

SMALLHOLDER FARMERS' INTENTION TO USE AND THEIR ATTITUDE TOWARDS ELECTRONIC PAYMENT PLATFORMS IN GWAGWALADA AREA COUNCIL OF THE FEDERAL CAPITAL TERRITORY, NIGERIA

Moradeyo Adebajo OTITOJU*, Sheu Ahmad OLOHUNGBEBE, Yemi Bako DANTANI, and Maimunat Umar SALIHU

Department of Agricultural Economics, Faculty of Agriculture, University of Abuja, Nigeria.

*Corresponding author: moradeyo.otitoju@uniabuja.edu.ng , +2347063036013

Abstract

Smallholder farmers in Nigeria have not been substantially influenced by the country's growing usage of payment systems, and it is unclear what these farmers think of the electronic payment platforms available in the study region. This study assessed smallholder farmers' intentions to use and attitudes toward electronic payment platforms in the Gwagwalada Area Council of the Federal Capital Territory (FCT), Nigeria. Ninety-three smallholder farmers were sampled using a multi-stage sampling technique. The study adopted descriptive statistics, the Likert scale, and the Probit model to achieve the specific objectives. The result showed that the majority of the respondents were single with an average age and household size of approximately 38 years and 6 persons respectively. Most of the smallholder farmers in the study area showed intention to use electronic payment platforms for their transactions. The farmers also expressed confidence in using electronic payment platforms and strongly agreed that the use of electronic payment platforms is risky and therefore preferred human tellers to electronic payment platforms. Probit model analysis revealed that the coefficient of education and income ($P < 0.05$) positively and statistically influenced farmers' intention to use electronic payment platforms. The study suggests that programs be developed in the study area to facilitate electronic payment options, increase farmers' income, and inform farmers of the advantages of using electronic payment platforms for utility and financial transactions in the Gwagwalada Area Council of the Federal Capital Territory.

Keywords: Intention, Electronic Payment Platforms, Probit Model

Introduction

In January 2012, the Federal Government of Nigeria implemented a strategy focused on cashless transactions. Two months later, the service price went into force, giving users time to switch to electronic channels and to get a feel for the new infrastructure. Banks were instructed to take advantage of this grace time to persuade customers to switch to available electronic channels and, whenever possible, to highlight the expenses associated with doing so (Central Bank of Nigeria CBN, 2012). A cashless policy was instated in accordance with the national Payment Systems Vision (PSV) 2020. The goal of PSV 2020 is to develop convenient, secure, and effective methods for sending and receiving payments of all kinds via various electronic channels and platforms. The policy reduces time spent in banks by facilitating fund transfers through the improved use of information technology. Systems for electronic payments (e-payments)

have given Nigeria the foundation it needs to shift to a modern market economy (PSV 2013). Financial stability, monetary policy, and total economic activity have all been shown to be significantly impacted by an effective e-payment system (CBN, 2021). Since the invention of money as the one and only means of expressing value, there has been a system for making payments.

The whole system of tools, intermediaries, rules, procedures and interbank funds transfer systems that facilitate the flow of money inside a country or currency is referred to as a payment system (Asaolu *et al.*, 2011). According to System Committee for Payments and Settlements CPSS (2003), a payment system ensures the flow of funds in any economy and includes several tools, banking procedures, and typically, interbank funds transfer systems. The electronic payment system serves as a platform for concluding business deals between the customer and

vendor. By enabling a straightforward exchange or movement of money in a safe atmosphere, the platforms aim to lessen the strain on both sides (Asaolu *et al.*, 2011). The payment system links bank accounts and offers the ability to trade money using bank deposits in a functioning platform that is subject to rules, laws, and standards (Bossone & Cirasino, 2001).

Delali (2010) defined electronic payment as a particular kind of financial transaction between a buyer and a seller that benefits from Internet communication. Massimo & Garcia (2008) referred to it as electronic commerce for acquiring and exchanging products and services. According to Cobb (2004), the benefits of electronic payment go far beyond the immediate convenience and security of cards to a wider arena of promoting overall economic development. Electronic payment in the Nigerian context according to Agba (2010), refers to the ability to pay vendors and suppliers electronically. It can also help in the payment of labourers and employees' salaries without resulting to the manual payment system. The productivity of smallholder farmers can be increased via electronic payments.

Smallholder rural farmers with farms smaller than two hectares generate a significant amount of the world's food. These farmers have constrained options due to their constrained market access and services. The bulk of Nigeria's smallholder farmers live in rural areas and depend on agriculture for both their survival and their livelihood. Investments in their capacity and productivity have the potential to yield enormous profits and one of the investments that have the potential to significantly increase efficiency is electronic payment platforms. Smallholder farmers can more easily access financial services thanks to electronic payment platforms' reduced transaction costs, increased flexibility, and enhanced user interface.

