

SOCIO-ECONOMIC DETERMINANTS OF THE ADOPTION OF ELECTRONIC BANKING IN ABIA STATE OF NIGERIA

Abstract

This study was conducted to examine the socio-economic determinants of e-banking in Abia State of Nigeria. The specific objectives were to (a) examine the level of awareness of the various products of e-banking (b) examine the socio-economic determinants of users (c) identify the challenges associated with the adoption of e-banking. Data for the study were collected from 90 bank customers drawn from Aba metropolis of Abia State. The data were analyzed using mean, frequency table, percentage and discriminant model. The result of the discriminant analysis indicates that the two most important socio-economic variables that explain group difference were ability to use e-banking and level of education with discriminant score of 1.398 and 1.086 respectively. It is therefore recommended that Central Bank of Nigeria (CBN) in collaboration with commercial banks should carryout adequate public enlightenment to educate the people on how to use the various e-banking methods.

1. Introduction

Globally, banking services have shifted from cash-based method of transaction to electronic banking with the view of meeting up with the challenges of the 21st century (Imiefoh, 2012 and Sanusi, 2012). Electronic banking which is the use of technology to communicate instructions and receive information from a financial institution where an account is held (Aliyu et al., 2012) is associated with so many merits especially in Nigeria economy that is heavily cash oriented in all transactions (Sanusi 2012 and Ovia 2012).

According to Musiime and Ramadhan (2011), the major advantages of electronic banking include reduction of operation costs of banking sector which will further cut down charges to bank customers such as lending rates and charge on other transaction. Sanusi (2012) opined that operation cost is a major component of banking expenditure due to significant costs incurred in cash management, frequency printing of currency note as well as payment of wages of employees. Available statistics reveal that direct cost of cash management to the banking industry is estimated to be about ₦192 billion in 2012 alone. This whopping amount could be used in the development of other sectors of the economy if e-banking is fully adopted.

36 Obisi and Nto (2012) further stated that e-banking reduces the risks involved in
37 keeping and moving large volume of cash such as high incidence of robberies and
38 corruption by public officers. E-banking also improves customer service delivery,
39 reduce branch traffic and also eliminate geographical and time barrier associated
40 with traditional banking system (Abdulrasheed and Etudaiye-Muntar 2009 and Ovia
41 2002).

42 Musiime and Ramadhan (2011) reviewed the importance of e-banking to the bank
43 customer, to be that of banking transaction without visiting the brick and mortar bank
44 institution through the use of Automated Teller Machines (ATMs), Point of Sale
45 (PoS), Cheques, Internet banking, Mobile banking, Mobile money, master card and
46 other non-cash-based transactions. For example, the customer can perform bank
47 transactions like transfers and payments; access of latest balance; viewing of
48 statement and account details; as well as downloading and obtaining statement on
49 all account linked to the bank customers (Oladejo and Akanbi 2012; Adesina et al.,
50 2012 and Asaolu et al., 2011).

51 Aliyu et al., (2012) lamented that despite the growing trend of e-banking all over the
52 world as well as its over whelming importance to the banks and society, not many
53 customers have adopted it as a medium of payment and banking transactions.
54 People still prefer cash transactions in spite of inherent problems associated with it
55 like encouragement of fraud related transaction such as payment of ransom to
56 kidnappers and armed robbery. Ovia (2012) clearly stated that of over 140 million
57 population of Nigeria, only about 8 million people have accessed and adopted e-
58 banking. A situation that may be attributed to low internet and telecommunication
59 penetration (Obisi and Nto 2012) thus leading to inadequate e-Banking facilities.
60 Asaolu et al., (2011) observed that the number of business outlets is still grossly
61 inadequate. There is also general poor public perception and apathy to e-banking
62 due to illiteracy and ignorance, a situation that has led to large percentage of fund in
63 the Nigerian economy residing outside the banking sector. Available statistics reveal
64 that about 65% of the cash in circulation in the Nigerian economy is outside the
65 banking system as against developed economies where money in circulation is for
66 example 4% in USA and 9% in United Kingdom (Oladejo and Akanbi 2012; Sanusi
67 2012, Adesina et al., 2012 and Abdullahi 2012).

