

DETERMINANTS OF ADOPTION OF RISK MANAGEMENT STRATEGIES IN ELECTRONIC BANKING AMONG AGRO-ENTREPRENEURS IN UGHELLI NORTH LOCAL GOVERNMENT AREA OF DELTA STATE, NIGERIA

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ABSTRACT

This study examined the determinants of adoption of risk management strategies in electronic banking (digital finance) among agro entrepreneurs in Ughelli North local Government area of delta state, Nigeria. Data were collected with the aid of structured questionnaire, administered on 79 respondents using two-stage sampling procedure. The data were analyzed with the use of descriptive statistics and regression analysis. This study showed that 34.0% of the respondents were male while 57.0% of the respondents were female, 39.2% of the respondents were in the age bracket of 41-50 years. The regression result shows that gender, age, marital status, level of education, farming status were all significant factors that influence risk management strategies in electronic banking. Household size, business experience, income and savings were not significant. Also, it was found that constraints faced by agro entrepreneur in adopting these risk management strategies includes the length of time it takes for unsuccessful funds transfer to be returned, the delayed response of banks to issues relating to electronic banking risks, ATM are not readily available and the ones that are, are usually congested resulting to agro entrepreneurs using the ATM at odd hours, amongst others. Proper awareness on these risk management strategies should be given to these rural entrepreneurs, and government should charge banks with the sole responsibility of providing a more secure and coordinated methods of carrying out these activities.

Key words: digital finance, electronic banking risks, ATM and cyber security

INTRODUCTION

Electronic Banking also known as digital finance is defined as “the use of technology to communicate instructions and receive information from a financial institution where an account is held. This service includes the system that enables customers of financial institution, individuals or businesses to access accounts, transact business, or obtain information on financial products and services through a public or private network” (Abdul and Muhammad, 2013). It has experienced tremendous growth in many countries especially Africa and today, it has transformed the traditional banking practice in Nigeria. Electronic banking in Nigeria has changed the way services are delivered by the banking sectors to their customers. Electronic banking services, has lower operating costs, improves customer services delivery, retains customers, reduces branch traffics, and downsize the number of branch staff (Parisa, 2006). Essentially, through the use of Information and Communication Technology banks now employ different channels such as online banking, mobile banking and Automated Teller Machine to deliver their services. Report on Electronic banking system in Nigeria reveals that e-payment machinery,

especially the card technology, is presently enjoying the highest popularity in Nigerian banking market. To be competitive in the internet business, financial institutions need to harness the power of the internet successfully (Adewuyi, 2011). Hence it is important to understand the benefits, barriers and impediments as it relates to electronic banking services marketing in developing economies such as Nigeria. Despite the fact that this technology is a good one, it comes with so many risks. These risks caused by this phenomenon include hacking of servers and security breach, agro entrepreneurs, employees and customers’ unfamiliarity with new technology, lack of infrastructures necessary to provide E-services, not taking an appropriate strategic approach by bank managers and by governmental top managers are challenges facing banks and financial institutions. One of the most important responsibilities of agro entrepreneurs is to understand these risks and the risk managements strategies associated to electronic banking. Risk management can be described as the process of determining the maximum acceptable level of overall risk of engaging in a proposed activity. It involves using risk assessment techniques to determine the initial level of risk and, if it is

excessive, developing a strategy to ameliorate appropriate individual risks until the overall level is reduced to an acceptable level. Risk management approaches differ from one firm to the next, which partly reflects different risk management goals. The rapid spread of Internet banking all over Nigeria is its acceptance as an extremely cost effective delivery channel of banking services as compared to other existing channels. However, the introduction of electronic banking is not an unmixed blessing to agro entrepreneur, along reduction in cost of transactions, it has also brought about the exposure of these gullible agro entrepreneurs to risks and even new forms of risks to which banks conducting e-banking expose these entrepreneurs to. Regulators and supervisors all over the world are concerned that while banks should remain efficient and cost effective, they must be conscious of different types of risks this form of banking entails and have systems in place to manage the same (Solanki, 2012). This study is aimed at looking at those factors that can be adopted by agro entrepreneurs to reduce or combat these risks associated with electronic banking.