Although Nigeria's use of payment systems has grown significantly over time, smallholder farmers have not been sufficiently impacted. According to Joseph & Richard (2015), the majority of smallholder rural farmers are uneducated, and for them to fully benefit from

electronic payment systems, they must be literate in both reading and writing as well as have a basic understanding of ICT. The bulk of Nigeria's smallholder farmers also resides in underdeveloped locations with scanty or no services like energy, technology, or even network supply, which must be available to use electronic payments. Acha *et al.*, (2017) cited some obstacles preventing the implementation of the cashless policy and the shift to electronic payment methods, including the absence of POS at purchasing centres and unreliable internet, lack of understanding about how to use payment mechanisms, difficulties with transactions, limited ATMs, ATM robberies, and a lack of access to funds.

Until different steps are taken to enhance the value proposition of electronic payment systems, such as the development of merchant acceptance infrastructures, cash is likely to continue to dominate rural transactions. The extent to which smallholder farmers have benefitted from or intend to employ the multiple monetary and fiscal policies the Federal Government of Nigeria through the CBN has developed to encourage easy payment and transactions on electronic payment platforms is yet unknown. Similarly, the opinions of the farmers about the electronic payment platforms that are accessible in the research area are unclear. Intentions have been defined in the Theory of Reasoned Action (TRA) or Theory of Planned Behaviour (TPB) as the amount of effort one is willing to exert to attain a goal (Ajzen, 1991). In the context of this topic intention to use electronic payment platforms as the willingness to use those platforms to perform transactions especially by the smallholder farmers. But these intentions are influenced by certain factors.

Islam (2016) explored the factors and constraints that influenced the acceptability of mobile payments in Bangladesh, among other topics that have been the subject of previous research on electronic payment systems or digital payments. Yang *et al.*, (2012) attempted to identify the variables affecting both current and potential customers of mobile payment services in China. Adeoti & Osoimehin (2012) evaluated how satisfied Nigerian consumers were with the use of point-of-sale terminals. The motivations

behind the Farmer's intention and initial choice to embrace agricultural Apps in Mexico were evaluated by Molina-Muturano *et al.*, (2021). Eweoya, Okuboyejo, Odetunmbi, & Odusote (2021) also looked into how electronic agriculture (e-agricultural) was accepted, used, and adopted in Nigeria.

However, none of these studies addressed the smallholder farmers' intention to use and attitude towards electronic payment platforms. Against this backdrop, this study examines smallholder farmers' intentions to use and attitudes toward electronic payment platforms in the Gwagwalada Area Council of the Federal Capital Territory, Abuja, Nigeria. Specifically, the study described the socioeconomic characteristics of the smallholder farmers, assessed farmers' intention toward the use of electronic payment platforms, examined smallholder farmers' attitudes toward the use of electronic payment platforms, and investigated the factors influencing smallholder farmers' intention toward the use of electronic payment platforms in the study area.

The null hypotheses are: (i). there is no significant correlation between smallholder farmers' intention to use electronic payment platforms and the socioeconomic features of smallholder farmers in the study area, and (ii). there is no significant correlation between farmers' intentions to use electronic payment platforms and the farm-specific and institutional factors in the study area,

Methodology
Study Area

The study was conducted in the Federal Capital Territory of Abuja, Nigeria's Gwagwalada Area Council. At a height of 70 meters above sea level, the Area Council is located in the extreme southwest, close to the Gurara River's flood plain, which flows through the region from north to south. Between latitude 07^o.57'N and longitude 07^o.7'E is where the area is located. The Dobi, Ikwa, Tungan Maje, Gwagwalada center, Kutunku, Zuba, Paiko, Gwako, Ibwa, and Staff quarters are the ten (10) wards that make up the Gwagwalada Area Council. The local vegetation blends the best features of the northern guinea savanna with the southern tropical rainforest. This demonstrates the

region's overall transitional nature as it is located between the Southern-forest and Northern grassland, which have trees and shrubs, respectively. The reddish soil is located in isolated hills with plains and well-drained sandy, clay, and loamy that can be used to cultivate a variety of important crops, such as sorghum, millet, melon, yam, soybean, benniseed, cassava, and rice.

Sampling Procedures and Sample Size

The study used the multistage sampling technique to sample the respondents. Three (3) wards were chosen at random from the Gwagwalada Area Council for the first stage. Two (2) farming communities were chosen at random from each of the chosen wards in the second stage, for a total of six (6) communities. In the final stage, 16 smallholder farmers were randomly selected, giving a total of 96 smallholder farmers for the study. The primary data used for this study were collected using questionnaires. Due to the incomplete filling of the questionnaire, 93 out of the 96 questionnaires were only used for the analysis.

Method of Data Analysis

Descriptive statistics like frequency, percentages, four-scale Likert-rating, where mean score 2.5 and above was rated very high, and the Probit model were used to examine the study's data.