68 According to Ovia (2012) the scenario is more disheartening when value of
69 transactions through e-banking of 3.4 billion dollars in Nigeria is compared to 136.4

70 billion dollars (USA), 127.5 billion dollars (China), 100 billion dollars (India) and 78.9
 71 billion dollars (United Kingdom). This ugly trend severely limits the tendency of
 72 Nigeria being ranked among the twenty top economies of the world by 2020.
 73 However, the government through the activities of Central Bank of Nigeria (CBN)
 74 may have taken several steps in ensuring price and economic stabilization by
 75 formulating policies that are supposed to domesticate the e-banking, yet this medium
 76 of transaction seems not to have been fully adopted by the people. The cashless and
 77 e-payment policies of the CBN are still viewed as aberration even by the government
 78 structures and agencies in most of the States (Ovia 2002; Liao and Cheung 2002,
 79 Obisi and Nto 2012).

80 According to Ovia (2008), e-banking transaction is still at the early stage of adoption
 81 in Nigeria. Obisi and Nto (2012) stressed that ever since the introduction of e-
 82 banking in Nigeria, the adoption has remained slow among users. Despite this, no
 83 significant study has focused on socio-economic characteristics of the users. The
 84 identification of this socio-economic attributes related to the adoption of e-banking is
 85 critical for designing policies aimed at stepping up the acceptability and usage of e-
 86 banking products. This is basic, following, Aliyu et al., (2012) which emphasized that
 87 adoption of new technology like e-banking often comes across a certain level of
 88 resistance to change from present way of operation, hence the need for a study of
 89 this nature. Oladejo and Akanbi (2012) revealed that the level of users' acceptance
 90 and adoption of e-banking will be greatly determined by their socio-economic status
 91 of the users. It is on this premise that this paper aim to (a) examine the level of
 92 awareness of the various products of e-banking, (b) examine the socio-economic
 93 determinants of users and (c) identify the challenges associated with the adoption of
 94 e-banking. Apart from section one which is the introductory part, the paper is divided
 95 into four sections. Section two discussed the literature review, section three
 96 explained the methodology adopted for the study while sections four and five deal
 97 with results/discussion and conclusion respectively.

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100 **2. Literature Review**

101 Sequel to the evolution of money as a replacement of barter system, policy makers
 102 have advocated for the replacement of physical cash with more flexible, efficient and
 103 cost effective retail payment system in line with global trend. With the advent and

development of internet system and telecommunication, there is transfer to electronic payment medium such as ATM, credit and debit card, POS, mobile banking etc (Oladejo and Akanbi 2012; Obisi and Nto 2012 and Asaolu et al., 2012). Ovia (2012) opined that e-banking makes it possible for banks to handle large volume of transaction at a lower transaction costs, improved service to customers, and enhanced productivity.

However, Abdulrasheed and Etudaiye-Muhtar (2009) explained that e-banking suffers a lot of challenges which made Imiefoh (2012) to add that both the banks and customers are not e-ready. E-banking cannot be fully maximized without access to efficient and adequate internet and telephone facilities which are grossly under-developed especially in the rural areas of Nigeria. Ovia (2008) stressed that e-banking cannot be utilized in a society like Nigeria which still lack suitable legal framework and security instrument to checkmate hackers. Ovia (2001) observed that it is practically impossible to move financial products and services from the banking hall to e-platform without adequate and reliable electronic communication infrastructure. These challenges limit customers want to transact their banking transaction at any time and location convenient for their life style, hence, restraining the adoption of e-banking in Nigeria.

