

# **The Acceptance of E-banking by Customers in Nigeria**

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*The internet is perhaps one of the most useful tools to businesses and individuals in contemporary world economies. Its use has touched virtually every aspect of human endeavour including banking. Technological breakthroughs and product designs have led to the emergence of e-banking services which, in recent time has become globally popular except in developing countries including Nigeria. The Central Bank of Nigeria (CBN) recently released a circular on the introduction of 'cashless' policy which sets cash deposit and withdrawal limits. The success of this policy requires the increased use of alternative payment systems including e-banking. However, despite the growing popularity of e-banking in the world, its rate of adoption in Nigeria has been relatively slow. It has therefore become imperative to study the underlying determinants of acceptance e-banking in order to understand and remove the inhibitions surrounding its use and enhance its popularity. The study takes a cross sectional analysis of determinants of acceptance of e-banking in Nigeria using a modified Technology Acceptance Model (TAM) as research framework. Four hundred questionnaires were distributed customers of different banks to elicit relevant data out of which two hundred and forty nine (249) were found to be useful. These questionnaires were designed using the 5-point Likert scale and the Cronbach Coefficient Alpha was used to test for reliability and consistency of research instrument. Linear Multiple Regression Analysis was employed to determine the effect of Age (A), Educational Background (PB), Income (Y), Perceived Benefits (PB), Perceived Ease of Use (PEOU), Perceived Risk (PR) and Perceived Enjoyment (PE) on Acceptance of E-banking (AI). The Statistical Package for Social Sciences (SPSS) was used for computation. The result shows that acceptance of e-banking in Nigeria is significantly influenced by Age, Educational Background, Income, Perceived Benefits, Perceived Ease of Use, Perceived Risk and Perceived Enjoyment.*

**Field of Research:** Banking and Finance

**Keywords:** Banking, E-banking

## **1. Introduction**

The internet has become an indispensable tool in the contemporary business environment. This is because virtually every aspect of human relationships and interactions has been affected by the World Wide Web in more ways than one including dating, communication, governance, accounting, payments, buying, selling and learning. Banking is not left out. Technological breakthroughs in the fields of electronic, communication engineering and computing has further proliferated the use of electronic banking (e-banking) in today's business environment. Encyclopaedia Britannica (2010) defined e-banking as the use of computers and telecommunications to enable banking transactions to be done by telephone or computer rather than through human interaction. Some e-banking services offered by banks include: electronic funds transfer for retail purchases, automatic teller machines (ATMs), Short Messaging Services (SMS) banking and automatic payroll

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deposits and bill payments. Others include: home banking, whereby a person with a personal computer can make transactions, either via a direct connection or by accessing a Web site. Electronic banking has vastly reduced the physical transfer of paper money and coinage from one place to another or even from one person to another. From banks' perspective, technology, including e-banking is vital in six areas: augmenting profit pool, operational efficiency, customer management, distribution and reach, product innovation and efficient payment and settlement (Kamakodi et al, 2008). It is therefore requisite for banks to adopt the best that technology has to offer for their corporate goals to be achieved. This perhaps is a reason for heavy investment in information technology by banks in Nigeria within the last decade. Presently, all banks in Nigeria has transformed from manual to automated systems using e-banking and e-payment platforms (Adesina & Ayo, 2010).

## 2. Problem Statement

The proliferation of electronic banking globally can be attributed to its cost saving potentials and speed of information transmission on the part of banks and convenience on the part of customers (Floh, & Treiblmaier, 2006). Other advantages from the user's perspective include ability to transact twenty four hours a day; seven days a week, easy access to account information and so on.

In realisation of the benefits of e-banking, the Central Bank of Nigeria (CBN) in April 2011 announced the introduction of a 'cashless' policy where service charges are to be introduced to withdrawals and deposits in excess of N150,000 (approximately US\$1,000) for individuals and N1million (US\$6,700) for corporate bodies. The aim of this policy is to reduce the amount of physical cash in circulation and encourage the use of electronic based transactions. It is anticipated that this policy will drive down cost of banking services and improve the effectiveness and efficiency of monetary policies (CBN, 2011).

