



UNILAG JOURNAL OF BUSINESS



DEPARTMENT OF BUSINESS ADMINISTRATION
UNIVERSITY OF LAGOS, AKOKA.

SOCIO-DEMOGRAPHIC FACTORS AND AUTOMATED TELLER MACHINE USAGE IN LAGOS STATE, NIGERIA

Ighomereho, O. Salome¹ and Dixon-Ogbechi, N. Bolajoko²

¹Department of Economics and Business Studies, Redeemer's University, Ede,
Osun State, Nigeria

E-mail: ighomerehosalome@gmail.com

²Department of Business Administration, University of Lagos, Lagos, Nigeria

E-mail: bdogbechi@gmail.com

Abstract

Automated Teller Machines (ATMs) are designed to make some banking transactions more convenient and efficient for customers. However, it has been observed that banks still have several customers using branch banking for transactions that could be carried out with ATM. The study investigates this problem from the perspective of socio-demographic factors by examining the influence of gender, age, level of education, income and nature of occupation on ATM usage in Lagos State, Nigeria. Five hypotheses were formulated and tested. The study adopted quantitative approach and cross-sectional research design. Three hundred (300) ATM users were selected for the study using Multi-stage sampling technique. Data were collected with the aid of questionnaire. The data were analysed descriptively using frequency, percentage, mean and standard deviation while General Linear Model (GLM) was used for inferential statistics. The results from the analyses revealed that age and education influence ATM usage while gender, income and occupation do not influence ATM usage. It was also found that ATM is mostly used for cash withdrawals even though it can be used for other transactions. Therefore, the study recommends that socio-demographic factors especially age and level of education should not be overlooked when designing ATM marketing strategies.

Key words: ATMs, technology-based services, customer, usage, demography,

Introduction

The market for a product is made up of customers who differ in their characteristics in such a way that some aspects of their demand also differs (Odugbesan, 2000). Customer characteristics can be described in terms of demographic, geographic, psychographic and behavioural characteristics (Nynne, 2010). Demographic characteristics deal with basic demographic factors such as age and gender while socio-demographic include other variables such as income, education and so on. Geographic characteristic is based on geographical areas such as nations, regions and cities. Psychographic characteristic is based on

the values and lifestyle of the customers while behavioural characteristics relates to attitude. Socio-demographic characteristics appear to be the most common and generally accepted bases for segmenting markets and customers (Nynne, 2010). Socio-demographics enable managers to understand the basic profile of target customers. Socio-demographics could also play a vital role in understanding the behaviour of customers in different market segments. When the characteristics are identified, they may be used to develop products according to customer's specific requirements and preferences. Such understanding can assist in formulating appropriate marketing strategies to improve the product. Moreover, it may provide a basis for marketers to better target the right customers for their products and to attract more customers.

Chaffey, Ellis-Chadwick, Mayer and Johnston (2006) opined that within every country, acceptance of a technology varies significantly according to individual socio-demographic characteristics. Customers' demography is fundamental to marketing practice including technology-based services. As such, it has been widely used to distinguish between segments of customers (Kotler, 2003). Marketers must know and understand demographics in order to effectively assess the size, reach and efficiency of the market (Kotler, 2003). Demography also allows a business with target markets that cut across different demographic levels to promote different products to the dissimilar groups. Furthermore, socio-demographics are easier to measure than other segmentation variables (Stafford, 1996). It has been noted that socio-demographics will continue to be one of the most popular and well-accepted bases for segmenting markets and customers especially in the banking industry because some socio-demographic data are readily available in a bank database (Pooja, 2013).

It has been observed that a number of studies have pointed out the factors influencing the adoption and use of e-banking but little attention has been given to socio-demographic factors (Izogo, Nnaemeka, Onuoha & Ezema, 2012). This prompted the authors to examine the impact of socio-demographic variables on the use of e-banking such as ATMs, Internet Banking, Tele Banking and Mobile Banking. In this study, the focus is on ATM. The gap that needs to be filled is to determine the category of bank customers who use ATM without combining it with other e-channels.

Furthermore, it was observed from extant literature that the determination of the

specific socio-demographic factors that influence the use of e-banking appears to be inconsistent. This is because some researchers have found some socio-demographic factors such as gender and income to be significant factors influencing usage but in some other studies, they were not found to be significant. For instance, Mohammed (2012); Bishnoi (2013); Amar, Banodita and Kshitiz (2014) found that level of income significantly influence the use of e-banking. However, in the study of Rugimbana (1995) and Izogo *et al.* (2012) income was not significant. In another study by Renuka and Paulraj (2014), significant positive influence of socio-demographic factors on the use of ATM was found. All the socio-demographic factors investigated (gender, education, occupation and income) significantly influence ATM usage. It is on this note that this study investigates the socio-demographic factors that may significantly influence ATM usage in Lagos.