The findings that e-banking facilities are not adequate for customers contradict that of Oladejo and Akanbi (2012) which stated that at present, all the commercial banks in Nigeria set up their own ATM networks, issue debit and credit cards and have joined ATM switch network but these are not fully adopted by customers (Oladejo and Akanbi 2012). Thus, several studies have been conducted on the factors that enhance customer's adoption of these e-banking products. Aliyu et al., (2012) noted factors that significantly impact the adoption of e-banking are cost/price factors, customers accessibility, perceived ease of use, customer reluctant to change, customer awareness and security concern. This study did not focus on the specific socio-economic attributes of customers that enhance adoption of e-banking so cannot be used to formulate policy based on the characteristics of clients that drive e-banking like age, level of education, sex, location, job affiliation etc.

According to Musiime and Ramadhan (2011) in a study conducted on the adoption of e-banking in Uganda indicated that factors such as accessing of account, usage of account, advantages accruing from the usage and use of account were very significant in influencing customers in adoption of e-banking. The study area though

138 offered some useful guides but was not centred on socio-economic characteristics
139 which this study intends to examine.

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141 **3. Methodology**

142 The study was conducted in Aba commercial city of Abia State of Nigeria. The city is
143 located in the Southern part of Abia State. It lies between longitude 04⁰45' and
144 06⁰17' North and latitude 07⁰00' and 08⁰10' East. It is about 596 kilometres from
145 Lagos and about 498 kilometres from Abuja Federal Capital Territory. The city was
146 selected for the study because of its cosmopolitan nature which gives opportunity to
147 select respondents that have excellent reflection of socio-economic characteristics of
148 Nigerians. Aba is among the areas selected for the second phase of pilot zone of the
149 cashless policy of the Central Bank of Nigeria. It houses branches and area of
150 offices of the 24 consolidated commercial banks in the country (Mbanasor and Nto
151 2008 and ABSEED 2005).

152 In the selection of respondents for the study, a visit was made to the area offices of
153 the 24 banks in Aba zone where the list of customers were requested for. Out of the
154 banks visited, 10 banks gave the list of customers while no success was recorded in
155 the other 14 banks. Simple random sampling procedure was adopted in selecting at
156 least 10 respondents from each of the banks. A total of 90 respondents were
157 administered with well structured and pretested survey instruments. The survey
158 instrument covered such key areas as annual income, types of e-banking facilities
159 used, and amount of transaction through the e-banking facilities, and socio-economic
160 characteristics of the respondents.

161 Objective 1 was analysed using descriptive statistics, while objective 2 was realised
162 with Discriminant model. The model is explicitly specified thus following Nto and
163 Mbanasor (2013) and Nto et al., (2010).

$$164 \quad Z = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + b_7X_7 + b_8X_8 + b_9X_9$$

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167 Where:

168 Z = Discriminant score of the canonical Discriminant function for each group.

169 a = Constant

170 b_1 = Discriminant coefficient of the independent variables

171 X_1 = Level of education (Years)

172 X_2 = Age (Years)

173 X_3 = Level of income (₦)

174 X_4 = Location of residence (0=rural, 1=urban)

175 X_5 = Distance to the nearest bank (km)

176 X_6 = Availability of internet and phone facility (0=Non, 1=Available)

177 X_7 = Transaction costs (₦)

178 X_8 = Economic status (0=Informal, 1=Formal)

179 X_9 = Ability to use E-Banking (1= Able, 0= not able)

180 Z = Group Membership

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182 In line with previous studies, the procedure starts with categorization of the
183 customers-respondents into two groups: e-banking compliant and non-compliant
184 based on percentage of income related to e-banking transaction.

185 Thus, $U \geq 60\%$ group 1: e-banking compliant while $U < 60\%$ group 2: non compliant

186 The test of significant of Discriminant function was done with wilk's lambda which
187 was further subjected to confirmatory test by first converting it into an approximation
188 of the chi-square (Poulsen and French 2013, Nto and Mbanasor 2013, Nto et al.,
189 2010 and Mbanasor and Nto 2008)

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191 **4. Results and Discussion**

192 The results and discussions started with the level of awareness of various products
193 of e-banking by the respondents. The result presented in table 1 indicates that 100%
194 of the respondents were aware of the use of ATM in e-banking transaction. This is in
195 line with apriori expectation given that ATM which is operated with the use of debit
196 and credit cards are scattered in all parts of Aba metropolis to allow customers
197 access to their accounts without visiting the banking hall.