However, in spite of this policy shift by the CBN, the pace of growth of e-banking in Nigeria can still be described as slow. This is the case despite the fact that as at 2008, it was estimated that N360 billion (US\$2.4billion) worth of transactions were effected electronically (Adesina & Ayo, 2010). For a population of almost 200 million people, this is relatively low. In a survey involving 2,200 bank customers carried out by Intermac Consulting, it was discovered that Electronic Payments accounted for N360 Billion (US\$340 Million) worth of transactions in 2008. The report indicated that there are 21.5 million ATM cards in circulation in Nigeria as at 2008 with an average of 51 million transactions per month in a country with over 150 million people with almost 100 million adults. The study also shows that as at 2008, just 7, 500 Point of Sales (PoS) terminals have been deployed across Nigeria, while about 6, 000 live ATM's have been installed so far. 'The picture presented by this research finding indicates that almost all the 97 percent of respondents that are aware of debit card (ATM) use the service. On the other hand, of the 67 percent of respondents that are aware of SMS banking, only 48 percent use it. In the case of MasterCard, even though 45 percent are aware, only a paltry 10 percent use the service' (BusinessDay. 2008). As at 2008, it was estimated that there are 9,000 ATMs in Nigeria. This is in sharp contrast to a country like the USA which has 403,000 ATMs in use as at 2009 (Gammon, K. 2009).

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The foregoing has made it imperative to study the underlying determinants of e-banking usage in order to identify and deal with factors inhibiting its usage. This will enable relevant stakeholders (banks, regulatory agencies, digital switch operators etc) formulate policies that will further increase the popularity of e-banking services. The 'cashless' policy of the CBN depends to a large extent on the acceptance of alternative payment systems such as e-banking by the populace. Thus an attempt to model the determinants of e-banking will provide insight into and anticipate progression of e-banking acceptance based on identified determinants.

### 3. Literature Survey

Electronic banking is defined as the provision of banking services to customers through the internet (Daniel, 1999). Services offered by banks using the internet include: Mobile banking (m banking), video banking, fund transfers, e-payments and ATM cards. Of all e-banking services on offer, ATM is by far the most popular in Nigeria. However, technological advancements keeps broadening the frontier of possibilities in all human endeavours and thus more e-banking services are being developed and introduced. As at July 2011, there are over 24 banks in Nigeria all of which offer e-banking services.

Technology has created 'paradigm shift' in the client servicing (Kamakodi et al, 2008). This amongst other reason has perhaps informed the large number of literature and research into the underlying determinants of acceptance of electronic banking by customers. It is generally accepted that increases in income and education have been found to be positively related to the adoption of an innovation (Donnelly, 1970; Uhl et al., 1970; Labay and Kinnear, 1981; Kennickell and Kwast, 1997; Lee and Lee, 2000; Lee et al., 2002). These studies show that people of higher education and income have a higher technology adoption rate than those of lower income and education. Kamakodi et al (2008) amongst others believe this to be true for e-banking as well.

Studies have also shown the effects of demographic characteristics on technology acceptance. In the works of Taylor and Todd (1995) and Gefen & Straub (1997), it was found that gender has a direct influence on adoption of technology with men and women having different rates of computer technologies adoption. Putrevu (2002) suggests that difference in information processing exists between men and women and as such both genders will have different rate of technology acceptance. Zeithaml and Gilly (1987) also opined the existence of a positive relationship between education, income, and exposure to mass communication and the adoption of Electronic Funds Transfer (EFT) with the latter as the dependent variable. The study also showed that this relationship was greater for younger than for older consumers. Lee et al. (2002) discovered the older the adopters the lower the rate of technology adoption. And in the words of Hogarth et al (2008), 'Increases in income and education also elicit a positive effect on adoption, regardless of the technology. On the other hand, the impacts of other demographic characteristics on adoption are less clear'.