The Probit Model

The probit analytical model was used to identify the elements impacting smallholder farmers' intention to use electronic payment platforms. It is expressed in probability in line with Alabi, (2014) as:

$$\text{Prob}(Y = 1) = 1 - F \left[- \sum_{k=1}^k \beta_k b_k \right] = F$$

$$\left[\sum_{k=1}^k \beta_k b_k \right] = \varphi \sum_{k=1}^k \beta_k b_k \dots\dots\dots(1)$$

The probability of no event equation is then:-

$$\text{Prob}(Y = 0) = 1 - \varphi \sum_{k=1}^k \beta_k b_k \dots\dots\dots(2)$$

The criterion function determines whether the farmer intends to use electronic payment platforms:-

$$Y^* = y Z_i + U_i \dots\dots\dots(3)$$

Where,

Y^* = Underlying index that contrasts the intention to use and the intention not to use electronic payment platforms.

y = vector of estimate-able parameter

Z_i = Exogenous variable vector that describes the intent to use electronic payment systems.

U_i = normally distributed error term.

We detect the farmers intending to use electronic payment systems given their intents to do so, which Y_i^* crosses the threshold value of 0. Y_i^* can never be observed in real life. Y_i , it's opposite, is described by:-

$Y_i = 1$ if $Y_i^* > 0$ (Farmers intention to use or willingness to use electronic payment platform), and

$Y_i = 0$ if otherwise

The model to calculate the likelihood of observing farmers' intention to use electronic payment platforms may be expressed as follows in the case of the normal distribution function:-

$$P(Y_i = \frac{1}{x}) = \varphi(x|\beta) = \int_{-\infty}^{x\beta} \frac{1}{\sqrt{2\pi}} \exp\left(\frac{-z^2}{2}\right) dz \dots\dots(4)$$

Where,

P = Likelihood that the i th farmer use electronic payment platforms and 0 otherwise.

X = k by 1 vector of the explanatory variables.

Z = normal variable (i.e $Z \sim N(0, \delta^2)$) and

B = k by 1 vector of the coefficients estimated.

The partial derivative of the probability with respect to a non-dichotomous variable determines the marginal probability for that variable. The marginal probability for the j th explanatory variable is given by:-

$$\frac{\partial p}{\partial x_{ij}} = \varphi(x_i|\beta) \beta_j \dots\dots\dots(5)$$

Where,

$\Phi(\cdot)$ = distribution function for a typical random variable.

β_j = the j th explanatory variable's coefficient.

The Probit model specification in this analysis is written as:-

$$Y_i^* = x_i\beta + \varepsilon_i \dots\dots\dots(6)$$

$$Y_i = \begin{cases} 1 & \text{if } Y_i^* \geq 0 \\ 0 & \text{if } Y_i^* < 0 \end{cases}$$

Where,

Y_i = observable dependent variable that is binary and has a value of 1 when a smallholder farmer intends to use an electronic payment system and 0 otherwise.

Y_i^* = underlying residual variable that measures the likelihood of utilizing electronic payment systems.

X_i = row vector containing the i th smallholder farmer's k regressor's values

β = $k \times 1$ vector of parameters to be estimated

ε_i = error term with a regular normal distribution that is assumed.

It can be explicitly stated as,

$$Y_i^* = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \varepsilon_i \dots\dots\dots(7)$$

Y_i^* = the binary dependent variable of smallholder farmers' intention to use electronic payment platforms (1 if yes, 0 otherwise); X_i is the independent variable; β_i are parameters of the independent variables and ε_i = error term.

The independent variables considered as determinants of intentions to use electronic payment systems by smallholder farmers are: X_1 = Education (Years in schooling); X_2 = income of the farmers (in naira); X_3 = Access to Electronic Payment Facilities (Dummy 1 if yes, 0 otherwise); X_4 = farm size (measured in hectare); X_5 = Risk perception about Electronic Payment (Dummy if perceived risky 1, 0 otherwise); X_6 = dependency ratio (the ratio of the number of people depending on the respondent to the total number of people in the household); X_7 = Household Size (Number of persons in the household).

The null hypotheses (i) and (ii) were tested using a z-test embedded in the probit model at various levels of significance.

$$Z\text{-test} = \frac{\text{Coefficient } (\beta_i)}{\text{Standard error}(S\beta_i)}$$

Results and Discussion

Socioeconomic Characteristics

Table 1 shows the socioeconomic features of the smallholder farmers who were sampled. The result showed that most of the smallholder farmers in the study area were single women. This finding implies that women dominated the smallholder farming activities in the area. The dominance of women in farming activities in the study area could easily be attributed to the nature of their farming enterprise, as opined by Mirie and Zemedu, (2018), it is expected that their male counterparts would dominate agricultural ventures that are physically demanding in nature. The average age of the smallholder farmers is approximately 38 years. The availability of farm labour and the ease with which new agricultural techniques and technology are embraced are directly impacted by age, which has implications for family output (Rauf,

2010). Age is an important factor that might have a big influence on farming decisions.

