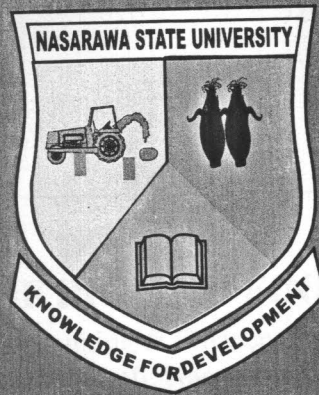




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## ELECTRONIC PAYMENT SYSTEM AND BANK CUSTOMERS' SATISFACTION IN ILORIN METROPOLIS OF KWARA STATE

By

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### Abstract

*The e-payment system adopted in the Nigerian financial system is expected to address the challenges inherent in the manual settlement and payment system. Despite the series of technological innovation of the e-payment facilities, cash usage still represented over 99 percent of the total transactions as at December, 2012 as posited by the CBN in 2013. This study therefore examined the electronic payment system and bank customers' satisfaction in the Ilorin metropolis of Kwara State. Primary data was obtained through the questionnaire for this study. Data obtained were subjected to dprobit, probit and logit regressions, using the Statistical Tool for Analysis (STATA 11.0). The major outcome of this study showed that Electronic Payment System has significant impact on customers' satisfaction, though with attendant challenges. The study therefore, recommends that; (i) the Central Bank of Nigeria should put in place an e-transact policy to encourage more customers to adopt the use of the e-platform; and (ii) the government should put in place enabling infrastructures, especially stable power supply. If the above recommendations are fully implemented, more users are likely to adopt the technology in carrying out their transactions, which will in-turn have positive effect on the Nigerian financial system.*

**Keywords:** Electronic Payment System, Bank Customer, Customers Satisfaction, Technology Acceptance. **JEL Code:** E42

### Introduction

Prior to the emergence of the Electronic Payment System in Nigeria, banking transactions were manually done which slowdown the settlement process, as postings are done from one ledger to another. As the e-settlement process began to evolve and replace the manual settlement process, individuals, customers' and companies among others began to adopt the new technology.

Nigeria cannot afford to fold her hands and watch other countries take its pride of place in the electronic payment system, as no country can function optimally without an efficient financial system which can be triggered by electronic payment system (Nwaolisa and Kasie, 2012).

The cost of transacting with cash in the Nigerian financial system was estimated to be ₦114.5 billion in 2009 and reaching ₦192 billion in 2012. Based on the 2009 statistics, 24%, 67% and 9% of the cost of cash are related to Cash in Transit Cost, Cash Processing Cost and Vault Management Cost respectively (Central Bank of Nigeria, 2013). According to Nwaolisa and Kasie (2012), "electronic retail payment has been designed to help individual customers and companies as well as the banks in eliminating or reducing some of the problems inherent in the settlement and payment process".

However, despite the series of technological innovation that have been adopted in the Nigerian banking industry, cash usage is still very high as cash related transactions represented over 99% of customer activities in Nigerian banks as at December 2012 (CBN, 2013). In addition, the banking halls continue to be immersed with the long queues as people come in to collect their monthly wages or salaries (Nwaolisa and Kasie, 2012). May be customers' are not satisfied with the use of the electronic payment system, that is why cash transactions have not reduced in the banking halls as expected. Therefore, this study evaluates the impact of electronic payment system on bank customers' satisfaction.

This research work has five sections. The first section gave the introduction. The second section discussed the literature review under the conceptual, theoretical and the empirical frameworks. The third section is on the methodology while the fourth section presents results and discussion. Section five concludes the research work and recommendations.

## **Literature Review**

This section focuses on conceptual issues, theoretical background and empirical studies.

### **Conceptual Issues**

This sub-section focuses on relevant conceptual issues to the study.

#### ***Electronic Payment System***

A payment system is used for transferring money. Most modern payment systems employ cash-substitutes. E-payment can be defined as payment by direct credit, electronic transfer of credit card details, or some other electronic means, as opposed to payment by cheque and cash (Agabonifo, Adeola and Oluwadare, 2012). According to Humphrey, Kim and Vale (2001), electronic payment refers to cash and associated transactions implemented using electronic means.