Two of the most common models used in investigating factors determining the acceptance of e-banking technology by consumers are Technology Acceptance Model (Davis, 1989) and Roger's Diffusion of Innovation (DOI) Theory (Rogers,

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1983). Using the DOI theory, Hogarth et al (2008) discovered that 'the more observable, compatible, simple, useful, and the more advantages the technology offers, the more likely are the consumers to adopt that technology'. Using the Technology Acceptance Model, Pikkareinen et al (2004) opined that perceived usefulness and perceived ease of use among other factors significantly affects the use of e-banking, other factors being: Perceived Enjoyment, Information on Online Banking, Security and Privacy, Quality of Internet Connection. Using the DOI theory, Lee and Lee (2000) investigated the factors influencing the adoption of various banking technologies. Using the 1995 Survey of Consumer Finances, they discovered 'that more educated, affluent and younger consumers who were likely to communicate with professional information providers tended to adopt electronic banking technologies more readily than their counterparts'. Tan & Teo (2000) discovered that adopted four attitudinal constructs of the DOI theory: relative advantage, compatibility, complexity, and trialability, as part of their research model to predict the intention to adopt Internet banking services. They found that relative advantage, compatibility, and trialability significantly affected the intention to use Internet banking, whereas complexity was not significant.

Karjaluoto et al (2002) in a study to determine online banking acceptance discovered that attitude towards online banking and its usage is significantly affected by Prior Computer Experience, Prior Technological Experience, Personal Banking Experience and Reference Group Influence. Rotchanakitumnuai and Speece (2004) on the other hand found out that Web Benefits (Information Quality, Information Accessibility, Information Sharing, and Transaction Benefit) and Web Barriers (Organisation Barrier, Trust, and Legal Support) are key factors influencing e-banking adoption by customers.

Lasser et al (2004) in an investigation into factors influencing the use of e-banking discovered that consumer innovativeness and personal characteristics are the key determinants of online banking adoption

Security issues top the list of factors limiting the acceptance of e-banking services by customers. Cheung et al (2002) in a survey of online banking acceptance in New Zealand discovered that security and complication of internet banking are some of the factors limiting the full acceptance of e-banking

In two studies carried out in 2005 and 2009, Gikandi and Bloor (2009) investigated the determinants of the adoption and influence of e-commerce involving 90% of the retail banks in Kenya. They discovered that there was a drastic shift in the importance attached to some e-banking drivers between years 2005 and 2009. They therefore concluded that e-banking has matured in developed countries. Thus it would be expected that banks in developing countries would learn some lessons from the developed countries and be spared some of the uncertainties undergone by their counterparts in technological development.

Investigation into the underlying factors determining the acceptance by bank customers in Nigeria is relatively sparse. However, some research efforts are worthy of note. Using the DOI theory to determine the underlying factors determining the adoption of ATM cards by bank customers in Nigeria, Olatokun et al (2009) found out that the constructs Relative Advantage, Complexity, Observeability, Compatibility, and Trialability were positively related to attitude to the use of ATM cards. The study

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also established the existence of a positive relationship between attitude to and use of ATM cards. In another study, Ezeoha (2005) discovered that Internet banking is slowly being embraced by customers because Internet practice in Nigeria has been abused by cyber attackers who use real and deceptive banking websites to spoof users' sensitive information and funds thus adding voice to security concerns as a major factor inhibiting the use of e-banking. A similar study conducted in Benin, Nigeria, Egwali (2008) concluded that Security Indicators (SI) are not very effective at alerting and shielding users from revealing sensitive information to spoofed e-banking sites