Objectives of the Study

The main objective of the study is to analyze the determinants of adoption of risk management strategy in electronic banking (e-banking) among agro entrepreneur in Ughelli North Local Government Area (LGA), Delta State. The specific objectives were to (i) describe the socio-economic characteristics of agro-entrepreneurs in Ughelli North LGA (ii) identify the various sources of risk faced by agro-entrepreneurs in accessing e-banking products and services in the study area, (iii) identify electronic banking risk management strategies adopted by agro entrepreneurs in the study area, (iv) examine the socio-economic factors that influence adoption of e-banking risk management strategies among agro-entrepreneurs in the study area, and (v) examine constraints to adoption of e banking risk management strategies among agro-entrepreneur in the study area.

Hypothesis of the Study

H₀: There is no significance relationship between socio-economic characteristics of agro entrepreneur and adoption of electronic banking risk management strategies.

MATERIALS AND METHODS

The study was conducted in Ughelli North LGA in Delta State, located at coordinates latitude 9°45N and longitude 8°43E, with headquarters in the city of Ughelli. This LGA occupies a geographical area of 818 km². According to the National Population Census of Nigeria (NPC, 2006), it has a population of 321,028, the LGA has a total number of 17 communities which includes among others

Afiesere, Ekuigbo, Ekrejebor, Eruemukobwarien, Iwhremaro, Iwhreneneiwhaeorie, Ododegho and Odovie. The people in this area mostly involve in agricultural activities such as farming, processing of agro-products, buying and selling of agro-products. Two-stage sampling was used to select respondents. Stage one was a purposive selection of four communities who have access to banking facilities. Stage two involved the purposive selection of 20 respondents who access electronic banking products from each community, which made it a total 80 respondents for the study, but 79 copies of questionnaire were used for the analysis. The data for this study were collected from primary source with the aid of questionnaire which was objective oriented. Objectives i,ii, iii and v were achieved using descriptive statistics such as frequencies and percentages, while objective iv was achieved using regression analysis.

Model Specification

Regression analysis was used to test for significant relationship between socioeconomic characteristics of the agro entrepreneurs and the level of adoption of risk management strategies. The implicit form of the linear regression is:

$$Y = F(X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_8, X_9) + e,$$

where Y is the level of adoption of risk management strategies, Y was derived as $U/V \times 100$, U is number of risk management strategies adopted by an agro entrepreneur, V is total number of risk management strategies X₁ is age of the agro entrepreneur (years), X₂ is educational level (Years), X₃ is marital status (0 = single, 1 = married), X₄ is gender (0 = male, 1 = female), X₅ is business experience of the agro entrepreneur (years), X₆ is personal annual income of the agro entrepreneurs (₦), X₈ is annual savings (₦), and e is error term. The relationship between the dependent and each of the independent variable was examined using the four functional forms, linear, semi-log exponential and double log.

Linear Function

$$Y = B_0 + 1B_1X_1 + B_2X_2 + B_3X_3 + B_4X_4 + B_5X_5 + B_6X_6 + B_7X_7 + B_8X_8 + B_9X_9 + e$$

Exponential Function

$$Y = B_0 + B_1 \text{Log}X_1 + B_2 \text{Log}X_2 + B_3 \text{Log}X_3 + B_4 \text{Log}X_4 + B_5 \text{Log}X_5 + B_6 \text{Log}X_6 + B_7 \text{Log}X_7 + B_8 \text{Log}X_8 + B_9 X_9 + e$$

Semi –Log Function:

$$\text{Log} Y = B_0 + B_1X_1 + B_2X_2 + B_3X_3 + B_4X_4 + B_5X_5 + B_6X_6 + B_7X_7 + B_8X_8 + e$$

Double–Log Function

$$\text{Log} Y = B_0 + B_1 \text{Log}B_1X_1 + B_2 \text{Log}B_2X_2 + B_3 \text{Log}B_3X_3 + B_4 \text{Log}B_4X_4 + B_5 \text{Log}B_5X_5 + B_6 \text{Log}B_6X_6 + B_7 \text{Log}B_7X_7 + B_8 \text{Log}B_8X_8 + e$$

where B_0 is intercept, B_1 to B_8 are estimated coefficients. The criteria used in selecting the functional equation that will best fit for regression were highest R^2 value, highest number of significant variables, highest F-value and conformity to apriority expectations of the coefficient.