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Table 1: Distribution of Respondents based on Level of Awareness to E-Banking Products

E-banking	Frequency	Percentage
ATM	90	100
Mobile Banking	30	33.33
Mobile Money	32	35.56
Internet Banking	25	27.76
Point of Sale	60	66.67

***Field survey Data 2013**

***Multiple responses recorded**

Reasonable proportions of the respondents (66.67%) were aware of point of sale (PoS) as a medium of e-banking. According to Obisi and Nto (2012) PoS terminal is a portable device that allows local debit cardholders make payment for goods and services in a retail environment. It performs printing of mini statements, cash advance, and balance enquiry etc. The result also shows that about 35.56% and 33.33% of the respondents noted that mobile money and mobile banking respectively were among the methods of e-banking in the area. While 27.76% observed that they are aware of internet banking as e-banking method.

The process of discriminant analysis which predicts a group membership starts with the examination of whether there exist significant differences between groups on each of the independent variables. Nto and Mbanasor (2013) opined that if there are no significant group differences, it is not worthwhile proceeding any further with the analysis.

Using the group means and Analysis of Variance (ANOVA) as specified in table 2 which was the group statistics, it could be inferred that there were significant group differences hence, making it worthwhile to proceed on further analysis. A rough examination of variables that may be of important in the table could be obtained by inspecting the group means and standard deviation

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Table 2: Group Statistics of the Respondents

Z	Variables	Mean	Std. Deviation	Valid N (list-wise)	
				Unweighted	Weighted
1	X ₁	35.1429	12.25854	42	42.00
	X ₂	16.8571	2.64641	42	42.00
	X ₃	2.2643E6	2.05780E6	42	42.00
	X ₄	1.0000	.00000	42	42.00
	X ₅	7.5714	3.68347	42	42.00
	X ₆	.9286	.26066	42	42.00
	X ₇	1.0000E4	9829.64655	42	42.00
	X ₈	.9286	.26066	42	42.00
	X ₉	.8571	.35417	42	42.00
2	X ₁	46.3125	15.55246	48	48.00
	X ₂	13.9375	2.75531	48	48.00
	X ₃	9.6950E6	2.41443E7	48	48.00
	X ₄	.6875	.46842	48	48.00
	X ₅	10.6250	6.38024	48	48.00
	X ₆	.5000	.50529	48	48.00
	X ₇	5.5125E4	1.20098E5	48	48.00
	X ₈	.3750	.48925	48	48.00
	X ₉	.1250	.33422	48	48.00
Total	X ₁	41.1000	15.11161	90	90.00
	X ₂	15.3000	3.06283	90	90.00
	X ₃	6.1807E6	1.80020E7	90	90.00
	X ₄	.8333	.3744	90	90.00
	X ₅	9.2000	5.48583	90	90.00
	X ₆	.7000	.46082	90	90.00
	X ₇	3.4067E4	90409.78743	90	90.00
	X ₈	.6333	.48459	90	90.00

269	X_9	.4667	.50168	90	90.00
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270 ***Calculated from Field survey data 2013**

271 . For instance mean difference between X_1 and X_2 in group 1 and that of X_1 (group 1)
 272 and X_1 (group 2) as depicted in table 2 suggest that these may be good
 273 discriminators as the separations are large. The study thus proceeded to test overall
 274 model fit and significance, given the high mean difference and standard deviation,
 275 among variables in the table.

276 The result of the statistical test of significance of the function is presented in table 3.
 277 The table indicated that the eigenvalue of the model was 3.116. A low eigenvalue
 278 obtained in the result is an indication of near linear dependencies in the data. (Nto
 279 and Mbanasor 2013; Gujarati and Sangeetha 2007) Hence, there is no room for
 280 problem of multi-collinearity in the discriminant model.

