Customer Intention Toward M-POS adoption in Gas Stations: Gender Perspective

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Abstract

With developments in financial technology, financial inclusion has attracted the attention of social researchers, given its value in addressing poverty and economic growth. mPoS payment is seen as a vehicle towards financial inclusion. But it is constrained by convergence of social, economic and environmental factors, leading to poor usage of debit card for payments on mobile Point of Sale (mPoS). In this paper, we evaluated the intention of customers to adopt mPoS. Part of the major goal of the article was to evaluate the gender perspective to the issue of financial inclusion in response to increasing demand for gender equality. Using data collected through questionnaire and analysed using structural equation model, the researchers observed a pattern of intention to adopt mPoS that is skewed towards more women making payment via mPoS. This result validated the growing knowledge, awareness and policy shift that encourages more women participation. We concluded that government must continue to engage and encourage more financial inclusion of women in Nigeria's payment ecosystem. This can be done by partnering with e-payment companies founded by women, encouraging regulators to increase women presence in fintech businesses, and ensure strict compliance with financial inclusion policy

strategy which indirectly will contribute to attainment of cashless economy drive in Nigeria.

Keywords: E-payment, Gender, Mobile Point of Sale, Technology Acceptance Model, Consumer Behaviour

Introduction

Before now, payments were basically paper-based. However, technological innovations have created a change in this approach such that there are births of several financial payment innovations that support electronic payments (Premchand & Choudhury, 2015). Customers have the opportunity to pay for purchases with several payment options, but studies show that customers who own plastic cards still prefer cash payments (Arango-Arango & Suárez-Ariza, 2019). Sultana and Hasan, (2016) attributed this to issues such as education and lack of awareness of many payment platforms. In other cases, it could be attributed to wide variety of e-payment options to customers which are higher in number in developed nations compared to African nations (Simatele & Mbedzi, 2021). Essentially, e-payment mechanism can be a nuisance to customers due to the transactional costs despite its advantages (Bisht, et al., 2015). However, customers' option of using plastic cards for payment has resulted to a shift in how they approach everyday payments. In most cases, such changes from customers' choice of payments influence the entire payment system in ways that call for policy decisions (Trütsch, 2016).

The e-payment system includes plastic cards which generally cover debit cards and credit cards. Debit cards are machine-readable plastic cards that grant the user access only to the amount in the owner' account held with holder's bank. Using plastic cards to pay offers a form of convenience as customers seem to value convenience in buying process. Furthermore, customers' choice of payment instrument can be dependent on demographic variables (Humbani & Wiese, 2018), subjective norm (Oloveze, et al., 2022a) and security (Sultana & Hasan, 2016) which appears as the most vital factor to customers (Simatele & Mbedzi, 2021). Other factors that are common among developing nations are customers' reluctance to use plastic money mostly because of poor perceptions of plastic money and lack of education (Sultana & Hasan, 2016). These factors are highlighted by the wide disparity between the levels of adoption of debit cards for payment in developed nations against the developing nations. For instance, in 2017, World Bank Group (2018) assert that only 22% adults paid for goods and services with plastic cards like debit cards against 80% adults in developed nations. This is not dissimilar in plastic card ownership where ownership of plastic cards in developed nations dwarfed plastic card ownerships in developing nations.

In Nigeria, there are evidences of poor adoption rate of mobile Point of Sale (mPoS) terminal by consumers (Oloveze et al., 2022) at the early stage of introduction of the innovation. The key factors affecting mPoS adoption at the early stage was poor infrastructure, network irregularities, and poor security of network communication (Akerejola et al., 2018). In recent times, the adoption rate has improved following the proliferation of mPoS merchants. This follows the evidence on the increasing number of mPoS terminals in Nigeria. As at 2017, only 155,000 mPoS terminals were in the market while in 2022, it is estimated to be 1.1 million (Sasu, 2022a). The significant increase in number was due to the increased usage by merchants (CBN, 2019). However, the adoption rate is still insignificant compared with the Nigerian population that is estimated to be over 200 million.

Despite the significant development in mPoS, the adoption by customers at gas or fuel stations has been poor just like Akerejola et al., (2018) asserted with business organisations. This is still traceable to the cash dominance in the society. When compared with other payments from 2017 to 2021, cash was still dominantly preferred by customers (Sasu 2022b) while on e-payment comparisons, automated teller machines were dominant as mPoS was third in value after m-channels (CBN, 2019).

In considering mPoS payment option, male and female customers will most likely use them in purchases. The findex report in 2017 indicates that about 40% Nigerians were financially excluded, had no account and were predominantly females and the poor (Demirgüç-Kunt, et al., 2018). The gender inequality is pronounced in developing countries particularly in accessing finances for either business investments or personal care. In recent time, the gender inequality reduced due to Fintech effect in sub-Saharan Africa such that there are evidences of increased ownership of accounts by females, and e-payments by females (The World Bank, 2022). Customer gender is shown in extant literature to be important in payment choice (Humbani & Wiese, 2018).

