

Determinants of Continuous Intention to Use Mobile Payment in Nigeria

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Abstract

The upsurge in m-payment usage despite multiple challenges is unfathomable. The research aims to determine the factors influencing the continuous intention to use m-payment in Southeast, Nigeria. The survey was anchored on the diffusion of innovation, technology acceptance model, and unified theory of acceptance and use of technology. A structured questionnaire was used for data collection while standard multiple regression was used for data analysis. The study found a positive statistical influence of perceived advantage, usefulness, safety, and cost on continuous intention to use mobile payment in Southeast, Nigeria. It was recommended that financial institutions should often upgrade the m-payment system to meet the requirements of users; be more aggressive in promoting the use of m-payment in Nigeria; use safety attributes to position the payment system in the minds of users; and position m-payment as a tool for cost-effective payments.

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1. Introduction

Mobile payment (m-payment) usage has recorded a sharp growth in Nigeria, rising from N136.85bn in 2019, to N623.47bn; N1.78tn; and to 4.86tn in 2020, 2021, and 2022, respectively (NIBSS, 2022). This was linked to a 13.98% increase in the number of telecom subscribers as two hundred and eighteen million, nine hundred and fifty-three thousand, eight hundred and forty-nine (218,953,849) active subscribers were reported in the country (Nigerian Communications Commission, NCC, 2022). M-payment encourages people to transfer cash with mobile phones from the comfort of their location (Daştan & Gürler, 2016; Nyirenda & Chikumba, 2014). It offers huge benefit to users, enabling them to make payments with smartphones (Chen et al., 2019). M-payment is useful for person-to-person, person-to-business, and business-to-business transactions. It involves a network of customers, merchants, mobile network operators (MNOs), and financial institutions (Boateng & Sarpong, 2019).

M-payment usage soared during the global health crisis (COVID-19 pandemic) following restricted movement and physical distancing. The m-payment is acceptable because it offers greater freedom when paying for taxes, licenses, fees, bills, fines, and goods and services at convenient days and times (Okifo & Igbunu, 2015). Despite the success of m-payment, it is not performing at an optimal level in Nigeria. Given an increase in literacy level, an increase in the use of mobile phones, and limited cash withdrawal from banks, the use of m-payment should be more than what is being reported.

M-payment provides greater convenience, saves time, guarantees the user's safety from cyber criminals, and becomes a cost-effective virtual payment option. It has an inadequate advantage over Automated Teller Machines (ATM) and Point of Sale (POS) terminals, experiences network failures, poses security concerns, and generates financial costs but enjoys continuous customer usage. Nevertheless, there is insufficient research on factors influencing

continuous intention to use mobile payment (CIUMP) in Nigeria. Available literature indicates that a few studies were conducted outside Nigeria (Gill et al., 2021; Yunita & Andajani, 2020; Jun et al., 2018). The outcome of the studies will yield no practical result when implemented in Nigeria. To fill the geographic-empirical gap, this survey aims to determine factors influencing continuous intention to use m-payment in Nigeria. The literature review section presents various factors that could impact the constant use of the technology. Then, the theoretical background, conceptual framework, and research methods are presented before the results.

Literature Review

1.1. Perceived Relative Advantage

The relative advantage of innovation explains how a new technology serves a purpose better than the past or existing technologies (Wamuyu, 2014). The perceived advantage of technologies suggests increased efficiency, economic benefits, and enhanced status (Rogers, 2003). M-payment is expected to provide a better service experience than automated teller machines, Western Union, and other technologies. Technologies are adopted and used based on the higher benefits they offer the target audience. M-payment is more convenient, safer, and affordable than traditional payment systems (Wamuyu, 2014). Wamuyu (2014) established that mobile users easily make purchases and pay their bills from their locations. Abebe & Lessa (2020) ascertained that relative advantage was an important determinant of m-payment adoption in Ethiopia. Also, Chen et al. (2019) found a statistical relationship between relative advantage and intention to adopt the payment system. Chin et al. (2020) found that perceived benefit exerted the strongest influence on the intention to use m-payment systems. Hee et al. (2020) ascertained a statistical relationship between perceived ease of use and m-payment adoption in Malaysia. Jun et al. (2018) determined a significant influence of personal innovativeness and perceived value on CIUMP. According to Gill et al. (2021), there was no indirect influence of mobility on the CIUMP. As a result, the research proposes the following hypothesis:

H1: Perceived relative advantage has a statistical influence on continuous intention to use m-payment in Nigeria.