#### **Bank Customer**

A bank customer is a person who is utilizing one or more of the services provided by the bank. A customer is a person through whom the bank gets an opportunity to make an earning in return to the service they can provide the customer. A person may become a customer of a bank, when the

bank accepts his/her offer (Oyedokun, 2002). The relationship between a customer and a banker is essentially contractual and it is fundamentally that of debtor and creditor with the roles sometimes reversed and sometimes flavoured with agency relationship (Oyedokun, 2002).

### **Customer Satisfaction**

Satisfaction is the customer's evaluation of a product or service in terms of whether that product or service has met their needs and expectations. Happy and satisfied customers behave in a positive manner. Customer satisfaction is derived largely from the quality and reliability of products and services (Adeoye and Lawanson, 2012).

### **Theoretical Background**

This sub-section discusses the under pinning theories to this study. This study adopted three theories as its theoretical framework. These include the Diffusion of Innovation (DOI) Theory, the Technology Acceptance Model (TAM) and the Kano's Model of Customer Satisfaction.

#### **Diffusion of Innovation Theory (DOI)**

The Diffusion of Innovation (DOI) Theory attempts to examine the factors that influence an individual, firms etc, to adopt an innovation –which is the Electronic Payment System adopted by banks to create customer satisfaction via service delivery. According to Rogers (1995), “five focal beliefs or constructs that influence the adoption of any innovation include- relative advantage, complexity, compatibility, trialability, and observability.” The DOI theory was used by Hogarth, kolodinsky and Gabor (2008) and by Nwankwo and Eze (2013), among others.

#### **Technology Acceptance Model (TAM)**

Park (2009), opined that “one of the well- known models related to technology acceptance and use, is the Technology Acceptance Model (TAM), this was originally proposed by Davis in 1986.” TAM has proven to be a theoretical model in helping to explain and predict user behavior of information technology (Legris, Ingham, & Collette, 2003). According to Park, two cognitive beliefs are posited by TAM: perceived usefulness (PU) and perceived ease of use (PEoU). TAM is of the principle that one's actual use of a technology system is influenced directly or indirectly by user's behavioral intentions, attitude, perceived usefulness of the system, and perceived ease of the system.

The Technology Acceptance Model was adopted by Pikkarainen, Pikkarainen, Karjaluoto and Pahnla (2004), Park (2009) and by Nwankwo and Eze (2013), among others, in their related studies.

#### **Kano's Model of Customers' Satisfaction**

Kano's model is a theory of product development and customer satisfaction, developed by Professor Noriaki Kano in 1984 and it distinguishes between three types of product requirements which influence customer satisfaction in different ways when met ( Sauerwein , Bailom, Matzler, and Hinterhuber, 1996). According to Sauerwein *et al.*, these include; Must-be Requirements;

One Dimensional Requirements; and the Attractive Requirements. The Kano Model of customer satisfaction was used by Walder (1993), Sauerwein, Bailom, Matzler, and Hinterhuber (1996), Jacobs (1997), Ungvari (1999), Zultner and Mazur (2006), among others. These theories are therefore relevant for this study.

### **Review of Related Empirical Studies**

The perceived benefits of electronic banking have been documented in recent studies; especially Thornton and White (2001) compared several electronic distribution channels available for banks in United States and concluded that customer orientations towards convenience, service, technology, change, knowledge about computing and the internet affected the usage of different channels

Howcroft, Hamilton & Hewer (2002), found that the most important factors encouraging consumers to use online banking are lower fees followed by reducing paper work and human error, which subsequently minimize disputes as observed by Kiang, Raghu, and Hueu-Min Shang (2000).

Ayo, Ekong, Fatudimu, and Adebisi (2008), using SWOT analysis conducted an investigation on the level of adoption of ICT in the Nigerian Banking sector. It was found that all banks in Nigeria offer e-banking services and about 52% of them offer some forms of other online banking services. They also agreed that Nigeria was the fastest growing telecoms nation in Africa and the third world.

Kaleem and Ahmad (2008), investigated bank employees' perceptions of the potential benefits and risks associated with electronic banking in Pakistan. Primary sources were used to collect the data and were analyzed via frequency analysis and mean score analysis. The results suggest that bankers' in Pakistan perceive electronic banking as a tool for minimizing inconvenience, reducing transaction costs and saving time.