The gender of a customer is often seen to have significant role on spending though the volume of expenses differ among gender (Nandanan & Fernandez, 2017). It can be argued that for either male or female who purchase on impulse, expensive and quality purchases with compulsive buying behaviour will most likely have the tendencies to use e-payment instruments. Generally, men are noted for expensive and quality purchases (Wilska & Haanpa, 2005) while women are noted for cosmetics and gift purchases (Saimek, 2009). In other instances, it is argued that men seek functional values while women are attracted to relational values (Yang & Lee, 2010). The motivation to spend differs between both sexes. Men are often regarded as having positive attitude towards spending whereas women are moved by savings (Sareetrakul, et al., 2013). Women's general disposition to spending is often anchored on family provisioning, care-giving and children's food (Blumberg 1988). The import of this is that spending and perception of choice of payment can be associated with opportunities to use debit card for payments on mPoS. Furthermore, gender differences are not consistent in all innovations. In some studies, there are gender differences in adoption (Zhang et al., 2014), in others, there is neutrality in adoption (Faqih & Jaradat, 2015) and similarity in adoption rate and pattern (Li et al., 2008).

The motivation for the study stems from the focus of most studies on payment choices by gender in developed nations with dearth of literature in developing countries such as Nigeria. This could result from network infrastructure as ITU (2020) indicates 86.6% broadband coverage in developed nations against 28.2% in Africa. On the other hand, most literature on e-payment are largely concentrated on m-banking and m-money while the issues of gender inequality is more pronounced in developing nations than developed nations. Thus the study seeks to evaluate customer intentions to debit card usage on mPoS in gas stations with emphasis on multi-group analysis. In this regard, the study seeks to contribute to literature on gender analysis to e-payment choice in Nigeria. Secondly, the study seeks to adopt a robust structural model in the analysis to provide diverse hidden structural relationships that are often missed by related studies in this area, because of the methodologies and techniques adopted. Some of the studies are Akerejola et al., (2018), Oloveze et al. (2021), and Okeke et al. (2017) from the dimension of gender analysis.

Gender Perspective on E-Payment

Interests on gender have gained attention particularly with the problem of financial inclusion in emerging economies. How men and women interact with information technologies (IT) differ as men tend to be positive about its acceptance than women (Nahar, 2022). In online buying perspectives, literature suggests more engagement among men given their proclivity in making planned IT purchases whereas women are inclined to unplanned purchases of convenience products like food (Liébana-Cabanillas et al., 2014). In other instances, the motivating factors to accept innovations differ. For instance, Subawa et al. (2021) asserted that ease of use is not significant in motivating men to adopt e-payment options while it is influential on women. Literature suggests contrasting results on gender involvement in technological innovations such as no gender difference in adopting e-payment in Malaysia (Zuroni & Teng, 2019), its significance in accepting mobile payment (Liébana-Cabanillas et al., 2014) as well as on mhealth

in Nigeria (Oloveze et al., 2022b). In the Nigerian context, the gender gap is a huge challenge in achieving financial inclusion (CBN & EFInA, 2019). The involvement of women in e-payment ecosystem is neglected though the recent development in women strides in fintech industry seems to be changing.

Theoretical Underpinning

Basically, different models have been used to address technological innovations. In the case of mPoS in Nigeria, the study of Okeke et al., (2017) and Omotayo and Dahunsi (2015) provided further illustrations on the innovation in Nigeria using technological acceptance model though in some cases such as Omotayo and Dahunsi (2015) it was majorly a support to the selected constructs rather than application. Thus, in underpinning a study on a theory, several theories such as unified theory of acceptance and use of innovation, theory of reasoned action, and technological acceptance model (TAM) have been used. In this study, TAM was adapted with modifications. The adaptation was because of the context of the study that demands evaluating the effects from male and female users of mPoS. Secondly, the model is robust in handling factors influencing innovations which have been proven through several empirical studies and confirmed validity (Jeong & Yoon, 2013). TAM was developed by Davis (1989). The model indicates behavioural intention to be determined by perceived usefulness (PU) and perceived ease of use (PEoU) with PEoU influencing usefulness. In this study, the adapted model is modified by including security and social influence. The importance of adopting the construct of security is because of its most prevailing influence on other technological innovations and men's resort to functional value while the construct of social influence from Fishbein & Ajzen's (1975) theory of reasoned action is because of women's relational value in objects of interest.

Perceived Security

Security is a key area that people consider important because of exposure to risk. It is the belief about privacy and safety in adopting innovation. It is more pronounced when there is no previous experience of related technology. Extant literatures show that security concerns on payment technologies are major concerns to users. For new electronic payment systems, it is necessary to establish new security mechanisms so as to protect customer transactions and generate confidence (Liébana-Cabanillas et al., 2017). This is important when majority of users of e-payment system are relatively unfamiliar with its technical details and as such, they tend to evaluate its security level based on their experience with user-interfaces (Kim, et al., 2010).