1.2. Perceived Usefulness

Perceived usefulness defines the feeling that an innovation will help satisfy identified needs. M-payment is acceptable because of the inclination of bank customers to enjoy superior benefits from the payment option. Tobbin (2010) argued that an increment in customer belief increases their intention to use the payment system. M-payment guarantees the transfer of cash anytime and anywhere. Distance and bank closing hours do not hamper the service delivery. Mugambi et al. (2014) included service convenience, timeliness, security, and accessibility in the list of m-payment service benefits. The perceived usefulness of m-payment drives its continuous usage. Focused group discussion revealed that users would not hesitate to consider and use the payment channel; and would intend to increase their use of mobile money if it was useful (Wamuyu, 2014). Ntaukira et al. (2021) determined the influence of perceived usefulness on CIUMP. Hee et al. (2020) revealed a significant relationship between perceived usefulness and m-payment adoption in Malaysia. Chin et al. (2020) reported that perceived benefit exerted the strongest influence on the intention to use m-payment systems. Abebe & Lessa (2020) found a positive significant influence of perceived usefulness on m-payment adoption. Liébaná-Cabanillas et al. (2020) reported a strong, direct statistical influence of perceived usefulness on intention to use m-payment. Sakala and Phiri (2019) established a significant relationship between perceived usefulness and user intention and system use in Zambia. Chandra et al. (2018) found a statistical influence of perceived usefulness on the use of GO-Pay. Shankar and Datta (2018) revealed that perceived usefulness has a significant influence on m-payment adoption intention. The research revealed that perceived usefulness is significantly related to m-payment adoption in Malaysia (Hee et al., 2020). Alternatively, Daştan and Gürler, (2016) found that perceived usefulness had no significant influence on m-payment adoption in Turkey.

H2: Perceived usefulness does not have a significant influence on continuous intention to use m-payment in Nigeria.

1.3. Perceived Safety

M-payment has a high level of uncertainty and poses a greater risk. The demand for trust increases banks' and mobile network operators' pressure to enable customers feel safe when making m-payments (Liu & Tai 2016). According to Tobbin (2010), bank customers should trust the reliability of the network and the process. Zhou (2014) opined that trust in m-payment tends to reduce customer concern about payment risk and uncertainty, and also increase their perceived control. The safety of customers' data is as paramount as the successful transaction itself (Liu & Tai, 2016). As a result, the customers consider the safety of the service more than any other benefit. Wamuyu (2014) reported that m-payment is useful when it facilitates safe, quick, and convenient transactions. The perceived safety of m-payment encourages continuous use of the technology. Hee et al. (2020) reported that perceived security and trust are significantly related to m-payment adoption among urbanites in Malaysia. Abebe and Lessa (2020) established a positive statistical influence of risk/security on m-payment adoption. Yunita and Andajani (2020) revealed that security has a significant influence on trust and that trust has a significant influence on CIUMP. Chen et al. (2019) found a statistical relationship between perceived risk and intention to adopt a payment system. Liu and Tai (2016) established that perceived safety statistically influenced the intention to use m-payment services in Vietnam. Hee et al. (2020) determined a significant relationship between perceived security and m-payment adoption in Malaysia. Chandra, Kristin, Suhartono, Sutarto & Sung (2018) reported that environmental risk negatively influences perceived trust while perceived trust negatively influences the adoption of GO-Pay. Gill et al. (2021) found an indirect relationship between technical security and the intention to use m-payment in Pakistan. Chin, Harris, and Brookshire (2020) revealed that perceived risk has no statistical influence on the intention to use the m-payment. Yunita and Andajani (2020) found that perceived risk had a negative statistical influence on CIUMP.