RESULTS AND DISCUSSION

Socio-Economic Characteristics of Agro-Based Entrepreneurs

The socio-economic characteristics of the respondents were summarized in Table 1. The results show a slightly higher ratio for females than males. This showed that 43.0% of the respondents were male while 57.0% of the respondents were females. The study also revealed that 39.2% of the

Table 1: Distribution of farmers' socio-economic characteristics

Socio-economic characteristics	Frequency (n = 79)	Percentage (%)
Gender		
Male	34	43.0
Female	45	57.0
Age		
21-30	12	15.2
31-40	19	24.1
41-50	31	39.2
51-60	13	16.5
61-70	4	5.1
Marital status		
Single	19	24.1
Married	51	64.6
Widowed	7	8.9
Divorced	2	2.6
Level of educational status		
No formal education	2	2.5
Primary	11	13.9
Secondary	29	36.7
Tertiary	35	44.3
Others	2	2.5
Family size		
1-3	18	22.8
4-6	51	64.6
7-10	10	12.7
Farming status		
Full time	46	58.2
Part time	33	41.8
Enterprise type		
Livestock	18	22.8
Crop farming	17	21.5
Agro processing	2	2.5
Fish farming	22	27.8
Marketing	16	20.3
Others	4	5.1
Business experience		
1-10	62	78.5
11-20	14	17.7
21-30	1	1.3
31-40	2	2.5
Average monthly income (₦)		
10,000-50,000	3	3.8
60,000-500,000	50	63.3
600,000-1,000,000	12	15.2
1,100,000-1,500,000	2	2.6
1,600,000-2,000,000	6	7.6
2,100,000-2,500,000	2	2.5
2,600,000-3,000,000	4	5.1
Annual savings (₦)		
10,000-200,000	65	82.3
210,000-400,000	7	8.9
410,000-800,000	4	5.1
801,000 – 1,000,000	2	2.5

Field survey, 2018

respondents were in the age bracket of 41-50 and 24.1% were observed to be in the age bracket of 31-40, which indicates that the respondents were in the middle and active ages of production. Married individuals were the highest among the respondents with the percentage of 64.6%, followed by single with the percentage 24.1% while 8.9% were widowed, and 2.6% divorced. A breakdown of the education statistics indicates that 2.5% had no formal education, 13.9% had attained the primary education, and 44.3% of the respondents had attained tertiary education and this was the highest level of education attained by my respondents, followed closely by 36.7% of the respondents who had attained secondary education, which is quite appropriate because a good level of education should be attained in order to be able to operate or use most of the electronic products and services. About 64.6% had a family size of 4-6, 22.8% had a family size of 1-3, and family size of 7-10 having a percentage of 12.7% which showed that the family size of 4-6 were the most dominant in the area of study hence they had the highest frequency. The respondents which were into agribusiness fulltime were the most dominant in the study with a percentage of 58.2% while 41.8% were part-time agro entrepreneurs. About 27.8% of these respondents were into fish farming, 22.8% were into livestock production, 21.5% were into crop farming, 20.3% were into marketing of agricultural products while 2.5% focused on agro processing.