The majority of the smallholder farmers had formal education, indicating that they were educated, and this may have influenced their intention to use electronic payment platforms in an effort to improve their commercial dealings in the research area. The average number of years of schooling is 6.2 years. This suggests that primary education was at least obtained by smallholder farmers. More educated farmers are more aware of the benefits of conducting business via electronic payment channels. Farmers that have had education tend to be more enlightened, which makes them better able to grasp innovation rapidly and use it. The average household size of about 6 people showed that smallholder farmers had enough household members to carry out farming activities, sparing them the expense of having to hire labour.

Table 1: The socio-economic characteristics of smallholder farmers in the area

Socio-economic variable	Frequency	%	Mean
Age			37.9 years
≤20	10	10.8	
21-30	20	21.5	
31-40	35	37.6	
41-50	11	11.8	
51-60	17	18.3	
Household Size (Number)			5.9 persons
1-5	49	52.7	
6-10	31	33.3	
11-15	12	12.9	
16-20	1	1.1	
Level of education			6.2 years
No formal education	43	46.2	
Attended primary school	12	12.9	
Attended secondary school	17	18.3	
Attended tertiary	21	22.6	
Sex			
Male	23	24.7	
Female	70	75.3	
Marital Status			
Single	74	79.6	
Married	19	20.4	
Extension Contact			
No extension contact	31	33.3	
Extension contact	62	66.7	
Membership of Cooperative			
Yes	93	100.0	
Total	93	100	

Source: Computed from Field Data, 2022.

The result also showed that all the sampled smallholder farmers belonged to one cooperative society or the other, while a majority of them had extension contact. Cooperative membership is a crucial component that can assist smallholder farmers

in overcoming the challenges that prevent them from fully realizing the benefits of their business because it empowers economically vulnerable farmers by increasing their collective bargaining power and lowering the risks they face in the market (Woldu *et al.*, 2013; Tefera *et al.*, 2016). Wanyama *et al.*,

(2009) contend that the role of agricultural cooperatives is especially critical in Sub-Saharan Africa, where farms are distributed over vast and remote rural areas. The usage of electronic payment platforms by member farmers may be made easier by the information and services that cooperatives and extensionists may offer.

The intention of the Smallholder Farmers to Use Electronic Payment Platforms

Table 2 shows the intention of the smallholder farmers to use electronic payment platforms in the study area. It revealed that most smallholder farmers have the intention to use electronic payment platforms for their financial transactions. This shows that farmers are now more focused on employing technology to improve financial systems and quality of life, according to Changchit and Chuchuen (2016). Additionally, Koslow *et al.*, (2020) claimed in their study that individuals are adopting digital activities significantly around the world and are very likely to do so in the future as a result of COVID-19.

The majority of the smallholder farmers showed intention to use POS (66.7%) as their preferred electronic payment platform. The least electronic payment platform the respondents intend to use mobile web payment system, according to Alam *et al.*, (2018), this is mostly because only wealthy people adopted mobile phones due to the greater cost of mobile phone connectivity. Customers must first open a mobile account using their registered SIM, national ID card, and pictures from a specific agent's shop to use their mobile phones for mobile online transactions, according to Sultana (2019), this may have had a part in the poor usage of the mobile web for financial transactions.

The result further showed that POS is the most preferred electronic payment platform among smallholder farmers, who also intend to use electronic payment platforms frequently in the study area. This result is consistent with Marous (2020) prediction that most users will conduct more of their shopping online than in physical stores in the future.

Table 2: Frequency Distribution of Intention to use Electronic Payment Platforms in the Study Area

Variables on e-payment intention to use	Frequency	Percentage
<u>Present Use of Electronic payment platforms:</u>		
Do not use Electronic payment platforms	24	25.8
Use Electronic Payment Platforms	69	74.2
<u>Intention to Use Electronic Payment Platforms:</u>		
No intention to use Electronic Payment Platform	2	2.2
Intention to use Electronic Payment platforms	91	97.8
<u>Electronic Payment Platforms intended to Use:</u>		
Mobile App or Mobile phone	7	7.5
Card-based mobile payment or ATMs	22	23.7
Point of Sale (POS)	62	66.7
Mobile Web Payment	2	2.2
<u>Most Preferred Electronic Payment Platforms:</u>		
Mobile App or Mobile phone-based payment	3	3.2
Card-based Mobile payment or ATM	38	40.9
POS	50	53.8
<u>Intention to Frequently Use Electronic Payment Platforms:</u>		
No intention to use Electronic Payment platforms at all times	3	3.2
Intention to use Electronic Payment Platforms at all times	90	96.8

Source: Computed from Field Data, 2022.

Attitude towards the Use of Electronic Payment Platforms of Smallholder Farmers

The result of the smallholder farmers' attitude towards the use of electronic payment platforms in the study area is presented in Table 3. The result shows that most

smallholder farmers are confident in the use of electronic payment platforms, and only 11.8% of them expressed a lack of confidence in the use of electronic payment platforms. The average level of confidence is 3.10, suggesting that, like other types of businesses, according to Lin, (2011) electronic payment systems as a

channel offer tremendous possibilities for banking activities, inspiring farmers to have faith in the platform's use.