H3: There is no significant relationship between perceived safety and continuous intention to use m-payment in Nigeria.

1.4 Perceived Cost

The cost of m-payment is all-encompassing. It includes transaction price, cost of data, and cost of a device (Tobbin, 2010). Similarly, Mugambi et al. (2014) posited that m-payment has two cost structures such as service cost and phone cost. Apart from these cost elements, the mobile user needs to subscribe to data before using the payment channel. The payment system is attractive when the service charge is affordable. This encourages people to continuously use the service even when they experience service delays. Available literature has indicated contradictory results on the relationship between cost and m-payment. For example, Abebe and Lessa (2020) determined a positive significant influence of cost on m-payment adoption in Ethiopia. On the contrary, Pathirana and Azam (2017) argued that students were more concerned about service benefits and fun obtained from m-payment than the price of the payment channel. Similarly, a focus group discussion established that m-payment met their expectations in terms of service levels, affordability, and convenience (Wamuyu, 2014).

H4: Perceived cost does not statistically influence continuous intention to use m-payment in Nigeria.

1.5 Continuous Intention to Use Mobile Payment (CIUMP)

Behavioral intention precedes patronage and use of m-payment. Initial intention leads to the first use of m-payment whereas subsequent m-payment usage requires subsequent intentions. This means that continuous use of m-payment requires continuous intention. Continuous intention explains the customer's willingness to use m-payment as long as he enjoys the benefits of using the technology (Wamuyu, 2014). The use of m-payment is dependent on the anticipated level of satisfaction (Zhou, 2014) and the attempt to avoid an ugly experience from other payment channels.

1.6 Mobile Payment

Mobile payment defines the use of mobile phones to begin, authorize, and confirm the exchange of financial value for goods and services (Mugambi et al., 2014). M-payment is an aspect of mobile banking that specifically involves the transfer of money from one party to another. M-banking has been described as a financial service offered through portable technology (Oliveira et al., 2017). Migliore et al. (2022) posited that m-payment involves all payments made by financial users through a mobile application. M-payment involves the transfer of cash using mobile phones (Nyirenda & Chikumba, 2014). Zhou (2014) maintained that mobile devices are used to make payments, check balances, and transfer money. M-payment saves financial constraints and grants convenient patronage. With m-payment, transactions are concluded using short message service (SMS), unstructured supplementary service data (USSD), wireless application protocol (WAP), and mobile wallet and near field communication (NFC) (Shankar & Datta, 2018). Mobile phone usage facilitates mobile payment adoption (Pham & Ho, 2015), ensures fast and convenient transactions (Teo et al., 2015), and increases the volume of secure transactions (Leong et al., 2013).

1.7. Mobile Payment in Nigeria

In Nigeria, m-payment service is offered by sixteen licensed operators owned and managed by banking and non-banking institutions. The mobile operators include Cellulant Nigeria Limited, Chams Mobile, Etranzact International Limited, Fortis Mobile Money Limited, Funds and Electronic Transfer (FETS) Limited, Hedonmark Management Services Limited, Mkudi Limited, Nownow Digital Systems Limited, Pagatech Limited, Palmpay Limited, Parkway Projects Limited, Opay Digital Services Limited (Formerly Paycom Nigeria Limited), Teasy International Company Ltd., Visual ICT Limited, Vtnetwork Limited, and Internet Limited. The operators complete person-to-person, person-to-business, and business-to-business payment services. Online transfer recorded 3,432,692,730 transactions at N235,617,811,325,903; USSD produced 292,969,790 transactions at N2,975,572,689,715; while mobile APP transfer produced 249,076,105 transactions at N19,377,841,240,553 (CBN, 2022).