To attract and retain e-payment users, it is vital to enhance customers' perceptions of security. However, men and women tend to respond differently to issues in life because of cognitive differences, biological, behavioural and social traits (Hossain, 2019). Gender differences in organisational setting show that women are less enthusiastic to adopt innovation than men (Xia et al., 2018). In other studies, men tend to have positive attitude and more interaction with innovation than women (Hossain, 2019). Hence the hypothesis:

H₁. Women perceive security higher than men on intention to adopt mPoS in gas stations

Social Influence

Social influence is the degree of perception an individual has about views of important members of his/her in-group in adopting a technology or not (Venkatesh & Bala, 2008). TAM did not account for social influence thereby projecting it as weakness such that authors are adapting it to their studies because of its importance in modern day society. It is a composition of belief and motivation from referents that influence the direction of their actions (Oloveze et al., 2022a). Such influences can also be human-nature induced or cultural influences on the individual (Gutierrez-Leefmans & Olaleye, 2021). It is significant in situations of high uncertainties as people tend to rely on referents' opinion (Gutierrez-Leefmans & Olaleye, 2021). Debit card users belong to an in-group who often influence them. Once they perceive that the acceptable way of

making payments in the society is using debit cards, they will most likely conform to the societal way of doing things. Venkatesh and Bala (2008) assert that in gender cases to innovation, men have higher intentions but in social contexts, women have higher sensitivity that influences their intention to adopt innovation. Thus the hypothesis:

H₂: The effect of social influence is significantly higher among women than men on intention to adopt mPoS in gas stations

Perceived Ease of Use

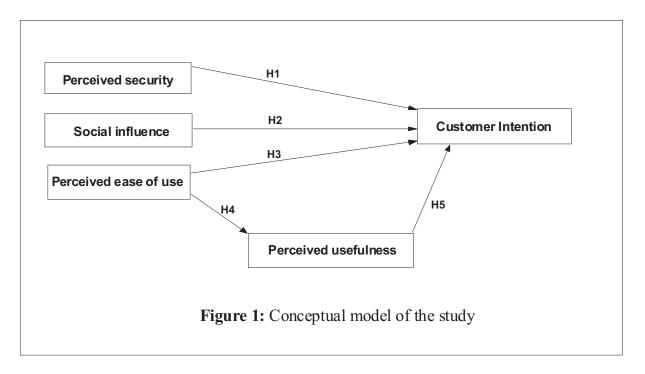
Perceived ease of use is the extent to which users believe a technology to be simple and non-complex (Davis, 1989). It is a key attribute of TAM that influences perceived usefulness and behavioural intention while also having the tendency to influence attitude. When an e-payment system is easy for customers to use, the chance of usage can increase. It is a key factor that influences customers' decision to adopt an innovation (Ramos-de-Luna et al., 2019). In relation to debit cards on mPoS, it deals with consumers' perception of having effortless payment. In some cashless transactions, women have positive significant intentions due to ease of use than men (Subawa et al., 2021). Other studies show that men are generally inclined to adopt innovations faster than women (Khan et.al., 2020) because they consider it easy to use when compared with women (Chawla & Joshi, 2020). This is because women can be averse to usage of this sort of innovations with reasons of complexities and difficulties (Nahar, 2022). Hence the hypothesis: H₃: The effect of perceived ease of use is significantly higher among men than women on intention to adopt mPoS in gas stations

H₄: The influence of perceived ease of use is significantly higher among men than women on perceived usefulness of mPoS for payment in gas stations

Perceived Usefulness

Perceived usefulness is the degree to which a person believes that using a certain technology will enhance his/her performance (Davis, 1989). It is sometimes seen in the context of relative advantage as related to Rogers (2010) assertion of being the extent to which a technology is better than its predecessor. When it is high, customers' intention to adopt a technology increases (Ooi & Tan, 2016). Consumers often consider the utility that emanates from the use of any given technology or system. Debit card usage on mPoS is about how much the user stands to benefit from using it compared to using cash. In some studies, it is a strong predictor (Pham & Ho, 2015). In others it is not significant (Li et al., 2014). However, men tend to perceive the usefulness of technologies more than women (Namabira & Mtawa, 2022). Their drive is more from instrumental reasons (Schmidthuber et al., 2020) as they tend to place higher emphasis on the utility and usefulness of an innovation than women in their intention to adopt the innovation (Nahar, 2022). They are strongly influenced by usefulness in adopting an innovation than women (Venkatesh & Morris, 2000) given that it impacts more on their attitude than women (Liébana-Cabanillas et al., 2014). Earlier studies claimed that men will more likely adopt an innovation than women when they perceive its usefulness and the chance of it contributing in meeting their goal (Shin, 2009). Thus the hypothesis:

H₅: The influence of perceived usefulness is significantly higher among men than women on intention to adopt mPoS in gas stations.



Methodology

Cross sectional survey was adopted for the study. The questionnaire was designed using 7 point Likert scale (1=strongly disagree, 7=strongly agree) on items that were adapted from related studies on e-payment (Further illustration is on table 1). The questionnaire was structured in two sections of demographic variable and constructs of the study. Face and content validity was done at the preliminary test stage by using three experts in the field who evaluated the questionnaire for proper wording and appropriateness. Convenience sampling with intercept technique was used given the non-existence of sampling frame on users of debit cards for e-payment, and gas stations that have mPoS as at the time of study. The unit of analysis consists of debit cardholders in major cities in South Eastern Nigeria particularly in Aba, Umuahia, Abakaliki, Enugu and Owerri.