Oladejo and Akanbi (2012) investigated banker's perception of electronic banking in Nigeria. Findings of the study revealed that banker's in Nigeria perceive electronic banking as a tool for minimizing inconvenience, reducing transaction cost, altering customers queuing pattern and saving customers banking time. Okey (2012), also examined the Central Bank of Nigeria's Cashless Policy in Nigeria: Benefits and Challenges. Their results revealed that the benefits that accrue to the policy implementation include; cost reduction, reduction in the risk of using cash, reduction in subsidy cash transaction costs, and reduction of corruption. While the challenges of adopting the policy include; fraud, indiscriminate deductions from accounts, high rate of illiteracy, inefficiency and epileptic power supply.

Nwankwo and Eze (2013), examined electronic payment in cashless economy of Nigeria: problems and prospects. Their findings showed that the electronic system of payment has a great implication in cashless economy of Nigeria, but will lead to significant decrease in deposit

mobilization and credit extension by Nigerian deposit money banks. Consequently, they concluded that the e-payment system should be developed first, so that people will be used to it before going cashless economy. They argued that this is so because bulk of the Nigerian economy is driven by SME and petty traders and thus, migration of our payment system towards a cashless society would require some reforms and a lot of sensitization especially for low income group, who are currently deeply rooted in using cash and see it as a convenient and easy way of receiving and making payments.

From the available literatures, there are lot of empirical studies on the electronic payment system and its adoption in Nigeria, but most of the studies concentrated on banker's perception of electronic banking in Nigeria and found that banker's in Nigeria perceived electronic banking as a tool for minimizing inconveniences, reducing transaction cost, altering customers queuing pattern and saving customers banking time (Agoola, 2006; Ayo, Ekong, Fatudimu and Adebisi, 2008; Akhalumeh and Ohiokha, 2012; Oladejo and Akanbi, 2012).

But to the best knowledge of the Authors, no specific study examined the electronic payment system from the perspective of bank customers' satisfaction, as banker's perception on electronic banking may not represent customers' satisfaction of the electronic banking system. Thus, this study examined Electronic Payment System and Bank Customers' Satisfaction in Ilorin Metropolis of Kwara State, Nigeria.

## METHODOLOGY

This section focuses on the methodology used in carrying out the study. It covers model specification and estimation, sources of data used, population of the study, sample size, sampling technique, method of data collection and the method of data analysis.

### Model Specification

This study developed a model towards satisfying the main objective of the study. The following model specification was adopted:

$$\text{Prob.}(CS_i = 1/EPS_i) = f(ATM_i, DC_i, MT_i, INTB_i) \dots \dots \dots (1)$$

The equation (1) can be transformed into linear equation and thus becomes;

$$\text{Prob.}(CS_i = 1/EPS_i) = \alpha_0 + \lambda_1 ATM_i + \lambda_2 DC_i + \lambda_3 MT_i + \lambda_4 INTB_i + \mu_i \dots \dots \dots (2)$$

### Where:

Prob. = Probability

$CS_i$  = Customer Satisfaction (Explained variables)

$EPS_i$  = Electronic Payment System (Explanatory variable)

Prob. ( $CS_i = 1/EPS_i$ ) = probability of Customers Satisfaction ( $CS_i$ ) being equal to one (1) i conditioned on the Electronic Payment System ( $EPS_i$ ).

And where proxies for  $EPS_i$  are:

$ATM_i$  = Automated Teller Machine (proxy 1 for electronic payment system)

$DC_i$  = Debit Cards (proxy 2 for electronic payments system)

$MT_i$  = Mobile Transfer (proxy 3 for electronic payments system)

$INTB_i$  = Internet Banking (proxy 4 for electronic payment system)

$\alpha_0$  = the intercept to the equation

$\lambda_1, \lambda_2, \lambda_3$  and  $\lambda_4$  = the parameter estimates (coefficients)

$\mu_i$  = the error term

The model shown in equation (2) has four independent variables and a dependent variable.

The Dependent variable (explained variable) is represented by CS= customer satisfaction.