Sources of Risk Faced by Agro-Entrepreneurs in Accessing e-banking Products and Services

The sources of risks faced by the agro entrepreneurs in Ughelli north local government are summarized in Table 2. The result showed that 67.1% of the respondent agreed that they have faced risk in the form of text message requesting for their bank details, which they sent and from which their accounts were hacked and money withdrawn. This is one of the most prominent forms of risk because hackers now send phishing messaging at random for people awaiting those who fall victims. About 63.3% of the respondents accepted that they were accosted by criminals immediately after withdrawal from automated teller machines (ATM). This is as a result of the customers using ATM at odd hours in a bid to avoid long queue, thereby making them susceptible to hoodlums and criminals. About 51.9% of the agro entrepreneurs in the study area further stated that they had fallen victim to text messages from criminals who claimed that their ATM card is expired or due for renewal, requesting for the sensitive security numbers on the card from which their money was withdrawn. The same percentage of people also said they had suffered from failed transactions when using their bank application, these transactions were thought to have failed due to

Table 2: Sources of risk faced by agro-entrepreneurs in accessing e-banking products and services

Sources of risks	Frequency	Percentage
Similar email address with that of the bank that requested for customers details from which accounts were hacked	9	11.8
Text message requesting for customers bank details, from which account was hacked and money withdrawn	53	67.1
Fake website which when accessed leads to hacking of my device and exposure of my bank details	7	8.9
ATM card and security number was accessed by 3 rd party	33	41.8
Accosted by criminals immediately after withdrawal from the automated teller machine (ATM)	50	63.3
Text messages saying ATM CARD had expired, requesting for the security numbers on the card	41	51.9
Failed transactions done with banks mobile application due to network issues, but money was debited from my account	41	51.9
Bad and negatives comments from my friends and family hindered me from continuing with these platforms	7	8.9
Stress passed through in the bank in other to get back money lost due to transfer failures	23	29.1
Error message every time I try to make transactions using my banks short code	12	15.2
Similar email address with that of the bank requesting for change of online banking password, which led to hacking of my account	5	6.3
Stolen phone resulting to loss of access to my online banking platform	8	10.1
Fake online shopping site, where details of debit card entered resulted to loss of my money	6	7.6
Payments made on point on sales (POS) which wasn't approved, yet money was deducted from my account	20	25.5
Unknown call from someone claiming to be account manager, requesting for some details, which compromised my account	18	22.8

Field survey, 2018

network issues but money was debited from their account. About 41.8% said that their ATM card was accessed by third party, this was corroborated by findings of Yousafzai *et al.* (2003) who reported that lack of security in protecting personal information is a problem in using internet banking according. About 29.1% of the respondent said that the stress faced in the bank in other to get back their funds which was lost due to using one or two banking services platform is their problem, whereas 25.5% suffered deduction of money on transactions not approved while using POINT ON SALES (POS). About 22.8% claimed to have received calls from unknown people claiming to be their account manager requesting for some sensitive details which lead to the compromising of their accounts.

Again 15.2% indicated that the error messages they get when trying to access their bank short code is not encouraging, this is also due to network issues. Also 11.8% of the respondent reported that similar email address with that of their banks emailed them requesting for their banking details in other to perform upgrades from which their accounts were hacked. About 10.1% mentioned that loss of their phones which led to lack of access to their online banking platforms. About 8.9% agreed that fake websites which were accessed compromises their devices and leads to hacking of their accounts, same percentage also agreed that negative comments from friends and family about electronic banking was the issue they faced which lead to total mistrust in electronic banking. Finally 7.6% of the respondents indicated that fake online shopping site, where details of debit card were entered resulted to loss of their money.