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282 **Table 3: Statistical Test of Significance for the Discriminant**
 283 **Function Model**

284	Test of Function	Result
285	Eigenvalue	3.166
286	Wilks' Lambda	0.243
287	Canonical Correlation	0.870
288	Chi Square	118.151
289	Degree of Freedom	9
290	Significance level	0.000***

291 **Calculated from field survey data 2013**

292 *****= Significant at 1% Probability level**

293 The high canonical correlation of 0.870 gives an insight to the index of overall model
 294 fit which is interpreted as being the proportion of variance explained. The canonical
 295 correlation also measures the association between the discriminant score and set of
 296 independent variables.

297 Table 3 shows that, Wilks Lambda which is the proportion of the total variance in the
 298 discriminant score not explained by the differences among groups is 0.243. The low
 299 value of the wilks lambda is desirable since only 24% of the variance was not
 300 explained by group difference. This is an indication of significance of the discriminant
 301 function. The Chi-Square statistic of 118.151 corresponding to the Wilks lambda is
 302 statistically significant at 1% probability level at degree of freedom of 9. Hence, it

could be concluded that there was a relationship between the dependent variable and the independent variables.

Following Baldwin et al., (1984) which opined that significance of each estimated discriminant function lies on the magnitude of the linear weight (Parameters) associated with each variable, the weight of the variable provides an index of the importance of each predicted.

The parameters might be positive or negative with the view of determining the direction of the relationship. Thus, table 4 reveals that 'ability to use e-banking' was the strongest predictor while 'level of education' was next in importance as a predictor.

Table 4: Product Contribution of Individual Variables to the Total Standardized Canonical Discriminant Score.

Variables	Function
X ₁ Level of education	1.086
X ₂ Age	-.095
X ₃ Level of income	.554
X ₄ Location of residence	-.773
X ₅ Distance to the nearest bank	-.401
X ₆ Availability of internet and phone facility	.712
X ₇ Transaction cost	-.836
X ₈ Economic status	.735
X ₉ Ability to use E-Banking	1.398
Group 1 Centroid	1.868
Group 2 Centroid	-1.633

***Calculated from field survey data 2013**

These two variables with large coefficients of 1.398 and 1.086 respectively stood out as those that strongly predict membership of group of e-banking compliants or non-e-banking compliant. The two variables made positive contribution to the membership of e-banking compliant group.

This is expected as education is an important tool in customers' decision making towards adoption of e-banking since it is a guide in verifying the gain or loss

experienced in using e-banking as an alternative to other payment methods. The ability to use e-banking facilities also depends on level of education of the customers (Obisi and Nto, 2013). Also Nto et al., (2011) added that education is a propelling force in the adoption of an innovation. It is a catalyst in attitudinal positive change of an individual. Variables such as, level of income, availability of internet and phone facilities as well as economic status of the respondents were less successful as predictors which made positive impact in the discrimination of the groups. The positive sign implies that the customers' chance of belonging to group of e-banking complaints improves with increase in the coefficient of the aforementioned variables vice versa. Hence, the two variables with the largest coefficients stand as those that strongly predict membership of any group thus should be taken seriously in the implementation of cashless policy of the Central Bank of Nigeria.

However, variables like age, location of residence, distance to nearest bank and transaction costs made negative contribution in the group discrimination. The negative sign is an indication that e-banking compliance has inverse relationship with the coefficient of the variables.

A further way of interpreting discriminant analysis result is to describe each group in terms of its profile, using the group (centroid) means of the predictive variables. Furthermore, table 4 reveals that the group centroids were 1.868 and -1.633 for group 1 and 2 respectively. This means that the higher the composite score of any bank customer, the higher the probability of being e-banking compliant vice versa. So, cases with scores near to a centroid are predicted as belonging to that group.

The classification result presented in table 5 reveals that 93.3% of the respondents were classified correctly into e-banking compliant and non e-banking compliant groups. However, e-banking complaints were classified with slightly better accuracy (92.9%) than non compliant group (93.8%).