1.8. Theoretical Background and Conceptual Framework

The theory of planned behavior (TPB), the diffusion of innovation (DOI), the technology acceptance model (TAM), and the unified theory of acceptance and use of technology (UTAUT) are useful in customer attitude, m-payments, and electronic banking discuss (Marumbwa & Mutsikiwa, 2013). TPB, DOI, TAM, and UTAUT were proposed by Ajzen (1985), Rogers (1983), and Venkatesh et al. (2003), respectively. TPB explains and predicts how intentions influence behaviors using attitudes toward behavior, subjective norms, and perceived behavioral control (Ajzen, 1985). Attitude explains a person's view about an object or something, subjective norm highlights perceived social pressure, and perceived behavioral control defines the ease or difficulty of performing an act (Ajzen, 1991). M-payment usage is linked to a positive attitude; social approval; and the technology being easy to use. DOI was developed to explain why and how people accept and use a new idea, an innovation, or a new product (Maurya & Tanty, 2022). The theory suggests that the product's features reduce uncertainty and influence its usage. The uncertainty-reducing features of innovation (for example, relative advantage, compatibility, complexity, trialability, and observability) were proposed by Rogers (1983). In line with other innovations, the diffusion of m-payment starts from knowledge to persuasion, decision, implementation, and confirmation. The decision to adopt or reject m-payment hinges on the capacity of the technology to meet customer requirements. Meanwhile, a rejected technology may later be adopted when there is a change in customer perception. TAM explains that an innovation is acceptable when it is useful for a specified purpose and when it is easy to use. The m-payment must provide competitive benefits to attract the attention, interest, intention, and patronage of the target customers. UTAUT model comprises performance expectancy, effort expectancy, social influence, and facilitating conditions (Pathirana & Azam, 2017). These variables exert a direct influence on user intention and an indirect influence on the use of technology. The model indicates the moderation of gender, age, experience, and voluntariness to use. The UTAUT model provided an extended and unified view of acceptance and continuous

use of technology (Pathirana & Azam, 2017). UTAUT 2 suggests that the intention and use of technology are influenced by intrinsic incentives, cost, and customers' routines. The m-payment is acceptable when it is useful, when it is easy to use when it meets social standards, when there is incentive, when it is affordable, and when it relates to users' routines.

This survey builds its theoretical basis using perceived advantage, usefulness, safety, and cost of the m-payment. These variables were adapted from DOI, TAM, and UTAUT2, respectively. Figure 1 presents a symbiotic relationship among the research variables and their relationship with continuous intention to use m-payment. The m-payment must possess a relative advantage over prior technologies and the advantage must be useful, safe, and cost-effective to attract and retain customer patronage.