### 4. Methodology

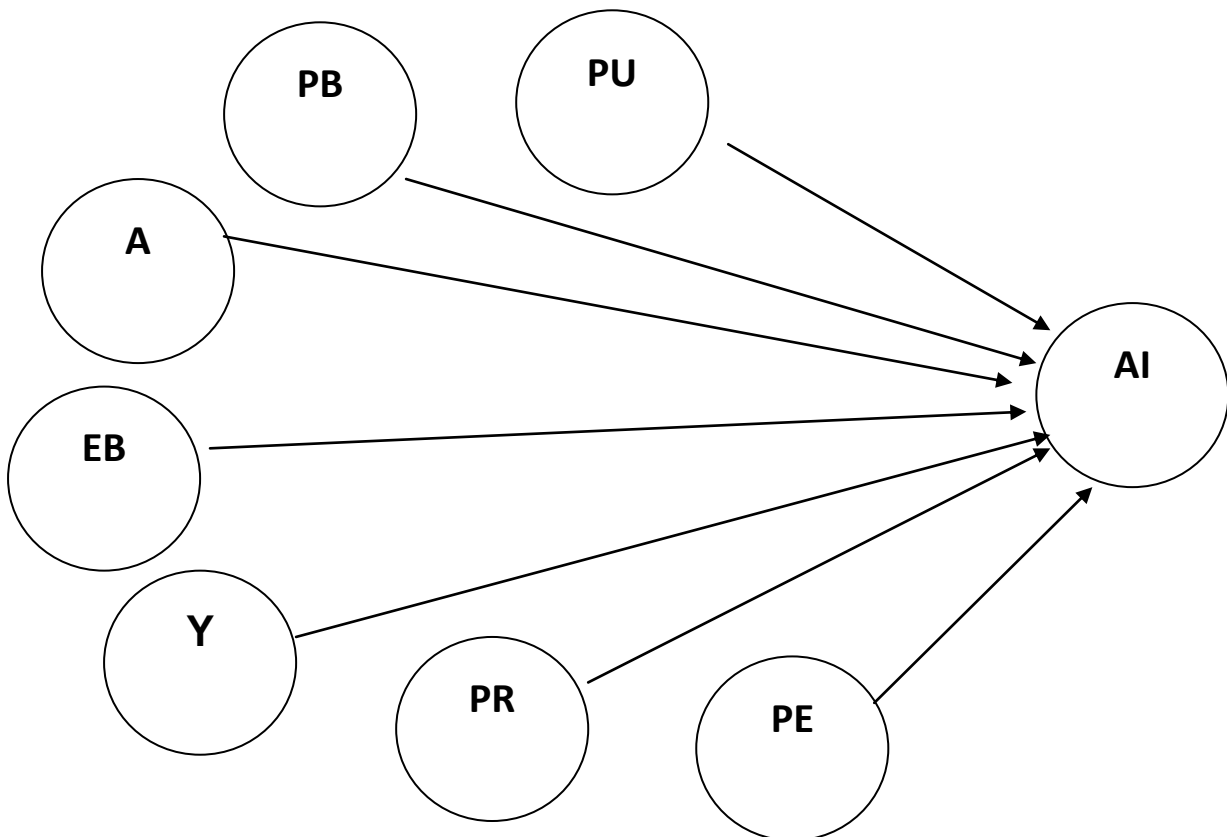
From the above, the following factors are believed to impact on the acceptance of e-banking: Gender, educational background, income, experience from previous use, perceived risk, perceived benefits, perceived ease of use, age, peer influence and perceived enjoyment. The objective of this study is to determine the extent to which these factors affect acceptance of e-banking in the Nigerian context. Also, this study focuses on all e-banking services except ATM cards. This is because previous relevant research efforts in Nigeria had focused on acceptance on ATM cards being the most popular e-banking services offered by Nigerian banks till date. However, there appears to be a dearth of research efforts to determine the factors affecting the acceptance of other e-banking services. This gap will be filled by this research effort. This study modifies the TAM to include other relevant factors supported by past research efforts into acceptance of innovation. According to Davies (1989), two factors determine the Acceptance of a new Innovation (AI): Perceived Usefulness (PU) and Perceived Ease of Use (PEOU). PU has been replaced with Perceived Benefits (PB) along with the following variables: Age (A), Educational Background (EB), Income (Y), Perceived Risk (PR), Perceived Benefits (PB) and Perceived Enjoyment (PE).