Table 1: Item Adaptation

Item adaptation	Source	Number
Perceived ease of use	Vekatesh & Bala, 2008	4
Perceived usefulness	Liébana Cabanillas et al., 2014	4
Social influence	Ramos-de-Luna et al., 2019	4
Perceived security	Ramos-de-Luna et al., 2019	4
Customer intention	Liébana Cabanillas et al., 2014	4

Results

196 valid data were used after screening out incomplete copies. SPSS v23 and AMOS v23 were the statistical packages employed in the analysis. Confirmatory factor analysis was used to assess the reliability and validity of the instrument. First, the principal component analysis conducted using varimax approach showed that the value of Kaiser-Meyer-Olkin is 0.958. This confirms sampling adequacy as the minimum threshold is 0.50. The p-value of Bartlett's test of sphericity is

0.000 which explains the significant difference between the correlation matrix and identity matrix thus indicating good covariances and suitability for factor analysis because the p-value is less than 0.05 (Bartlett, 1951).

Reliability and validity was checked using Cronbach's alpha (CA), composite reliability (CR) and convergent validity through average variance extracted (AVE). As illustrated in table 2, the values of CA for each of the constructs were above the threshold of 0.7 (Verkijika, 2018) which is also applicable to each construct in respect to CR that has the minimum recommendation as 0.7 (Fornell & Larcker, 1981). The values of AVE must be above 0.5 to confirm validity (Fornell & Larcker, 1981). The AVE values for each of the constructs were above 0.50 which confirms the validity of the instrument using convergent validity approach.

The demographic variable from the study was only gender because it is the focal point of the study. Thus, 53.6% were female while 46.4% were male.

or analysis Factor loadings	CA	CR	AVE
PS1 = .678	.872	.820	.574
PS2 = .718			
PS3 = .726			
PS4 = .792			
SI1 = .675	.832	.818	.530
SI2 = .749			
SI3 = .755			
SI4 = .730			
	.841	.867	.622
PEoU2 = .835			
PEoU3 = .763			
PEoU4 = .846			
PU1 = .690	.797	.839	.567
PU2 = .754			
PU3 = .766			
PU4 = .797			
CI1 = .762	.811	.869	.624
CI2 = .761			
CI3 = .813			
CI4 = .822			
	Factor loadings PS1 = .678 PS2 = .718 PS3 = .726 PS4 = .792 SI1 = .675 SI2 = .749 SI3 = .755 SI4 = .730 PEoU1 = .701 PEoU2 = .835 PEoU3 = .763 PEoU4 = .846 PU1 = .690 PU2 = .754 PU3 = .766 PU4 = .797 CI1 = .762 CI2 = .761 CI3 = .813	PS1 = .678	Pactor loadings

Structural Model Assessment

Goodness-of-fit indices were used to assess the model fit. This was done using the matrix produced by the model and the recommended thresholds for the common methods adopted. These include the CMIN/DF, Root mean squared error of approximation (RMSEA), Standardized root mean squared residual (SRMR), incremental fit index (IFI), Comparative fit index (CFI), and Tucker-Lewis index (TLI), while other measures such as Normed fit index (NFI), Parsimony-Adjusted measures index (PNFI), Reflexive fit index (RFI), and Pclose were also checked. As illustrated on table 3 the model satisfied majority of the recommended thresholds. NFI and RFI are marginally okay. Therefore, the model has good fit given the recommended thresholds (Hair, Black, Babin & Anderson, 2010).

Table 4: Model Fit										
dices	CMIN/DF	RMR	NFI	RFI	PNFI	IFI	TLI	CFI	RMSEA	PClose
el ;	1.63	0.04	0.89	0.86	0.73	0.95	0.94	0.93	0.06	0.15
shold	<5	< 0.05	>0.90	>0.90	>0.50	>0.90	< 0.90	>0.95	< 0.08	>0.05

Path Analysis and Discussion

Structural equation model was used to analyse the proposed structural paths against the p-values and unstandardised regression weights of men and women. The key focus of the study was to ascertain the intention of women and men to the use of debit card on mPoS in gas/fuel stations. First, the test of the model confirms it to be adequate following the check of the model fit values against the recommended thresholds. Second, not all the hypotheses were significant. Two paths were statistically significant for both groups while two other paths were not significant for both groups. Only one path was significant for one group but not significant for the other group. These are clearly illustrated on table 5 and figure 2.

Specifically, the path between perceived security and customer intention that was proposed as hypothesis 1 is not significant for both groups. The result is not significant for men $(\beta=0.265,p=0.508)$ but significant for women on intention to adopt mPoS $(\beta=0.980;p=0.50)$ as confirmed in related studies about women expressing security concerns in the adoption of e-payment system (Hossain, 2019) and by Punyani et al., (2015), in using e-payment during e-shopping. The result is not the same in the case of female students toward adoption of cashless transaction systems (Subawa et al., 2021), as female students show no significant result while male students are positively influenced by security concerns in adopting cashless transactions.

Privacy and security issues are vital aspects that customers are concerned with, in dealing with e-payments as it can impact their attitude. The implication on women is that when there is improvement on security and how secure they perceive mPoS, the intention to adopt it positively improves. The movement for reduction in gender inequality to financial inclusion in African nations is further buttressed by the result. E-payment adoption is improving with the rising female financial inclusion (The World Bank, 2022) which can further be deepened with removal of insecurity perceptions by the female adopters of e-payment innovation such as mPoS. Furthermore, the result confirms the statistics about women shopping more than men and relying on convenience and time savings to adopt e-payment systems (Punyani et al., 2015). The underlying factor is the importance to feel secure in adopting the payment system especially as it deals with privacy, and risk of loss. Therefore, women will embrace mPoS innovation in gas stations as more security is provided.