The majority (79.6%) of the smallholder farmers agreed that they prefer transactions by a human teller to electronic payments. The mean of 3.05 as shown in Table 3 implies that on average smallholder farmers in the study area preferred human tellers to electronic payment. The bottleneck that is visible in financial institutions in Nigeria when trying to register on their online platforms and the distance to the nearest electronic payment agent may have caused farmers within the study area to prefer over-the-counter transactions, even though electronic payment platforms speed up fund transfers in a manner that is better than the physical form, as suggested by Morawczynski, (2009).

The mean of comfort and safety in the use of electronic payment (3.08, respectively) indicates that the farmers agreed that there is safety and comfort in the use of electronic payment platforms in the area. According to Pham & Ho (2015), farmers are motivated to use electronic payment platforms because they

feel safe and secure doing so, which eliminates the need for them to hold and utilize cash.

A mean score of 3.17 affirms that the farmers on average believe that electronic payment platforms are better to use. This outcome demonstrates that electronic payment platforms offer more practical methods for both personal and commercial transactions (Mallat 2007). According to Ondrus & Pigneur (2006), technology is superior in that it makes it easier to handle small payments electronically, which greatly reduces trading costs in the study area.

The majority of farmers firmly agreed that using electronic payment platforms in the study area is very risky. The mean score of 3.54 implies that the electronic payment platforms in the study area are perceived as highly risky by smallholder farmers. This finding is somewhat in line with those of Cho (2004) and Kesharwani and Bisht (2012), who asserted that the adoption of innovative technology is significantly influenced by risk. In addition, recent research on the intention to use mobile payments (Aji *et al.*, 2020; Daragmeh *et al.*, 2021; Huterska *et al.*, 2021) has included perceived health risk as a crucial element.

Table 3: Farmers' Attitude towards the use of Electronic Payment Platforms in the Study Area

Farmers' attitude	Strongly Agreed	Agreed	Disagreed	Strongly Disagreed	Mean Score
There is confidence in using electronic payment platforms	22(23.7)	59(63.4)	11(11.8)	1(1.1)	3.10
There is a preference in transaction by human tellers for electronic payment	12(12.9)	74(79.6)	7(7.5)	0(0.0)	3.05
Electronic payment platforms are safe to use	14(15.1)	72(77.4)	7(7.5)	0(0.0)	3.08
There is comfort in using electronic payment platforms	10(10.8)	80(86.0)	3(3.2)	0(0.0)	3.08
Electronic payment platforms are better to use	23(24.7)	63(67.7)	7(7.5)	0(0.0)	3.17
Electronic payment platforms are highly risky to use	55(59.1)	33(35.5)	5(5.4)	0(0.0)	3.54

Source: Computed from Field Data, 2022.

Factors influencing Farmers' Intention to Use Electronic Payment Platforms in the Study Area

The result of the Probit model analysis for the factors influencing farmers' intention to use electronic payment platforms in the study area

is presented in Table 4. The Wald chi-square value of 213.71 is significant (P<0.01), indicating that the model has a powerful explanatory capacity. The following factors socio-economic (education level of the respondents, dependency ratio, perceived risk about electronic payment platforms usage, and

average income) and institutional factors (farmers' access to electronic payment facilities) were statistically significant and influenced the farmers' intention to use electronic payment platforms in the study area.

The coefficient of education was positively and statistically connected to the probability of farmers' intention to use electronic payment platforms at a 5% level of significance, this suggests that literate farmers are more likely to have the intention to use electronic payment channels. In Bangladesh, Akhtaruzzaman (2019) discovered a link between financial literacy and access to financial services.

The coefficient of income was positive and significant to the probability of farmers' intention to use electronic payment platforms. This suggests that smallholder farmers in the study area were more likely to use electronic payment platforms if their income rises. According to Alam *et al.*, (2018) and Khatun *et al.*, (2018), a rise in farmers' income could encourage investment in both agriculture and a company, therefore, the availability of electronic payment systems like ATMs, agent banking, internet banking, and mobile banking may be a great way to solve financial issues in rural areas and can actively contribute to ensuring that people in Nigeria have easy access to money.

The coefficient of access to electronic payment facilities is positive and statistically significant with the probability of farmers' intention to use electronic payment platforms at a 1% significance level in the study area. Indicating that increasing access to electronic payment facilities will likely increase the farmers' likelihood of showing intention to use electronic payment platforms. The majority of farmers do not have access to official financial platforms for a variety of reasons, including

ignorance, collateral requirements, and a difficult and drawn-out loan approval process, according to Khatun (2019), Lowder *et al.*, (2016), and Ololade & Olagunju (2013).