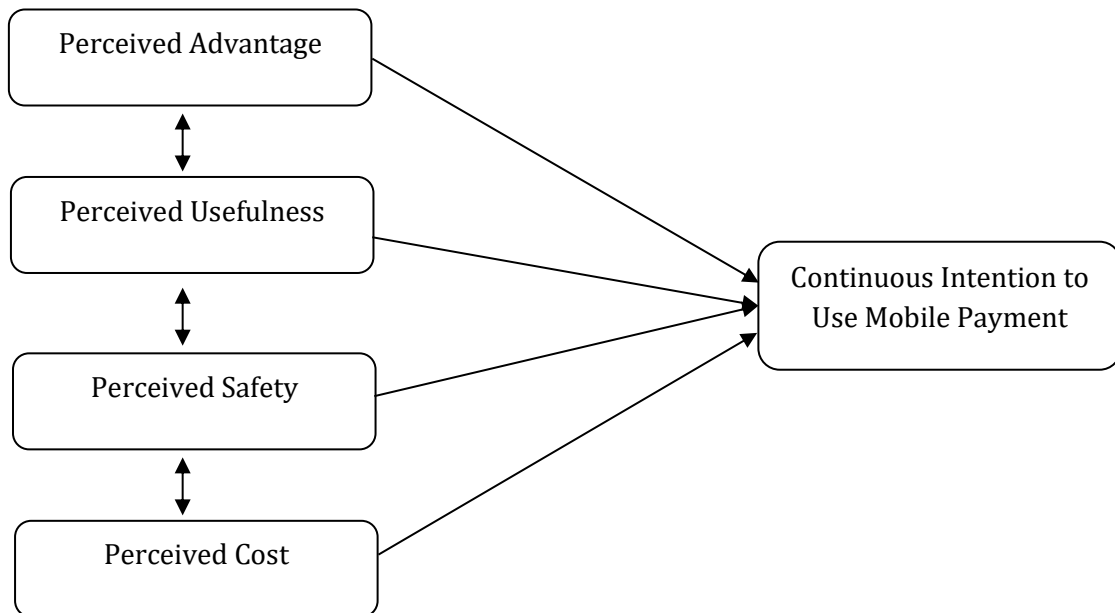


Figure 1. Determinants of continuous intention to use mobile payment
Source: Development by Reseacher (2024)

2. Methods

3.1 Sampling Procedure

This survey targeted m-payment users in Nigeria. The research used Topman's formula for determining the sample of the study from an infinite population because the population is unknown. Topman's formula is stated thus; $N = \frac{Z^2PQ}{e^2}$

Where N = Sample Size; Z = 1.96; P = Probability of success; Q = Probability of failure; and e = Limit of tolerable error (5%). To determine the probability of success (P) and probability of failure (Q), thirty (30) individuals were asked whether they used the m-payment service. Twenty (20) responded "Yes" while ten (10) responded "NO". The probability of success is $30/40 = 0.75\%$ while the probability of failure is $10/40 = 0.25$.

Therefore,

$$N = \frac{1.96^2 \times 0.75 \times 0.25}{0.05^2}$$

$$N = \frac{1.96^2 \times 0.75 \times 0.25}{0.0025}$$

$$N = \frac{0.7203}{0.0025}$$

$$N = 288$$

The research data were collected using a structured questionnaire. This study adopted a convenience sampling technique to select respondents who were accessible and had given

consent. The survey used 241 (84%) valid responses for data analysis because they were considered sufficient enough.

The questionnaire comprises sections A and B. Section A deals with the bio-data of the respondents while Section B presents the key research variables. The question items were adapted from Liu and Tai (2016) and Wamuyu (2014). The instrument was designed on a five-point Likert scale, ranging from strongly agree (5) to strongly disagree (1). The instrument was validated by three experts and the scale reliability test was conducted using Cronbach Alpha. Linear regression was used to analyze the research data.

The research determined the reliability coefficients of the variables which exceeded the benchmark of 0.70 (Pallant, 2007). The results are presented in Table 1.

Table 1. Reliability of Research Instrument

Variable	Number of items	Cronbach's Alpha
Perceived Advantage	3	0.858
Perceived Usefulness	3	0.900
Perceived Safety	3	0.922
Perceived Cost	3	0.873
Continuous Intention to Use M-Payment	3	0.951

Source: Data Processed (2024)

3. Results and Discussion

3.1. Demographic Analysis

The research recorded the participation of 91 (37.8%) males and 150 (62.2%) females. Young adult participants (less than 41 years) outnumbered older ones (42 years and above). The research established that low-income earners (those earning N80,000 only), outnumbered medium-income earners (those earning N81,000 – N102,000) and high-income earners (those earning N103,000 and above). The results revealed the eligibility of the respondents.

3.2. Standard Multiple Regression Result

The research tested and met multiple regression assumptions, such as multicollinearity, normality, linearity, outlier, homoscedasticity, and independence of residuals. The survey met variance inflation factor (VIF) standards, scoring above 0.10 (Pallant, 2007).

Table 2. Standard Multiple Regression Result

Variable	Beta	t value	Sig.	Part	Tolerance	VIF
(Constant)		4.328	0.000			
Perceived Advantage	0.163	2.490	0.013	0.063	0.151	6.641
Perceived Usefulness	0.205	3.836	0.000	0.098	0.227	4.398
Perceived Safety	-0.354	-7.675	0.000	-0.195	0.304	3.288
Perceived Cost	0.844	13.053	0.000	0.332	0.155	6.455

$R^2 = .847$; F value = 326.739

Dependent variable: Continuous Intention to Use Mobile Payment

Source: Data Processed (2024)

The research established a statistical influence of perceived advantage, perceived usefulness, perceived safety, and perceived cost on CIUMP. Perceived cost made the highest single contribution in predicting the CIUMP. It was followed by perceived safety, usefulness, and the technology's relative advantage. The survey found an 85% variance in CIUMP was explained by the predicting variables. Perceived advantage, usefulness, safety, and cost made unique contributions of 4%, 1%, 4%, and 11% to the explanation of variance in CIUMP.