The path between social influence and customer intention to adopt mPoS in gas stations is not significant for men (β =0.074,p=0.819) and women (β =0.381,p=0.446). This is also confirmed in some other studies such as Sattari, et.al., (2017) when assessing the factors that influence students in accepting web-based training, and Saprikas & Avlogiaris (2021) where social influence is not related to the direct mobile purchases through social media Apps. However, the result differs in some others like Gutierrez-Leefmans and Olaleye (2021) wherein the effect of social influence was established but more among males than females in awareness of technology. Present study did not show any significant result for both groups thus buttressing the arguments on uniqueness of e-payment system (all e-payments are not exactly the same – Ramos-de-Luna et al., 2019) and African context challenges (where 40% adult population are estimated to suffer from financial inclusion in Nigeria).

The relationship between perceived ease of use and customer intention is not significant for men $(\beta=-1.184,p=0.237)$ and women $(\beta=-0.016,p=0.988)$. The original TAM indicates an influence of ease of use on behavioural intention. Empirical studies show inconsistencies with this path of the theory. The result is confirmed in related studies such as Ooi and Tan (2016) in exploration of credit card using mobile users, and earlier studies such as Tarhini et al. (2014) which asserts no individual differences among male and female on e-learning users' behaviour.

The relationship between perceived usefulness and perceived ease of use is significant for men and women. Generally, it conforms to TAM and other empirical studies (Oloveze et al., 2022a; Ramos-de-Luna et al., 2019). Specifically, the result is significant and shows both groups to have strong influence on perceived usefulness when ease of use are considered. However, men have stronger influence (β =1.311,p<0.000) than women (β =0.965,p<0.000). This is because as ease of usage increases, men tend to perceive the usefulness more than the women (Ha et al., 2007). The result is confirmed by earlier studies on e-payment innovation (Liébana-Cabanillas et al., 2014).

The path between perceived usefulness and customer intention is significant as confirmed in theory (TAM). The proposed hypothesis is that perceived usefulness is significantly higher among men than women on intention to adopt mPoS in gas stations. It was found that the perception of usefulness is stronger among women (β =0.703,p<0.000) than men (β =0.352,p<0.1). Therefore, we could not confirm the related findings in this area in which men were found to have higher perception of usefulness than women in adopting e-payment innovations (Liébana-Cabanillas et al., 2014; Namabira & Mtawa, 2022). This is explained by the recent closure on gender inequality to financial inclusion in Nigeria and more access to e-payments by the poor. Also the fintech effect is enhancing the capacity of women to be involved in e-payments. Furthermore, Nigerian women are breaking new grounds on e-payments in recent times (Alekhuoge, 2022) unlike few years ago where Nigerian men had 72% involvement in e-payments compared with women's 28% (Eleanya, 2021).

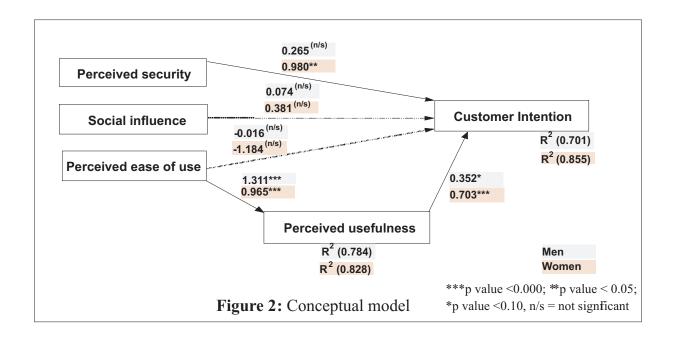
On the other hand, the R² values for the models from women (R²: PU=0.828; CI=0.855) and men (R²: PU=0.784; CI=0.701) are closer to 1. It proves that the variables provided good explanation of the variance in women's model to the level of 82.8% and 85.5% for perceived usefulness and customer intention respectively. Similarly, 78.4% and 70.1% variance in the men's model for perceived usefulness and customer intention respectively is accounted by the included variables. However, the women's model has stronger explanation to the variance than the men's model.

Table 5: Test of Hypotheses (Unstandardised Path Estimates)
Proposed relationships Women

M	[er

r roposed relationships	women		Men		
	Estimate	P-value	Estimate	P-value	
CI? PS	0.980**	0.050	0.265 ^(n/s)	0.508	
CI? SI	$0.381^{(n/s)}$	0.446	$0.074^{(n/s)}$	0.819	
CI? PEoU	-1.184 ^(n/s)	0.237	-0.016 ^(n/s)	0.988	
PU? PEoU	0.965***	0.000	1.311***	0.000	
CI? PU	0.703***	0.000	0.352*	0.086	
R^2 (PU)	0.828		0.784		
R^2 (CI)	0.855		0.701		

Note: ***p value <0.000; **p value <0.05; *p value <0.10, n/s = not significant; CI = customer intention; PS = perceived security; SI = Social influence; PEoU = Perceived ease of use; PU = Perceived usefulness



Conclusion and Recommendation

The main focus of the study was to analyse the customer intentions toward debit card usage on mPoS in gas stations within the gender context using a conceptual model and its determinant factors.