Risk Management Strategies Adopted by Agro Entrepreneurs

Risk management strategies adopted by the agro entrepreneurs are shown (Table 3). Majority (92.4%) of the respondents block and ignore irregular email and text messages that have to do with their bank details thereby preventing risk due to phishing, 87.5% said they no longer use lonely ATMs or go to the ATM at odd hours. About 73.4% indicated that they keep contact with their banks in relation to information got online or via SMS relating to their bank accounts. About 53.2% indicated that since their experience with these risks they are now careful whenever they login to their online banking platform to prevent preying eyes. Whereas 50.6% indicated they call their banks to deactivate their ATM card whenever lost, 45.6% said that they periodically check with their banks if everything is okay with their accounts in order to detect any move to hack their accounts. About 44.3% of the agro entrepreneurs agreed that they do not use birthdates and address that would be easy for attackers to find out. Also 44.3% indicated that not using the same passwords for all their bank account are both strategies they used in combating security risks. Whereas 30.4% of the respondents indicated that they no longer click on links from suspicious looking emails, 25.3% of them revealed they now use reliable mobile security software to protect their devices. About 22.8% of the respondent agreed that they download mobile apps only from official stores, while 11.4% reported that they always make use of https:// (which is more secured) instead of http:// while logging into websites. Finally 10.1% reported that they do not use public Wi-Fi for online transactions.

Socio-Economic Factors in Level of Adoption of Risk Management Strategies in e-Banking

Results of the regression analysis for the socio-economic characteristics for all the four functional forms are shown in Table 4. Double-log form was chosen as the lead equation based on the highest value of coefficient of multiple determination (R^2), more significant coefficients, highest F-value and conformity to theoretical expectations of the R^2 . The R^2 value of 0.691 indicates that about 69% of the variation in the dependent variation was explained by the independent variable included in the regression while the remaining 31% was due to other factors not specified in the model; F-ratio with 5.693 value in the regression is significant at 1%. It implies that all the variables have significant or joint effect on the dependent variables.

Gender (X_1) was significant at 5% and related positively to level of adoption of risk management strategies in electronic banking. This shows that men were more likely to adopt to many risk management strategies. Age (X_2) was significant and had a negative coefficient. This implied that being a younger farmer increased the probability of adopting more risk management strategies in

electronic banking. The negative effects of age may be due to younger farmers being technology savvy which helps to adopt to different risk management strategies. This is in line with the findings of Ugwuja *et al.* (2017) who reported that younger farmers adopted more risk management strategies in fish farming. Marital status (X_3) was significant at 5% and has positive coefficient.

This implied that being married increased the probability of level of adoption of risk management strategies. Level of education (X_4) was significant at 1% and it related positively to level of adoption of risk management strategies in electronic banking. This shows that the more literate a farmer is the more chances of adopting to many risk management strategies. Farming status (X_6) was significant at 5% and had a negative coefficient. This shows that being a full time farmer reduces the chances of adopting more of risk management strategies. This may be due to part-time agro-entrepreneurs getting income from other sources and increasing their chances of having more resources that will enable them to adopt to more risk management strategies. Household size, business experience, income and savings were not significant.

Table 3: Risk management strategies adopted by agro entrepreneurs

Risk managements strategies	Frequency	Percentage
I take special care whenever I want to login to my online banking platform to prevent preying eyes from getting my details	42	53.2
I ignore irregular email and Text messages that has anything to do with my bank details	73	92.4
I no longer click on links in suspicious looking email no matter how enticing they look	24	30.4
I contact my bank to crosscheck my information receive online or via text message	58	73.4
I periodically check with my bank to confirm if everything is okay	36	45.6
I no longer use birthdates, address and other words or numbers that would be easier for attackers to find out or guess my passwords	35	44.3
I don't use the same passwords for all my bank accounts because guessing of one password can compromise the other accounts	35	44.3
I don't use lonely ATMs or go to the ATM during late hours	69	87.5
I now use a reliable mobile security software to protect my device	20	25.3
I now use a two factor authentication(pin and OTP) process for my mobile banking	18	22.8
I called my bank immediately to deactivate my misplaced ATM card	40	50.6
I installed antivirus to prevent third party from accessing my computer or phone	18	22.8
I don't use public Wi-Fi for my online transactions	8	10.1
I always use https:// instead of http: to log in my account I download apps only from reputable Vendors	29	11.4
	18	22.8

Table 4: Regression results on level of adoption of risk management strategies in e-banking by agro-entrepreneurs