The result also showed that the coefficient of risk perception about electronic payment platforms was negatively and statistically related to the farmers' intention to use electronic payment platforms at a 1% significance level. This implies that the farmers' intention to use electronic payment platforms in the study area, increases with a decreasing perceived risk of the electronic payment platforms. This finding agrees with that of Shaikh *et al.*, (2015) and Changchit *et al.*, (2017), who suggested that although electronic payment platforms like mobile banking have many benefits, their use in transactions or access to financial information is not as common as expected due to risk, uncertainty, and security as well as a lack of awareness. According to Kaur *et al.* (2020), the biggest obstacles to use intentions are value and risk barriers.

Furthermore, the dependency ratio showed a positive and statistical significance at a 10% probability level to the farmers' intention to use electronic payment platforms in the study area. This implies that the dependency ratio of the smallholder farmer is directly related to their intention to use electronic payment platforms in the study area, meaning that a unit increase in the dependency ratio will increase the farmers' probability of using electronic payment platforms. The dependency ratio which is the ratio of dependent members of a household to the total number of persons in the household had a positive relationship with the intention to use electronic payment platforms in the study area and may be as a result of the farmers' perceived benefits from the use of these platforms.

Table 4: Factors influencing Farmers' intention to use Electronic Payment Platforms in the Study Area

Explanatory Variables	Coefficient	Robust Standard Error	z-value
Education (Years of schooling)	0.0970	0.0416	2.33**
Income (Naira)	0.0000196	8.26E-06	2.37**
Access to Electronic Payment Facilities (Dummy 1 if yes, 0 otherwise)	6.364	1.301	4.89***
Farm size (Hectares)	-0.369	0.341	-1.08
Risk perception about Electronic Payment (Dummy if perceived risky 1, 0 otherwise)	-6.166	1.252	-4.93***
Dependency ratio	0.996	0.575	1.73*
Household Size (Number of persons in the house)	-0.737	0.452	-1.63
Constant	-7.519	2.148	-3.50

Number of Observation = 93

Wald Chi-square (7) = 213.71

Prob > Chi-square = 0.0000

Log Pseudolikelihood = -7.0169

Pseudo R² = 0.471

*, **, *** stand for 10%, 5% and 1% levels of significance

Source: Computed from Field Data, 2022.

Conclusions

According to the study's findings, the majority of smallholder farmers in the Gwagwalada Area Council of the Federal Capital Territory (FCT) Abuja intend to use electronic payment platforms for their transactions, with most of them prefer POS as their choice electronic payment platform. The majority of the smallholder farmers expressed confidence in using electronic payment platforms and strongly agreed that the use of electronic payment platforms is risky and therefore preferred human tellers to electronic payment platforms. Finally, the factors influencing farmers' intention to use electronic payment platforms in the Gwagwalada area council of the FCT Abuja were dependency ratio, risk perception, access to electronic payment facilities, education, and income.

References

- Acha, I., Kanu, C. and Agu, G. (2017). Cashless Policy in Nigeria: The Mechanics, Benefits, and Problems. *Innovative Journal of Economics and Financial Studies*. 1. 28-38.
- Adeoti, O. and Osotimehin, K. (2012). Adoption of point of sale terminals in Nigeria Assessment of consumers' level of satisfaction. *Research Journal of Finance and Accounting*, 3, (1), 1-5.

Recommendations

The study recommends the creation of programs in the study area that could avail electronic payment facilities, boost farmers' income and enlighten the farmers on the need to adopt the use of electronic payment platforms for ease of financial and utility transactions in the Gwagwalada area council of the FCT Abuja.

Acknowledgments

The authors heartily acknowledged the personnel of the Agricultural Development Programme (ADP) of the Gwagwalada Area Council of the FCT Abuja, Nigeria.

- Agba, D. (2010). Implications and Challenges of E-payment System. 12th March, 2014.
- Aji, H.M., Berakon, I. and Md Husin, M. (2020). COVID-19 and e-wallet usage intention: A multigroup analysis between Indonesia and Malaysia. *Cogent Business and Management*, 7(1), 1-16.