First, the variable that has the greatest influence on intention to adopt mPoS among all the paths leading to customer intention is perceived security. This further deepens the role of privacy concerns and security perceptions in adopting electronic payments such as mPoS. For the women, it is the fundamental factor that determines their intention to adopt it in gas stations while it is not significant among men.

Second, the influence of perceived ease of use on perceived usefulness of adopting mPoS is stronger among men than women. This path has been proven in extant literature and our result strengthens earlier empirical supports on this relationship.

Third, the effect of perceived usefulness on customer intention to adopt mPoS in gas stations is stronger among women than men. Thus, women are beginning to perceive the usefulness of e-payment tools such as mPoS while also showing perceived understanding of the utility and value from adopting this measure. Though this does not confirm some findings in this area, it buttresses the emerging shift in financial inclusion and shows the improvements on gender inequality and women integration into the e-payment structure of Nigeria.

Following the findings, we recommend policy reengineering approach that encourages firms to comply strictly with regulations that promote financial inclusions. Also this means dismantling barriers that challenges gender mainstreaming.

The limitation of the study is basically on the use of cross sectional design because the established predictor and outcome links were simultaneously evaluated. A longitudinal survey is suggested to help provide deeper understanding of the established links. Furthermore, though the sample is adequate for the study, however, in generalising the results of the study, the researchers call for caution because the sample might not represent all the users of e-payment since there is no existence of sampling frame. Furthermore, while these findings are profound, particularly the major difference from earlier studies on women's inclination to usefulness in adopting mPoS, it is vital to note that it could be temporal because of the rising economic challenges in the country that could deter or erode the progress championed by fintech in Nigeria.

Reference

- Akerejola, W., Asihkia, O. U., & Soetan, T. (2018). Consumer trust and adoption of point of sales of selected business organisations in Lagos State, Nigeria. *International Journal of Applied Science*, *5*(4), 1-14. DOI: 10.21767/2394-9988.100069
- Alekhuoge, N. (2022, July 20). 2022: Nigerian women in tech break new grounds. *Thisday*. https://www.thisdaylive.com/index.php/2022/01/31/2022-nigerian-women-in-tech-break-new-grounds/
- Arango-Arango, C. A., & Suárez-Ariza, N. F. (2019). Digital payments adoption and the demand for cash: New international evidence. *Borradores de Economía*; No. 1074
- Bartlett, M.S. (1951). The effect of standardization on a Chi-square approximation in factor analysis. *Biometrika*, *38*, 337-344.
- Bisht, A., Nair, P., Dubey, R., & Hajela, T. (2015). Analysis of use of plastic money: A boon or a bane. SIMS *Journal of Management Research*, 1, 1-11.
- Blumberg, R. L. (1988). Income under female versus male control: Hypothesis from a theory of gender satisfaction and data from the Third World. *Journal of family issues 9(1)*, 51-84. *doi*: 10.1177/019251388009001004.
- CBN. (2019). Central bank of Nigeria annual report 2019. https://www.cbn.gov.ng/Out/2020/RSD/CBN%202019%20ANNUAL%20REPORT-FINAL.pdf
- CBN & EFInA (2019). Assessment of women's financial inclusion in Nigeria. https://www.cbn.gov.ng/out/2020/dfd/assessment%20of%20womens%20financial%20 inclusion%20-%20exec%20summary.pdf
- Chawla, D., & Joshi, H. (2020). The moderating role of gender and age in the adoption of mobile wallet. *Foresight 22*, 483–504. doi: 10.1108/FS-11-2019-0094
- Davis, F.D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13(3), 319–340.
- Demirgüç-Kunt, A., Klapper, L., Singer, D., Ansar, S., & Hess, J. (2018). The global findex report 2017: Measuring financial inclusion and the Fintech revolution. *World Bank Group*. DOI: 10.1596/978-1-4648-1259-0. https://openknowledge.worldbank.org/bitstream/handle/10986/29510/9781464812590. pdf
- Eleanya, F. (2021 April 16). Nigerian men made 3 times more e-payments than women in 2020. *Businessday*. https://businessday.ng/technology/article/nigerian-men-made-3-times-more-e-payments-than-women-in-2020/
- Faqih, K.M., & Jaradat, M. I. R. M. (2015). Assessing the moderating effect of gender differences and individualism-collectivism at individual-level on the adoption of mobile commerce technology: TAM3 perspective. *Journal of Retailing and Consumer Services*, 22, 37-52