Variables	Linear	Exponential	Semi-log	Double log
Constant	57.688(2.936)***	202.462 (3.814)***	4.096(8.805)***	7.204 (5.760)***
Gender(X_1)	0.146 (1.358)	0.203(1.908)*	0.164(1.541)	0.226(2.163)**
Age(X_2)	-0.518(-3.428)***	-0.586 (-3.620)***	-0.480(-3.205)***	-0.575 (-0.608)***
Marital status (X_3)	0.269(2.309)**	0.266 (2.053)**	0.241(2.091)**	0.269(2.112)**
Level of education (X_4)	0.402(3.684)***	0.386(3.496)***	0.394 (3.651)***	0.392(3.611)***
Household size(X_5)	0.010 (0.090)	0.042(0.385)	-0.028 (-0.256)	0.029(0.273)
Farming status(X_6)	-0.181(-1.796)*	-0.183(-1.804)*	-0.217 (-2.168)**	-0.207 (-2.068)**
Business	0.046	0.072	0.034	0.066
Experience(X_7)	(0.355)	(0.537)	(0.262)	(0.499)
Income(X_8)	0.047(0.301)	0.100(0.528)	0.106 (0.689)	0.173(0.930)
Savings(X_9)	-0.045(-0.300)	-0.154(-0.847)	-0.107 (-0.718)	-0.208 (-1.160)
R^2	0.667	0.656	0.688	0.691
F-value	5.431***	4.780***	5.204***	5.693***

Field Survey (2018); *** Significant at 1% level, ** Significant at 5% level, *Significant at 10% level. Values in parenthesis are the t-values

Table 5: Constraints faced by agro-entrepreneurs in adopting risk management strategies in electronic banking

Constraints	Frequency	Percentage
My bank doesn't always respond on time to issues concerning these risk	55	69.6
I do not have proper information from the bank or any other medium on how to go about these risks	39	49.9
The ATM are not really available in my locality and the ones that are available are usually crowded during the day, so I still result to waiting for odd hours before making withdrawal	50	63.3
I cannot operate most of these devices, making me always at risk since I call on people to help me use them	26	32.9
I can barely differentiate my banks email from these hackers because the bank do not have any uniqueness distinguishing theirs	11	13.9
There's no protection of customers privacy in our network providers because I think most of the time my details are gotten by their negligence not mine	10	12.7
Most of these fake websites are linked to my bank websites, which makes me always trust and fall for them without knowing	10	12.7
The security breach are usually as a result of the banks fault thereby exposing my details	10	12.7
It takes long for unsuccessful fund transfer to be returned	63	79.7

Constraints Faced by Agro Entrepreneurs in Adopting Risk Management Strategies

The constraints faced by agro entrepreneurs is summarized in Table 5, with 79.7% of the respondents revealing that the length it takes for unsuccessful transfer to be returned back to their account is too long. About 63.3% said that ATMs are not really available in their locality and the ones available are always crowded during the day so they still result to going to the ATM when it's lonely making them susceptible to this criminal. Whereas 49.9% of the respondent indicated that lack of information on what to do in times of risk is their issues, this is due to the lack of awareness banks do not create for their customers. Only 12.7% of the respondents said that there's no protection of their privacy in the network services, that's why hackers can get access to their details which they use in sending spam messages.

CONCLUSION

Electronic banking though very convenient has so much associated risks. Managing these risks is pertinent to effective use of electronic banking products. Findings from the study showed that that gender, age, marital status, level of education, farming status are the main factors determining level of adoption of risk management strategies in electronic banking among agro entrepreneur in my study area. Constraints faced by agro entrepreneur in adopting these risk management strategies includes the length it takes for unsuccessful funds transfer to be returned, the delayed response of banks to issues relating to electronic banking risks, the crowdedness of ATM available leading to their inability to access as at when due. The study recommends that Central Bank of Nigeria should

charge banks with the responsibility of educating the customers, proper dispersal of knowledge on what these programs are, the risk involved and what methods can be used to combat them would be a bold step. It is also important for CBN to adopt a clear and relevant regulation that addresses electronic banking which will specify the need for banks to urgently attend to customers who are experiencing these risks.

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