- <https://doi.org/10.1080/23311975.2020.1804181>.
- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision processes*, 50, 179-211.
- Akhtaruzzaman, M. (2019). Survey on impact analysis of access to finance in Bangladesh, Bangladesh Bank.
- Alabi, O.O., Lawal, A.F., Coker, A.A., and Awoyinka, Y.A. (2014). "Probit Model Analysis Of Smallholder'S Farmers Decision To Use Agrochemical Inputs In Gwagwalada And Kuje Area Councils Of Federal Capital Territory, Abuja, Nigeria," *International Journal of Food and Agricultural Economics (IJFAEC)*, Alanya Alaaddin Keykubat University, Department of Economics and Finance, vol. 2(1), pages 1-9, January.
<http://dx.doi.org/10.22004/ag.econ.163712>
- Alam, G.M.M., Alam, K. and Shahbaz, M. (2018). Influence of socio-demographic factors on mobile phone adoption in rural Bangladesh: Policy implications. *Inf Dev* 35: 739–748. <https://doi.org/10.1177%2F0266666918792040>
- Asaolu, T.O., Ayoola, T.J. and Akinkoye, E.Y. (2011). Electronic Payment System in Nigeria: Implication, Constraints and Solutions, *Journal of Management and Society*, 1 (2), 16 – 21. <https://scholar.oauife.edu.ng/sites/default/files/tjayoola/files/epns.pdf>
- Bossone, B., and Cirasino, M. (2001). The Oversight of the Payments Systems: A Framework for the Development and Governance of Payment Systems in Emerging Economies. *Payment and Securities Clearance and Settlement Systems Research Series No. 1*. <https://documents1.worldbank.org/curated/en/646651468156578578/pdf/388270Oversight0of0payments01PUBLI01.pdf>
- CBN (2012). Central Bank of Nigeria Statistical Bulletin. CBN, Abuja. Available from: <https://www.cbn.gov.ng/rates/mnymktind.asp?year=2012>
- CBN (2021). The Nigerian payment systems. Understanding Monetary Policy Series No. 6, Central Bank of Nigeria. <https://www.cbn.gov.ng/out/2022/mpd/series%206.pdf>
- Changchit, C. and Chuchuen, C. (2016). Cloud computing: An examination of factors impacting users adoption. *J Comput Inform Syst* 58: 1–9. <https://doi.org/10.1080/08874417.2016.1180651>
- Changchit, C., Lonkani, R. and Sampet, J. (2017). Mobile banking: Exploring determinants of its adoption. *Jorg Comp Elec Com* 27: 239–261. <https://doi.org/10.1080/10919392.2017.1332145>
- Cho, J. (2004). Likelihood to abort an online transaction: influences from cognitive evaluations, attitudes, and behavioral variables”, *Information and Management*, Vol. 41 No. 7, pp. 827-838. <https://doi.org/10.1016/j.im.2003.08.013>
- Cobb, R.E. (2004). Assessing Job Satisfaction and Emotional Intelligence in Public School Teachers’, Ph.D. Dissertation, Western Kentucky University. Available from: <http://www.sciepub.com/reference/221495>
- Committee on Payment and Settlement [CPSS] (2003). Committee on Payment and Settlement Systems red book 2003. Payment and settlement systems in selected countries. Prepared by the Committee on Payment and Settlement Systems of the Group of Ten Countries. Available from: <https://www.bis.org/cpmi/publ/d53p01.pdf>
- Daragmeh, A., Sági, J. & Zéman, Z. (2021). Continuous intention to use e-wallet in the context of the covid-19 pandemic: Integrating the health belief model (hbm) and technology continuous theory (tct). *Journal of Open Innovation: Technology, Market, and Complexity*, 7(2), 132. <https://doi.org/10.3390/joitmc7020132>
- Delali, K. (2010). The Challenges of Implementing Electronic Payment

- System: The case of Ghana's E-zwich payment system MBA Thesis.
- Eweoya, I., Okuboyejo, S., Odetunmbi, O.A. & Odusote, B.O. (2021). An empirical investigation of acceptance, adoption and the use of Electronic agriculture. *HELIYON* 1-4. <http://dx.doi.org/10.1016/j.helyon2021.e07588>.
- FCT, ADP. (2004). Federal capital territory. Agricultural Development Project. 2004 Annual Report.
- Huterska, A., Piotrowska, A.I. & Szalacha-Jarmużek, J. (2021). Fear of the covid-19 pandemic and social distancing as factors determining the change in consumer payment behavior at retail and service outlets. *Energies*, 14(14), 4191. <https://doi.org/10.3390/en14144191>
- Islam, M.M. (2016). An investigation of drivers and barriers stimulating in the acceptance of mobile payment in Bangladesh. *Universal Journal of Industrial and Business Management*, 4 (4), 104-113. <http://dx.doi.org/10.13189/ujibm.2016.040402>
- Joseph, O. and Richard, I. (2015). Electronic payment system in Nigeria: Its economic benefits and challenges. *Journal of Education and Practice*, 6(16), 56-62.
- Kaur, P., Dhir, A. and Singh, N. (2020). An innovation resistance theory perspective on mobile payment solutions. *J Retail Consum Serv* 55: 102059. <https://doi.org/10.1016/j.jretconser.2020.102059>
- Kesharwani, A. and Bisht, S.S. (2012). "The impact of trust and perceived risk on internet banking adoption in India: an extension of technology acceptance model", *International Journal of Bank Marketing*, Vol. 30 No. 4, pp. 303-322.
- Khatun, J., Loh, T.C., Akit, H., Foo, H.L. and Mohamad, R. (2018). Influence of different sources of oil on performance, meat quality, gut morphology, ileal digestibility and serum lipid profile in broilers. *Journal of Applied Animal Research*, 2018; 46(1): 479-485. Available from: <https://www.ejmanager.com/mnstamp/68/68-1561790530.pdf?t=1658687381>
- Khatun, M.N. (2019). What are the drivers influencing smallholder farmers access to formal credit system? Empirical evidence from Bangladesh. *Asian Dev Policy Rev* 7: 162-170. <https://doi.org/10.18488/journal.107.2019.73.162.170>
- Koslow, L, Jean, L.J and Tsusaka, M. (2020). COVID-19 Consumer sentiment snapshot: Special feature-Asia-Pacific, Boston Consulting Group (BCG). Available from: <https://www.bcg.com/publications/2020/covid19-consumer-sentiment-special-feature-asia-pacific>.
- Lin, H.F. (2011). An empirical investigation of mobile banking adoption: The effect of innovation attributes and knowledge-based trust. *Int J Inf Manage* 31: 252-260. <https://doi.org/10.1016/j.ijinfomgt.2010.07.006>
- Lowder, S., Skoet, J. and Raney, T. (2016). The number, size, and distribution of farms, smallholder farms, and family farms worldwide. *World Deve* 87: 16-29. <https://doi.org/10.1016/j.worlddev.2015.10.041>
- Marous, J. (2020). How COVID-19 has changed payments & banking behaviors forever, The Financial Brand. Available from: <https://thefinancialbrand.com/96502/coronavirus-covid-19-changingbanking-payments-digital-behavior-trends/>.
- Mirie, T., and Zemedu, L. (2018). Determinants of market participation and intensity of marketed surplus among teff producers in Dera District of South Gondar Zone, Ethiopia. *Journal of development and agricultural economics*, 10, 359-366. Available from: <https://www.semanticscholar.org/paper/Determinants-of-market-participation-and-intensity-Mirie-Zemedu/e3037d80e4b1bfc0a892c8ab52f720181b0ddafd>
- Molina-Maturano, J., Verhulst, N., Tur-Cardona, J., Guereña, D.T., Gardeazabal-Monsalve, A., Govaerts,