- Fishbein, M., & Ajzen, I. (1975). *Belief, attitude, intention, and behavior: An introduction to theory and research.* Reading, Ma: Addison-Wesley
- Fornell, C. & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, 18(1), 39–50
- Gutierrez-Leefmans, M., & Olaleye, S. A. (2021). Social influence and mPOS use: The effect of gender. *Journal of Technology Management and Innovation*, 16(4), 3-10.
- Ha, I., Yoon, Y., & Choi, M. (2007). Determinants of adoption of mobile games under mobile broadband wireless access environment. *Information & Management*, 44, 276-286
- Hair, J., Black, W., Babin, B., & Anderson, R. (2010). *Multivariate Data Analysis*, (7th Ed.). New Jersey: Prentice-Hall
- Hossain, M. A. (2019). Security perception in the adoption of mobile payment and the moderating effect of gender. *PSU Research Review, 3*(3), 180-190. DOI 10.1108/PRR-03-2019-0006
- ITU. (2020). Offline population Measuring digital development. https://itu.foleon.com/itu/measuring-digital-development/off line-population/
- Jeong, B. K., & Yoon, T. E. (2013). An empirical investigation on consumer acceptance of mobile banking services. *Business and Management Research*, 2(1), 31-40
- Khan, K. A., Akhtar, M. A., Dey, S. K., & Ibrahim, R. (2020). Financial anxiety, financial advice, and e-payment use: Relationship and perceived differences between males & females of Generation *Z. Journal of Critical Review, 7*, 1812–1820. doi: 10.31838/jcr.07.18.228
- Kim, C., Tao, W., Shin, N., & Kim, K. S. (2010). An empirical study of customers' perceptions of security and trust in e-payment systems. *Electronic commerce research and applications*, *9*(1), 84-95
- Li, H., Liu, Y., & Heikkil€a, J. (2014). Understanding the factors driving NFC-enabled mobile payment adoption: an empirical investigation. *PACIS 2014 Proceedings*, p. 231.
- Li, S., Glass, R., & Records, H. (2008). The influence of gender on new technology adoption and use mobile commerce. *Journal of Internet Commerce*, 7(2), 270-289. https://doi.org/10.1080/15331860802067748
- Liébana-Cabanillas, F., Ramos-de-Luna, I., & Montoro-Ríos, F. (2017). Intention to use new Mobile PaymentSystems: a comparative analysis of SMS and NFC payments, *Economic Research-EkonomskaIstraživanja*, *30*(1), 892-910. http://dx.doi.org/10.1080/1331677X.2017.1305784
- Liébana-Cabanillas, F.J., Sánchez-Fernández, J., & Muñoz-Leiva, F. (2014). Role of gender on acceptance of mobile payment. *Industrial Management & Data Systems*, 114(2), 220-240. http://dx.doi.org/10.1108/IMDS-03-2013-0137

- Liébana-Cabanillas, F., Singh, N., Kalinic, Z. & Carvajal-Trujillo, E. (2018). Examining the determinants of continuance intention to use and the moderating effect of the gender and age of users of NFC mobile payments: a multi-analytical approach. *Information Technology and Management*, 22,133–161.
- Nahar, S. (2022). Decoding the role of gender in the relationship between the online payment system and SME performance: A case study investigating an emerging economy—Bangladesh. *Frontiers in Research Metrics and Analysis*, 7,842670. doi:10.3389/frma.2022.842670
- Nandanan, P., & Fernandez, S. P. (2017). A Study on the Gender Differences in the Spending Attitude and Behavior of IT Professionals in Urban Bangalore. *International Journal of Business and Management Invention*, 6(7),55-59
- Namabira, J. & Mtawa, H. T. (2022). Gender and perceived usefulness of e-HRM technologies. A case of Bankers' experience in Tanzania. *Texila International Journal of Management*, DOI: 10.21522/TIJMG.2015.08.01.Art010
- Octavius, G. S., & Antonio, F. (2021). Antecedents of intention to adopt mobile health (mHealth) application and its impact on intention to recommend: An evidence from Indonesian customers. International *Journal of Telemedicine and Applications, Article ID 6698627*, https://doi.org/10.1155/2021/6698627
- Okeke, T. C., Nwatu, B. C., & Ezeh, G. A. (2017). Predicting Consumer adoption of point of sale (POS) e-payment system in Nigeria using extended technology acceptance Model. *British Journal of Marketing Studies*, 5(8), 1-11
- Oloveze, A. O. ,Ogbonna, C., Ahaiwe, E. O., & Ugwu, P. A. (2022a). From offline shopping to online shopping in Nigeria: Evidence from African emerging economy, *IIM Ranchi Journal of Management Studies*, 1(1), 55-68
- Oloveze, A. O., Oteh, O. U., Nwosu, H. E., & Obasi, R. O. (2021). How user behaviour is moderated by affective commitment on point of sale terminal, *16*(1), 2-20 DOI:10.1108/RAMJ-05-2020-0019
- Oloveze, A. O., Ugwu, P.A., Okonkwo, R. V. O., Okeke, V. C., Chukwuoyims, K., & Ahaiwe, E. O. (2022b). Factors motivating end-users' behavioural intention to recommend mhealth innovation: Multi-group analysis. *Health Economics and Management Review, Issue 3*, 2022
- Omotayo, F., & Dahunsi, O. (2015). Factors Affecting adoption of point of sale terminals by business organisations in Nigeria. *International Journal of Academic Research in Business and Social Sciences*, 5(10), 115-137.
- Ooi, K. B., & Tan, G. W. H. (2016). Mobile technology acceptance model: an investigation using mobile users to explore smartphone credit card. *Expert Systems with Application*, 59,33-46, doi:10.1016/j.eswa.2016.04.015
- Pham, T. T. & Ho, J. C. (2015). The effects of product-related, personal-related factors and attractiveness of alternatives on consumer adoption of NFC-based mobile payments. *Technology in Society*, *43*, 159-172.