While the Independent variables (explanatory variables), include; the electronic payments system and they are proxied by the most common means of electronic payments in Nigeria. These are the Automated Teller machine (ATM), Debit Cards (DC), Mobile Transfer (MT) and Internet Banking (INTB). The data for the model was obtained from the responses of the questionnaire.

### Model Estimation

To estimate the model, a dprobit regression, as well as Probit and Logit regression analysis were used to test the validity of the model.

### Sources of Data

This study made use of the primary data. The primary data for this study was however obtained through the questionnaires administered to customers of banks in the Ilorin metropolis of Kwara State, Nigeria. The questionnaire was a close-ended type, designed to seek factual and definite responses from the respondents.

### Method of Data Collection

The instrument for the collection of the primary data was the questionnaire designed and administered to five hundred (500) respondents from different banks, using purposive sampling technique.

### Results and Discussion

#### Results on Marginal effects, Probit and Logit Regressions

##### Impact of Electronic Payment System on Customers' Satisfaction

| Variables        | Marginal effects<br>(Probit) | Probit     | Logit     |
|------------------|------------------------------|------------|-----------|
| CONSTANT         |                              |            |           |
| Coefficient      |                              | -0.8754835 | -1.586667 |
| Prob. (z-stat)   |                              | 0.000***   | 0.000***  |
| Robust std. Err. |                              | 0.1272959  | 0.2314924 |

|                 |           |           |           |
|-----------------|-----------|-----------|-----------|
| ATM             |           |           |           |
| Coefficient     | 0.1063551 | 0.3370514 | 0.5073218 |
| Prob. (z-stat)  | 0.139     | 0.139     | 0.195     |
| Robust std. Err | 0.0751275 | 0.2277876 | 0.3916628 |
| DC              |           |           |           |
| Coefficient     | 0.3782813 | 1.136607  | 2.064151  |
| Prob. (z-stat)  | 0.000***  | 0.000***  | 0.000***  |
| Robust std. Err | 0.0772403 | 0.2302035 | 0.2969406 |
| MT              |           |           |           |
| Coefficient     | 0.1937563 | 0.6430875 | 1.317325  |
| Prob. (z-stat)  | 0.000***  | 0.000***  | 0.000***  |
| Robust std. Err | 0.0404765 | 0.1484527 | 0.2969406 |
| INT.B           |           |           |           |
| Coefficient     | 0.152864  | 0.5074289 | 0.982888  |
| Prob. (z-stat)  | 0.001***  | 0.001***  | 0.000***  |
| Robust std. Err | 0.0431687 | 0.1478451 | 0.264387  |
| Pseudo R2       | 0.3057    | 0.3057    | 0.3185    |
| Wald chi 2 (4)  | 123.58    | 123.58    | 97.48     |
| Prob. Chi 2     | 0.0000*** | 0.0000*** | 0.0000*** |

\*\*\*significant at 1%, \*\*significant at 5%, \*significant at 10%

Source: Authors' computation (2015)

The coefficients of the marginal effect regression (dprobit) indicates that a unit increase in the use of the Automated Teller Machine increases the likelihood of customers' satisfaction by 0.1063551 i.e., by approximately 11%. The 0.3782813 coefficient for Debit Card indicates that a unit increase in the use of debit card by bank customers increases the likelihood of customers' satisfaction by 38%. The 0.1937563 coefficient for the Mobile Transfer facility implies that a unit increase in the use of the facility increases the likelihood of customers' satisfaction by 19.38%, while a unit increase in the use of Internet Banking has the probability of increasing customers' satisfaction by 15.29%.

The probabilities of the z-statistics for Debit card, Mobile Transfer, and Internet Banking are 0.000, 0.000 and 0.001 and shows that they are all statistically significant at 1% level of significance.

The Wald Chi-square (Wald Chi<sup>2</sup> (4)) = 123.58 is large with an associated probability of 0.0000 i.e., Prob. Chi<sup>2</sup> = 0.000 indicating that the model is statistically significant at 1% level of significance. The figure four (4) in parentheses indicates the four predictors (ATM, Debit Card, Mobile Transfer and Internet Banking) used in the model.