Thus the following hypotheses will be tested in this research:

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|---------------------|--|
| <b>Hypothesis 1</b> | Age does not significantly affect acceptance of e-banking                        |
| <b>Hypothesis 2</b> | Educational background does not significantly affect the acceptance of e-banking |
| <b>Hypothesis 3</b> | Perceived Benefits does not significantly affect acceptance of e-banking service |
| <b>Hypothesis 4</b> | Perceived ease of use does not significantly affect the acceptance of e-banking  |
| <b>Hypothesis 5</b> | Income does not significantly affect acceptance of e-banking                     |
| <b>Hypothesis 6</b> | Perceived Risk does not significantly affect acceptance of e-banking             |
| <b>Hypothesis 7</b> | Perceived Enjoyment does not significantly affect acceptance of e-banking        |

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The hypotheses to be tested are shown pictorially below:



Structured questionnaires divided into six sections were distributed to four hundred (400) respondents to elicit data on relevant variables. Section A dealt with three variables: Age (A), Educational Background (EB) and Income (Y) of respondents while section B elicited data on Perceived Benefits (PB). Section C questions respondents on Perceived Ease of Use (PEOU). Sections D and E elicited data on Perceived Risk (PR) and Perceived Enjoyment (PE) respectively while section F produced data on Acceptance of E-banking (EI). Questions in all sections were designed using the Likert's scale. Data was collected between 15th November 2010 and 13th January 2011. Additional data was also collected in November 2011.

Cronbach coefficient alpha was used to test for internal consistency and reliability of the multiple scale items used. Data obtained from questionnaire were analysed using multiple regression analysis and frequency counts. Data was computed using the Statistical Package for Social Science (SPSS) version 14 application to strengthen accuracy of results.

## 5. Results

Out of 400 questionnaires that were distributed, 258 were found to be useful representing 65%.

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**Table 1: Results of Cronbach Coefficient Alpha Test**

Construct	Cronbach's Alpha	No. Of Items
Age	0.56	4
Educational Background	0.59	3
Income	0.65	4
Perceived Benefits	0.61	5
Perceived Ease of Use	0.60	7
Perceived Risk	0.69	6
Perceived Enjoyment	0.64	5
Acceptance of E-banking	0.71	5

Table 1, the result of Cronbach Alpha test shows consistency and reliability of test instruments, the minimum being Perceived Ease of use with a figure of 0.56.

**Table 2: Result of Frequency Count**

Variable	Category	Frequency	Percentage	
<b>Age</b>	18 – 24 Yrs	32	12	
	25 – 39 Yrs	105	41	
	40 – 59 Yrs	89	34	
	60 Yrs & above	30	12	
<b>Gender</b>	Male	149	58	
	Female	109	42	
<b>Monthly Income Range (US\$)</b>	Low Income (US\$0 – 500)	88	34	
	Middle Income (US\$501 – 2000)	99	38	
	High Income (Above US\$2000)	71	28	
<b>Highest Educational Qualification</b>	Uneducated	22	9	
	Primary School Certificate	23	9	
	Secondary School Certificate	24	9	
	Trade Tests/Artisans	33	13	
	NCE, ND* or A levels	31	12	
	Students of Tertiary Institutions	44	17	
	HND* or University Degree	51	20	
	Masters, PhD* & above	30	12	

\*NCE: National Certificate of Education, ND: National Diploma, HND: Higher National Diploma, PhD: Doctor of Philosophy

The table above show the frequency of respondents based on age, income and educational qualification.

**Table 3: Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.803(a)	.632	.61	.381

Predictors: (Constant), Age, Educational Background, Income, Perceived Benefits, Perceived Ease of Use, Perceived Risk, Perceived Enjoyment

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The table above show the model summary indicating an adjusted R<sup>2</sup> of 0.6 with a Standard Error of Estimate of 0.381. In other words, an estimated 61% of acceptance of e-banking is accounted for by the dependent variables: Age, Educational background, Income, Perceived Benefits, Perceived Ease of Use, Perceived Risk and Perceived Enjoyment. This position is further strengthened by the table below.