Table 5: Classification Result

		Predicted Group membership			
		Z	Group 1	Group 2	Total
Original	Count	1	39	3	42
		2	3	45	48
	%	1	92.9	7.1	100
		2	6.2	93.8	100

370 **Percentage of group cases correctly classified** **93.3%**

371 ***Calculated from field survey data 2013**

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373 Originally, in using the classification procedure where at least 60% income of
374 customers are related to e-banking transaction (group 1), it was discovered that 42
375 respondents were e-banking compliant while 48 respondents whose less than 60%
376 income were related to e-banking transaction were non-compliant (group 2). But on
377 application of the discriminant model to perform the classification, it was observed
378 that 3 respondents (7.1) in group 2 were erroneously classified as belonging to group
379 1 while 6.2% of group 1 were erroneously classified to belong to group 2. This
380 misclassification error may cause serious problem through given room to biased
381 policy targets. Following the high classification performance of the model which was
382 93.3%, the result was considered adequate thus making the identified socio-
383 economic variables adequate and reliable for policy formulation.

384 Table 6 indicates that the distribution of respondents based on challenges
385 encountered in the adoption of e-banking in the area. According to the table, 100%
386 of the respondents observed that major constraints in the adoption of e-banking were
387 inadequate facilities, poor infrastructure, poor internet security and incidence of fraud
388 respectively.

389 According to Obisi and Nto (2012) and Ovia (2012), inadequate e-banking facilities
390 as well as poor infrastructure are related to poorly developed telecommunication
391 infrastructure (especially beyond the urban areas), unreliable power supply and
392 inadequate e-platform (such as number of networks linking customers to banks and
393 payment switch centres).

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395 **Table 6: Distribution of Respondents Based on Challenges**
396 **Encountered in the Adoption of E-banking**

397	Challenges Encountered	Frequency	percentage
398	Poor public perception	85	94.44
399	Inadequate facilities	90	100.00
400	Lack of suitable legal system	60	66.60
401	Poor infrastructure	90	100.00
402	Poor internet security	90	100.00
403	Incidence of fraud	90	100.00

404	Loss of human contact	45	50.00
405	High cost and charges	50	55.50
406	*Multiple responses were recorded field survey data 2013		

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408 Also poor internet security and incidence of fraud which grossly hinder the adoption
409 of e-banking in the area were associated with cyber crimes, activities of hackers on
410 the net to manipulate customer's account balance, virus attack on banking
411 application servers, and other fraudulent activities (Musiime and Ramadhan 2011).

412 Table 6 further reveals that about 94% of the respondents noted that the major
413 challenge in the adoption of e-banking was poor public perception. This is due to
414 high level of illiteracy and ignorance in the study area. The result opined that about
415 67%, 56% and 50% of the respondents attributed the problems in adoption of e-
416 banking in the area to lack of suitable legal system, high cost and charges for using
417 e-banking facilities as well as loss of human contact respectively.

418 419 **5. Conclusion**

420 The study was conducted to examine the socio-economic determinants of e-banking
421 in Abia State of Nigeria. Abia State was selected for the study as it is among the pilot
422 states in the second phase of cashless policy of the Central Bank of Nigeria. The
423 specific objectives were to examine the level of awareness and the adoption of e-
424 banking products in the area, examine the socio-economic determinants of users
425 and identify the challenges associated with the adoption.

426 The results of the discriminant function analysis indicated that only 24.3% of the
427 variation was explained by the variables in the model. Variables like 'ability to use e-
428 banking' and 'level of education' with discriminant score of 1.398 and 1.086
429 respectively made the highest contributions to the total standardized canonical
430 discriminant score. The result also depicted that 93.3% of the respondents were
431 classified correctly into e-banking compliant and non e-banking compliant groups.

432 The policy implication points to the fact that the on-going education sensitization
433 programme of the Central Bank of Nigeria in the area should be strengthened with a
434 view to getting the general public acquainted on how to use e-banking products. The
435 implementation strategies to be adopted should be symposium, seminar, meeting,
436 rally and television advertisement. It should be targeted more on the illiterate
437 members of the public in such areas as market places, town hall meetings etc.

438 Various commercial banks should collaborate with Central Bank of Nigeria (CBN) in
439 training their customers on how to use the e-banking facilities.

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