Results from the Probit regression shows that the four predictors (ATM, Debit Card, Mobile Transfer and Internet Banking) of the model all have positive coefficients. The coefficient of the Automated Teller Machine is 0.3370514, Debit Card is 1.136607, and Mobile Transfer is 0.6430875, while that of the Internet Banking is 0.5074289. The positive coefficients of these four predictors of the model imply that the probability of customers' satisfaction increases with the use of ATM, Debit Card, Mobile Transfer and Internet Banking respectively. The coefficient of the constant is -0.8754835 and implies that customer satisfaction is likely to constantly decrease by -0.8754835 with the use of the electronic payments system (ATM, Debit Card, Mobile Transfer and Internet Banking).

The probabilities of the z-statistics for the Debit Card, Mobile Transfer, Internet Banking and the constant are 0.000, 0.000, 0.001 and 0.000 respectively. This implies that they are all statistically significant at 1% level of significance. The Wald  $\chi^2$  (4) is 123.58 with a probability of 0.0000. This implies that the model is statistically significant at 1% level of significance. The results from the Logit regression indicate positive coefficients of 0.5073218, 2.064151, 1.317325, and 0.982888 for ATM, Debit Card, Mobile Transfer and Internet Banking respectively. This implies that the probability of customer satisfaction increases with the use of the electronic payments system (ATM, Debit Card, Mobile Transfer and Internet Banking). The constant has a negative coefficient of -1.586667 and implies that customer satisfaction is likely to decrease constantly by -1.586667 with the use of the electronic payments system.

The associated probabilities of the z-statistics for Debit Card, Mobile Transfer, Internet Banking and the constant variable are all 0.000 respectively, which imply that they are all statistically significant at 1% level of significance.

The Wald  $\chi^2$  (4) is 97.48 with an associated probability (Prob.  $\chi^2$ ) of 0.0000, implying that the model is statistically significant at 1% level of significance.

The robust standard error was used in the computation to adjust for problems of normality and heteroscedasticity.

#### **Benefits Associated with the Use of Electronic Payment System**

The table 4.2 below shows the investigation on the benefits associated with the use of electronic payment system by bank customers.

Table 4.2 Benefits Associated with the Use of Electronic Payment System

| Questions                                                                              | Percent % |
|----------------------------------------------------------------------------------------|-----------|
| Electronic Payment System has brought you convenience in conducting your transactions? |           |

|                                                                                              |       |
|----------------------------------------------------------------------------------------------|-------|
| Yes                                                                                          | 78.21 |
| No                                                                                           | 21.79 |
| Electronic Payment System has reduced your risk of cash related crimes?                      |       |
| Yes                                                                                          | 72.22 |
| No                                                                                           | 27.78 |
| Electronic Payment System has brought you cheaper access to out-of- branch banking services? |       |
| Yes                                                                                          | 70.94 |
| No                                                                                           | 29.06 |

**Source: Authors' Investigation, 2015**

From table 4.2, 78.21% of the respondents agreed that the Electronic Payment System has brought them convenience in their transactions with banks. 72.22% of the respondents are of the opinion that the Electronic Payment System has reduced their risk of cash related crimes, while 70.94% of the total respondents agreed that the Electronic Payment System has given them the opportunity to cheaper access to out-of-branch banking services.

### **Problems Associated with Electronic Payment System as Substitute to the Cash Based System.**

Table 4.3 below shows some of the challenges faced by the users of the Electronic Payment System in Nigeria.

**Table 4.3 Problems Associated with the Electronic Payment System**

| <b>Questions</b>                                                                           | <b>Percent %</b> |
|--------------------------------------------------------------------------------------------|------------------|
| Do you find the Electronic Payment System to be challenged by e-payment Fraud?             |                  |
| Yes                                                                                        | 87.39            |
| No                                                                                         | 12.61            |
| Do you find the Electronic Payment System to be challenged by epileptic power supply?      |                  |
| Yes                                                                                        | 66.88            |
| No                                                                                         | 33.12            |
| E-payment is challenged by limited ATM and point-of-sales terminals at priority locations? |                  |
| Yes                                                                                        | 91.88            |
| No                                                                                         | 8.12             |

|                                                                        |       |
|------------------------------------------------------------------------|-------|
| E-payment is challenged by indiscriminate and exorbitant bank charges? |       |
| Yes                                                                    | 55.13 |
| No                                                                     | 44.87 |
| Electronic Payment System is challenged by network-down-time?          |       |
| Yes                                                                    | 87.39 |
| No                                                                     | 12.61 |