3.3. Discussion

A continuous intention to use m-payment was linked to the perceived advantage, usefulness, safety, and cost-effectiveness of the technology. The relative advantage of m-

payment was an important predictor of CIUMP. This result was in line with previous findings (Abebe & Lessa, 2020; Hee et al., 2020; Chen et al., 2019; Jun et al., 2018). However, Gill et al., (2021) established no indirect influence of mobility on the CIUMP. This suggests that m-payment's efficiency, convenience, and enhanced social status influence its continuous usage. The higher the m-payment's perceived advantage, the greater the continuous intention to use the technology. Therefore, financial institutions should often upgrade the payment technology to meet the requirements of the users.

The research also ascertained a statistical relationship between perceived usefulness and CIUMP. This was similar to many past research findings (Ntaukira et al., 2021; Hee et al., 2020; Abebe & Lessa, 2020; Liébana-Cabanillas et al., 2020; Sakala & Phiri, 2019; Chandra et al., 2018; Shankar & Datta, 2018). In addition, Chin et al. (2020) reported that perceived benefit wielded the strongest influence on the intention to use m-payment systems. Alternatively, Daştan and Gürler (2016) found that perceived usefulness had no significant influence on m-payment adoption in Turkey. The usefulness of m-payment tends to be culture-based. For example, Europeans use m-payment more than Nigerians because of the difference in their feelings about its usefulness. In Nigeria, the cashless policy implementation drives m-payment usage. The more m-payment's usefulness is promoted, the more people's usage intention will be sustained. As a result, banks should be more aggressive in promoting the use of m-payment in Nigeria. This will be achieved by making the m-payment app installation part of the account opening and upgrading process.

It was found that the perceived safety of m-payment was a predictor of the CIUMP in Nigeria. Many past researches reported that perceived safety/risk influences the intention and use of m-payment (Gill et al., 2021; Hee et al., 2020; Yunita & Andajani, 2020; Abebe & Lessa, 2020; Yunita & Andajani, 2020; Chen et al., 2019; Chandra et al., 2018). On the contrary, Chin et al. (2020) revealed that perceived risk has no statistical influence on the intention to use the m-payment. Users who feel safe about m-payment tend to use the technology more than those who have safety concerns. The lower the level of risk, the higher the number of those who will use m-payment. Therefore, firms are advised to use safety attributes to position the payment system in the minds of users. This should be done by focusing on the safety of account details and the reliability of the payment process.

Finally, the survey determined the influence of perceived cost on CIUMP in Nigeria. Available literature has indicated contradictory results on the relationship between cost and m-payment. For example, Abebe and Lessa (2020) determined a positive significant influence of cost on m-payment whereas Pathirana and Azam (2017) reported an insignificant relationship between cost and m-payment among students. The perceived cost-effectiveness of m-payment depends on the user's financial status. Business managers are not as cost-conscious as students because of the difference in their levels of income. This suggests that the higher the income, the higher the tendency to use m-payment. Hence, banks are advised to position m-payment as a tool for cost-effective payments. This will be achieved by describing the low cost of making each transaction.

4. Conclusion

The conclusion of this study shows that the continuance intention to use m-payment (CIUMP) in Nigeria is significantly influenced by the perceived benefits, usability, security, and cost of the technology, with perceived cost contributing the most. However, this study has limitations, such as limited geographical coverage, potential respondent bias, and cultural factors that may affect the results. Therefore, further research is recommended to expand the coverage area, consider more diverse demographic factors, and explore other elements that may influence m-payment adoption. As a recommendation, financial institutions are advised to improve system security, clarify the benefits of use, and reduce transaction costs to encourage wider adoption of m-payments in the community.

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