- Premchand, A. & Choudhry, A. (2015). Future of payments EPAYMENTS. *International Journal of Emerging Technology and Advanced Engineering*, *5*, 110-115.
- Punyani, G., Sharma, S., & Dash, G. (2015). Examining factors affecting females' perception towards the usage of electronic payment system: An exclusive study on E-Shopping. *Journal of Advances in Business Management*, 1(3), 275-288.
- Ramos-de-Luna, I., Liebana-Cabanillas, F., Sanchez-Fernandez, J., & Munoz-Leiva, F. (2019). Mobile payment is not all the same: the adoption of mobile payment systems depending on the technology applied. *Technological Forecasting and Social Change,* 146, 931-944.doi:10.1016/j.techfore.2018.09.018
- Rogers, E. M. (2010). *Diffusion of innovations*. (4th ed.). Simon and Schuster
- Saimek, M. (2009). Expenditure patterns of Thai adolescents. Unpublished Phd thesis. National institute of Development Administration, Bangkok.
- Saprikis, V., & Avlogiaris, G. (2021). Factors that determine the adoption intention of direct mobile purchases through social media apps. *Information*, 12, 449. https://doi.org/10.3390/info12110449
- Saretrakul, W., Wongveeravuti, S., & Likitapiwat (2013). Gender differences in saving and spending behavior of Thai students. *Research in Education* (90), 68-81. DOI:10.7227/RIE.90.1.5
- Sasu, D. D. (2022a, July 18). Annual number of POS terminals in Nigeria 2017 2022. Statista. https://www.statista.com/statistics/1178109/number-of-pos-terminals-in-nigeria/
- Sasu, D. D. (2022b, April 22). Most popular in-store payment methods in Nigeria 2017-2021. Statista. https://www.statista.com/statistics/1270456/distribution-of-pos-payment-methods-in-nigeria/
- Sattari, A., Abdekhoda, M., & Gavgani, V. Z. (2017). Determinant factors affecting the webbased training acceptance by health students, applying UTAUT model. *International Journal of Emerging Technologies in Learning*, 12(10), 112–126.
- Schmidthuber, L., Maresch, D., & Ginner, M. (2020). Disruptive technologies and abundance in the service sector-toward a refined technology acceptance model. *Technological Forecasting and Social Change 155*, 119328. doi: 10.1016/j.techfore.2018.06.017
- Shin, D. H. (2009). Towards an understanding of the consumer acceptance of mobile wallet. *Computers in Human Behavior, 25,* 1343-1354.
- Simatele, M., & Mbedzi, E. (2021). Consumer payment choices, costs, and risks: Evidence from Zimbabwe. *Cogent Economics & Finance*, *9*(1), 1875564
- Subawa, N. S., Dewi, N, K. A., & Gama, A. W. O. (2021). Differences of gender perception in adopting cashless transaction using technology acceptance model. *Journal of Asian Finance, Economics and Business*, 8(2), 617-624.

- Sultana, N., & Hasan, M. (2016). Investigating the consumers' perception towards usage of plastic money in Bangladesh: An Application of Confirmatory Factor Analysis. *South East Asia Journal of Contemporary Business, Economics and Law*, 9(2),16-24.
- Tarhini, A., Hone, K., & Liu, X. (2014). The effects of individual differences on e-learning users' behaviour in developing countries: A structural equation model. *Computers in Human Behaviour, 41*, 153-163. https://doi.org/10.1016/j.cnb.2014.09.020
- The World Bank. (2022). The global findex database 2021: Financial inclusion, digital payments, and resilience in the age of COVID-19. https://www.worldbank.org/en/publication/globalfindex
- Trütsch, T. (2016). The impact of mobile payment on payment choice. *Financial Markets and Portfolio Management*, 30(3), 299–336.
- Venkatesh, V., & Bala, H. (2008). Technology Acceptance model 3 and a research agenda on interventions. *Decision Sciences*, *39*, 273–315.
- Venkatesh, V., & Morris, M. G. (2000). Why don't men ever stop to ask for directions? Gender, social influence, and their role in technology acceptance and usage behavior. *MIS Quarterly*, 24(1), 115-139
- Verkijika, S.F. (2018). Factors influencing the adoption of mobile commerce applications in Cameroon. *Telematics and Informatics*, *35*(6), 1665–1674.
- Wilsa, T. A., & Haanpa, L. (2005). Gender differences in the consumption pattern of children and young people in Finland: lifestyles and social change. Essays in economic sociology, *Publication of turkey school of economics and business administration* pp159-176
- Yang, K., & Lee, H. (2010). Gender differences in using mobile data services: utilitarian and hedonic value approaches. *Journal of Research in Interactive Marketing* 4(2),142–156
- Xia, H., Tan, Q., & Bai, J. (2018). Corruption and technological innovation in private small-medium scale companies: Does female top management play a role? *Sustainability*, 10, 2252. doi:10.3390/su10072252
- Zhang, X., Guo, X., Lai, K. H., Guo, F., & Li, C. (2014). Understanding gender differences in m-Health adoption: A modified theory of reason d action model. *Telemedicine and e-Health*, 20(1), 39–46
- Zuroni, Md-J., & Teng, Y.J. (2019). Perceived security, subjective norm, self-efficacy, intention, and actual usage towards e-payment among UPM students. *Journal of Education and Social Sciences*, 12(2), 8-22