**Source: Authors' Survey, 2015**

The above table 4.3 represents the responses of the respondents on the challenges associated with the use of the e-payment system. A total of 87.39% of the total respondents agreed that the electronic payment system is challenged with e-payment fraud, 66.88% of the respondents agreed that the users' of electronic payment system are faced with problems of epileptic power supply, 91.88% agreed on limited Point-of-Sales (POS) terminals/Automated Teller Machines (ATMs) at priority locations, 55.13% of the respondents opined exorbitant bank charges for using the e-payment products, while 87.39% complained that they are challenged by network down-time. On the other hand, 12.61%, 33.12%, 8.12%, 44.87%, and 12.61% of the total respondents opined that the electronic payment system is not challenged with the e-payment fraud, epileptic power supply, limited ATM/POS terminals, exorbitant bank charges, and network down-time respectively.

Linking the theories adopted by this research work in discussing the findings of this study; the Diffusion of Innovation theory and the Technology Acceptance are two similar theories on technology adoption with five and two constructs respectively. The findings of this research work shows that factors influencing the adoption of the electronic payment system are its user-friendliness, convenience, usefulness and ease-of-use (non-difficulty to understand), as well as the findings on benefits of the electronic payment system which include reduced risk of cash related crimes, cheaper access to out-of-branch banking services as well convenience in conducting banking transaction, are all in conjunction with the constructs provided by the two theories. The findings of this research work is therefore consistent with the findings of Rogers (1995); Pikkarainen, Pikkarainen, Karjaluoto and Pahlila (2004); Hogarth, Kolodinsky and Gabor (2008); Park (2009); and Okafor and Ezeani (2012).

Applying the Kano's Model of Customers' Satisfaction to the findings of this research work, the e-payment facilities (ATM, Debit Cards, Mobile Transfer, Internet Banking) are the must-be requirements expected by customers' desiring to use electronic payment facilities of banks. The findings such as convenience, user-friendliness, usefulness, non-difficulty of use of this research work are factors that can attract customers' to using the e-payment system and ultimately bring about customers satisfaction. This is therefore in line with One Dimensional Requirement and

the Attractive Requirements of the Kano's Model. Perhaps, this accounted for the significant impact of the Electronic Payment System on customers' satisfaction, established by this study.

The findings of this study is therefore consistent with the findings of Walder (1993), Sauerwein, Bailom, Matzler, and Hinterhuber (1996), Jacobs (1997), Ungvari (1999), Zultner and Mazur (2006).

### **Conclusion and Recommendations**

This study concludes that the electronic payment system has significant impact on bank customers' satisfaction in the Ilorin metropolis of Kwara State, though with attendant challenges associated with the use of the e-payment facilities. If the recommendations of this study are implemented by the relevant stakeholders, there is every likely-hood that more Nigerians will adopt the technology in carrying out their banking transactions, which in-turn will have great effect on the Nigerian financial system-the payment and settlement system in particular, and the entire economy in general. This study recommends that: (i) the Central Bank of Nigeria (CBN) being a supervisory and regulatory body concerned should embark on public enlightenment on the use of e-payment system; (ii) it should specifically put in place a policy on 'e-transact' to enable Nigerians adopt the use of the electronic payment system before going cashless. This is because the cashless policy which the CBN has recently introduced cannot thrive or work without customers first embracing the e-payment facilities; (iii) the government of Nigeria should put in place customer protection measures through the CBN in order to make banks address challenges such as e-payment fraud, exorbitant charges, limited POS/ATM at priority locations and network down-time. Addressing these challenges will not only lure more customers to using the e-payment facilities but will also increase the confidence of its existing users' about the technology; and (iv) the government should put in place enabling infrastructures, especially stable power supply, this will go along away to address the problem of epileptic power supply. Providing a stable power supply will not only encourage customers' to using the e-payment facilities on demand but it will also reduce the banks running cost which are usually shifted on customers, resulting to exorbitant bank charges.

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