- B. and Speelman, S. (2021). Understanding smallholder Farmer's intention to adopt agricultural Apps: The role of mastery approach and innovation Hubs in Mexico. *Agronomy*, 11, (194), 2-23,
- Morawczynski, O. (2009). "Exploring the usage and impact of 'transformational' mobile financial services: the case of M-PESA in Kenya", *Journal of East African Studies*, Vol. 3, pp. 509-525. <https://doi.org/10.1080/17531050903273768>
- Ololade, R.A. and Olagunju, F. I. (2013). Determinants of access to credit among rural farmers in Oyo State, Nigeria. *Global J Sci Front Res Agric Veterinary Sci* 13: 16–22. Available from: <https://journalofscience.org/index.php/GJSFR/article/view/778>
- Ondrus, J. and Pigneur, Y. (2006). "Towards a holistic analysis of mobile payments: a multiple perspectives approach", *Electronic Commerce Research and Applications*.5. pp. 246-257. <https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.177.298&rep=rep1&type=pdf>
- Payments System Vision PSV. (2020). National utilized internationally recognized. Available from: https://www.cbn.gov.ng/icps2013/papers/NIGERIA_PAYMENTS_SYSTEM_VISION_2020%5Bv2%5D.pdf
- Pham, T.T.T. and 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, pp. 159-172. Available from: <https://ideas.repec.org/a/eee/teins/v43y2015icp159-172.html>
- Raufu, M.O. (2010). Characteristics of Input Use by Crop Farmers in South-Western Nigeria. *The Pacific Journal of Science and Technology* 11(1):436-441
- Shaikh, A.A., Karjaluoto, H. and Chinje, N.B. (2015). Consumers' perceptions of mobile banking continuous usage in Finland and South Africa. *Int J Electron Financ* 8: 149–168. Available from: <https://ideas.repec.org/a/ids/ijelfi/v8y2015i2-3-4p149-168.html>
- Sultana, S. (2019). Initiation and recent status of mobile banking in Bangladesh. *Int J Sci Res (IJSR)* 8: 666–673. <https://doi.org/10.3934/GF.2021013>
- Tefera, D.A., Bijman, J. and Slingerland, M.A. (2016). Agricultural co-operatives in Ethiopia: evolution, functions, and impact. *J Int Dev*. <https://doi.org/10.1002/jid.3240>
- Wanyama, F.O., Develtere, P. and Pollet, I. (2009). Reinventing the wheel? African cooperatives in a liberalized economic environment. *Ann Public Coop Econ* 80(3):361–392. <https://doi.org/10.1111/j.1467-8292.2009.00390.x>
- Woldu, T., Tadesse, F. and Waller, M.K. (2013). Women's participation in agricultural cooperatives in Ethiopia (No. 57). International Food Policy Research Institute (IFPRI). <http://ageconsearch.umn.edu/bitstream/210967/2/Assefa-Women's%20Participation%20in%20Agricultural%20Cooperatives%20in%20Ethiopia-908.pdf>.
- Yang, S., Lu, y., Gupta, S.G., Caw, Y. and Zhang, R. (2012). Mobile payment service adoption across time: An empirical study of the effects of behavioral beliefs, social influences, and personal traits. *Computers in human Behavior*, 28, 129-142.