**Table 4: ANOVA (b)**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	106.720	5	21.34	145.001	.000(a)
	Residual	57.74	253	0.146		
	Total	164.46	258			

a Predictors: (Constant), Age, Educational Background, Income, Perceived Benefits, Perceived Ease of Use, Perceived Risk, Perceived Enjoyment

b. Dependent Variable: Acceptance of e-Banking

Table 4 presents the ANOVA report on the general significance of the model. As p is less than 0.05, the model is significant. Thus, the combination of the variables significantly predicts the dependent variable (F = 145.001; p < 0.05).

The table below shows the relationship between the dependent and independents variables within the model.

**Table 5: Coefficients (a)**

Model		Unstandardised Coefficients		Standardised Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.145	.144		.771	.041
	Age	.452	.023	.571	1.862	.04
	Educational Background	.325	.023	.352	3.265	.001
	Income	.532	.021	.613	3.256	.000
	Perceived Benefits	.985	.051	.872	7.362	.000
	Perceived Ease of Use	.921	.036	.745	5.032	.000
	Perceived Risk	.965	.013	.801	6.231	.000
	Perceived Enjoyment	.529	.057	.596	3.023	.024

a. Dependent Variable: Acceptance of e-banking

Table 5 above shows clearly the influence of each independent variable on the dependent variable. Both standardised and unstandardised coefficients of all independent variables are positive, all at p < 5%. The implication of this is that there exists a significant positive relationship between the dependent variable (Acceptance of e-banking) and independent variables (Age, Income, educational Background, Perceived Benefits, Perceived Ease of Use, Perceived Risk and Perceived Enjoyment). Of all the dependent variables, Perceived Benefit has the strongest



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influence (with an unstandardised beta coefficient of 0.958 and  $t = 7.362$ , the highest in the pack). The variable with the least impact is Educational Background (with an unstandardised beta coefficient of 0.325 and a  $t$  value of 3.265; the least of them).

The multiple regression for the model is shown below:

$$AI = 0.145 + 0.452A + 0.325EB + 0.532Y + 0.985PB + 0.921PEOU + 0.965PR + 0.529PE$$

(Where A = Age; Y = Income; PB = Perceived Benefits; PEOU = Perceived Ease of Use; PR = Perceived Risk; and PE = Perceived Enjoyment)

### 5.1 Hypotheses Test Results

The table below show the beta coefficients for each independent variable with their respective  $p$  values.

**Table 5: Summary of Values**

Variables	Beta	P < 0.05
Age	.452	.04
Educational Background	.325	.001
Income	.532	.000
Perceived Benefits	.985	.000
Perceived Ease of Use	.921	.000
Perceived Risk	.965	.000
Perceived Enjoyment	.529	.024

From the above, age has a coefficient of 0.452 at  $p < .05$ . This mean that age positively determines acceptance of e-banking. From this study, e-banking is more popular with those between 18 and 59 years. However, a decline in its use occurs from age 50 years, thus supporting general opinion in literature (Rogers, 1995; Putrevu, 2002; Lee et al, 2002).

Educational Background and Income positively affects the acceptance of e-banking as shown by their beta coefficients of 0.325 and 0.532 respectively at  $p < 0$ . This also supports earlier studies (Donnelly, 1970; Uhl et al., 1970; Labay and Kinnear, 1981; Kennickell and Kwast, 1997; Lee and Lee, 2000; Gilly, 1987; Hogarth, 2008; Lee et al, 2002). Perceived Benefit and Perceived Ease of Use Contributes positively in determining acceptance of e-banking (with Beta coefficient of 0.985 and 0.921 at  $p < 0.05$  respectively). This also supports general opinion in literature (Tan & Teo, 2000; Pikkareinen et al, 2000; Hogarth, 2002). Other variables also positively influence acceptance of e-banking all with positive beta coefficients at  $p < 0$  supporting general views in literature.

