceptance of computer technology: A comparison of two theoretical models. *Management of Science*, 35(1), 982-1003.
- Dwivedi, Y.K, Rana, N.P. Jeyaraj, A., Clement M., Williams M.D. (2019). Re-examining the Unified Theory of Acceptance and Use of Technology (UTAUT): Towards a Revised Theoretical Model. *Information Systems Frontiers*. 21(3): 719-734
- FinTech Africa, 2025. Nigeria's PoS Transactions Surge to Record N18 Trillion in 2024. 4th February Edition.
- Fishbein, M. & Ajzen, I. (1975). Belief, attitude, intention, and behavior: An introduction to theory and research. Reading, Mass; Don Mills, Ontario: Addison-Wesley Pub. Co.
- Ibrahim, A. U. & Daniel, C. O. (2019). Impact of E-Banking on the Development of Banking Sector in Nigeria. *International Journal of Managerial Studies and Research*, 7(2), 19-27.
- Igudia P.O (2017). A Qualitative Evaluation of the Factors Influencing Adoption of Electronic Payment Systems (SMEs) by SMEs in Nigeria. *European Scientific Journal Vol 13, No 31*, 472-502.
<https://doi.org/10.19044/esj.2017.v13n31p472->
- Iluno, E. C., Farouk, B. K. U. & Saheed, Z. S. (2018). Impact of the electronic banking products and services on the customers' satisfaction: a case study of Kaduna state, Nigeria. *Journal of Good Governance and Sustainable Development in Africa*, 4(2), 21-33.

- Morufu, O. (2016). *E-Payments Adoption and Profitability Performance of Deposits Money Banks in Nigeria*. *IPASJ International Journal of Information Technology*, 4, 1-9.
- Nworie O.G. and Okafor T.G. (2023). Nigeria Public Manufacturing Firms Adoption of Computerised Accounting System: The Firm Size and Firm Capital Turnover Effect. *Journal of Global Accounting*, 9(1), 324-345.
- Nwude C.E & Igwooji N.D & Udeh S.N, (2020). "The Role Of Electronic Banking As A Tool To Financial Inclusion In Nigeria," *Noble International Journal of Business and Management Research*, Noble Academic Publisher, vol. 4(1), pages 01-08.
- Nwankwo, S. N., & Agbo, E. I. (2021). *Effect of electronic banking on commercial bank performance in Nigeria*. *European Journal of Accounting, Finance and Investment*, 7(1), 68–82.
- Obi-Nwosu, V., Onuoha O & Okoye N.J (2021). *Electronic Banking and Growth of Deposit Money Banks Operations: Nigeria Experience*. *Asian Journal of Economics Business and Accounting*. 21 (8):124-35. DOI: 10.9734/AJAJEBA/2021/v21i830416
- Odia, E. O. and Agbonifoh, C. I. (2022). Point of Sale Payment System Adoption and Customer Satisfaction. *Uniben Journal of Marketing*, 1(1): 38-51.
- Olaiya A.C & Adeleke K.O. (2019). *Electronic Banking and profitability of deposit money banks in Nigeria*. *Journal of Association of Professional Bankers in Education*, 5(1), 129-151
- Omotayo F. and Dahunsi O. (2015). Factors affecting adoption of POS terminals by businesses. *International Journal of Bank Marketing*, 22(6), 36-48
- Omosho K.O., Dada A.D., Adelowo C.M. and Siyanbola W.O. (2012). Linking Innovations with Productivity in a Nigeria Banking Firm: What roles for ICT? *Journal of Management* 2 (5): 204-213.
- Omosho, K. O. and Adelowo, C. M. (2016). Prospects of Nigeria's ICT Infrastructure for E-Commerce and Cashless Economy. *British Journal of Economics, Management and Trade* 13 (2): 1-10.
- Oluwatusin, F. M., & Olofinsao, T. O. (2020). *Financial inclusion and rural households' banking preferences in South-West Nigeria*. *Journal of Banking and Finance Research*, 8(2), 33–49.
- Qi W., Geng, N, Yang Z & Xu G. (2024). Education and FinTech adoption: evidence from China. *China Finance Review International*, Vol 15, Issue 1, pg 140-165 <https://doi.org/10.1108/CFRI-06-2023-0141>
- Rabbani, H., Shahid, M. F., Khanzada, T. J. S., Siddiqui, S., Jamjoom, M. M., Ashari, R. B., Ullah, Z., Mukati, M. U., & Nooruddin, M. (2024). Enhancing security in financial transactions: a novel blockchain-based federated learning framework for detecting counterfeit data in fintech. *PeerJ. Computer science*, 10, e2280. <https://doi.org/10.7717/peerj-cs.2280>
- Raj, L.V., Amilan, S., Aparna, K., & Swaminathan, K. (2024). Factors influencing the adoption of cashless transactions during COVID-19: an extension of enhanced UTAUT with pandemic precautionary measures. *J Financ Serv Mark* 29, 488–507. <https://doi.org/10.1057/s41264-023-00218-8>
- Sunardi, N. and Tatariyanto, F (2023). The Impact of the Covid-19 Pandemic and Financial Technology Adoption on Financial Performance Moderating by Capital Adequacy. *International Journal of Islamic Business and Management Review* Vol.3, No.1, Pp.102-118
- Saga V. and Zmud R. (1994). The Nature and Determinants of IT Acceptance, Routinization and Infusion in Diffusion, transfer and implementation of information technology, L. Levine (ed). *North-Holland, Amsterdam*, 1994, pp. 67-86
- UNESCO (2021). Data and Information for Science Advice and Advocacy in the Management of the COVID-19 Pandemic Crisis. A Report of the Policy Project Submitted to UNESCO in December 2021.
- Venkatesh, V., & Davis, F. D. (2000) A theoretical extension of the technology acceptance Model: Four longitudinal field studies. *Management Science*, 46 (2), 186-204.
- Venkatesh; Morris, Michael G.; Davis, Gordon B.; Davis, Fred D., (2003) "User acceptance of information technology: Toward a unified view", *MIS Quarterly*, , 27, 3, 425-478.