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From the foregoing therefore, the following results of hypotheses testing are displayed in Table 6 below

	<b>Hypotheses</b>	<b>Result</b>
<b>H1</b>	Age does not significantly affect acceptance of e-banking	Reject
<b>H2</b>	Educational background does not significantly affect the acceptance of e-banking	Reject
<b>H3</b>	Perceived Benefits do not significantly affect acceptance of e-banking service	Reject
<b>H4</b>	Perceived ease of use does not significantly affect the acceptance of e-banking	Reject
<b>H5</b>	Income does not significantly affect acceptance of e-banking	Reject
<b>H6</b>	Perceived Risk does not significantly affect acceptance of e-banking	Reject
<b>H7</b>	Perceived Enjoyment does not significantly affect acceptance of e-banking	Reject

## 6. Discussion

This study shows that age, educational background, perceived benefits, perceived ease of use, income, experience from previous use, perceived risk, peer influence and perceived enjoyment all significantly determines acceptance of e-banking by customers in Nigeria. This confirms the outcome of similar research in India, Malaysia, New Zealand and other parts of the world (Tan, M. and Teo, T.S.H, 2000; Chung, W and Paynter J., 2002; Kamakodi, N. And Khan, B.A. 2008 etc). For age, the implication of these findings is that countries where most of her populace fall with age 18 and 50 will have a higher degree of e-banking acceptance than others. Extra efforts have to be made to increase its acceptance by those of other age groups.

For educational background, this study provides empirical evidence that the more educated a person is, the higher will be his/her degree of acceptance of e-banking. Thus to make e-banking more popular, the government and other relevant stakeholders should pursue policies that will increase the level of education of its citizens to tertiary levels to encourage increased acceptance of e-banking.

This study also provides evidence that the more the perceived benefits of e-banking, the higher the rate of its acceptance. People will be more willing to use it if it is believed to be beneficial to them. Enlightenment programmes that focuses on providing information about the benefits of various e-banking products will help in stimulating its acceptance.

The study has also shown that the more user friendly an e-banking product is, the higher the rate of acceptance. This implies that relevant stakeholders such as banks, e-banking software and hardware designers and producers must work continuously to improve the user friendliness of e-banking product to ensure sustained increase in its acceptance.

Acceptance of e-banking has also been proven in this study to grow with income. The implication of this is that e-banking will be more popular during the period of economic growth. Also, e-banking will be more popular among high and medium

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income earners than low income earners. Thus policies on poverty reduction, stimulation of economic growth and increased employment will positively influence the rate of acceptance of e-banking.

This study also shows that the higher the perceived risk of using an e-banking product, the lower will be its rate of acceptance. Thus effective security features will boost customer confidence and its rate of acceptance. Finally, the study also shows that there is a positive relationship between acceptance of e-banking and enjoyment derived from its use. Thus making the use of e-banking more pleasurable will enhance customer acceptance.

## 7. Conclusion

This study is an attempt to model the determinants of acceptance of e-banking. Several research efforts by various author has identified a number of factors that determine acceptance of new innovation including e-banking. One of such is the Technology Acceptance Model (TAM). This research adopted a modified version of TAM which replaced perceived usefulness with perceived benefits (Tan & Teo, 2000) while adding Age, educational background, income, perceived risk and perceived enjoyment as determinants of acceptance of e-banking. Data analysis shows the existence of a significant positive relationship between the dependent and independent variables. This finding has various implications for planning and policy formulation for relevant stakeholders as discussed above.

However, this study has a number of limitations and thus areas for further studies. One of such is the choice of Lagos as study area. Also, number of samples can be increased to enhance accuracy of findings. Further studies can draw data from other parts of the country or even other parts of the world. This paper also ignored the influence of gender and socio-cultural factors on acceptance of e-banking. Also, research into the acceptance of each individual e-banking product will shed light into determinants that are peculiar to each online banking product.

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