Literature Review

Theoretical Review

The theory underpinning this study is the socio-demographic theory. This theory was established by Edward and Kristopher (2010). The theory posits that the socio-demographic characteristics of individuals influence their behaviour. It has been noted that few studies have examined the influence of socio-demographic factors (Izogo *et al.*, 2012). This was confirmed by Ibrahim and Mohammed (2014) in their study of online purchase behaviour among professionals, a socio-demographic perspective. The authors further observed that the few conventional literatures that examined the effect of socio-demographic factors focused on offline behaviour. However, less empirical evidence is currently available to support this phenomenon in technology-based context and thus, the e-consumer behaviour is an emerging research area. ATM is one of the technology-based options in the banking system and its usage may be influenced by several factors but the focus of this study is on socio-demographic factors.

Automated Teller Machine (ATM): An Overview

ATM is a computerised machine that provides the customers of banks the facility of accessing their accounts for dispensing cash and to carry out other financial transactions without the need of actually visiting a bank branch (Asabere, Baah & Odediyah, 2012). It is one of the self-service technologies that have changed the way banking is carried out globally. It is set up to provide 24/7 service to bank customers without the need for human clerk or bank teller. Before the advent of

ATM, bank customers who want to perform any of the banking transactions, had to go to the bank and wait in line to be attended to by a bank staff, however the introduction of ATM has changed this system (Izogo *et al.*, 2012). The desire to measure up with global standards and to remain competitively relevant is propelling the growth and development of ATM in the banking industry (Oludimu & Olayinka, 2008).

The inventor of ATM can be traced to Luther George Simijan and John Shepherd-Barron (Miller, 2007; Kumbhar, 2011; Odusina, 2014). Some scholars (Miller, 2007) are of the view that ATM was originated by Luther George Simijan because the idea came from him. Other scholars (Odusina, 2014; Ogbuji, Onuoha and Izogo, 2012) believe that John Shepherd-Barron invented the machine. However, the idea of having a machine, that can automatically dispense cash, started in 1930s when George Simijan built the first version of an ATM (Miller, 2007, Kevin & David, 2008). At that time, the idea was greatly doubted but in 1960s the idea was looked at again by John Shepherd-Barron, managing director of De La Rue Instruments (Odusina, 2014).

Consequently, ATM was first installed by Barclays Bank in Enfield Town in North London, United Kingdom in 1967 (Kumbhar, 2011; Ogbuji *et al.*, 2012). It was introduced in Nigeria by the defunct Societe Generale Bank of Nigeria (SGBN) in 1989 (Odusina, 2014; Ogbuji *et al.*, 2012). With the use of ATM, plastic cards replaced checks in bank transactions while electronic terminal and computerized information system replaced the teller. At first, ATMs were operated as elitist services designed for those desirous of exclusive services. With the introduction of Guidelines on Electronic Banking by the Central Bank of Nigeria in 2003, ATM service became an important part of banking service in Nigeria. The deployment of ATM by banks and its use by bank customers have grown rapidly in recent times. Fasan (2007) noted that the rapid growth of ATM was due to the consolidation of banks in 2004 which made it possible for more banks to acquire ATMs. Agboola (2006) reported that although only a bank had an ATM as at 1998, by 2004 most of the banks that made it in the consolidation exercise had ATM. Also, the number of ATM transactions via the interswitch Network increased from 1,065,972 in 2004 to 144,110,773 in 2009 and now there are billions of ATM transactions (CBN, 2016). Despite this growth, the perception of ATM by bank customers appears to be varied and diverse. Some describe ATM as 'Avoid Travelling with Money' or 'Any Time Money' while

others see it as 'Automatic Thief Machine' or 'Avoid The Machine' (Okere, 2014).

ATM offers considerable benefits to both banks and their customers. The machine can enable customers to withdraw cash at more convenient times and places than branch banking which operate at stipulated hours. It has brought banking services closer to the customer and also given them the opportunity to access their money at any time of the day. On the other hand, the combined services of both the automated and human tellers imply more productivity for banks during banking hours and non-banking hours and so, there is continued productivity for the banks even after banking hours. Moreover, banks have taken advantage of ATM by using it as an advertising channel to advertise their services and even the products of other companies and to provide information. Banks also get significant cost savings, greater consumer involvement and efficiency in their operations through ATM (Madinios, Tsairidis & Grigoriadis, 2009; Bishnoi, 2013). According to Peppard (2000) cited by Alsudairi (2012), the following are the relative transaction cost associated with various service delivery channels in the banking industry:

Table 1: Transaction Cost Associated with Various Service Delivery Channels in the Banking Industry

S/N	Service Delivery Channel	Relative Transaction Cost
1	Branch Banking	1.20
2	ATM	0.40
3	Telephone Banking	0.30
4	PC Banking	0.20
5	Internet Banking	0.01

Source: Alsudairi (2012:7)

Table 1 shows the transaction cost associated with various service delivery channels in the banking industry. It indicates that the cost of a transaction carried out with an ATM is relatively less than the cost of a transaction conducted through branch banking. This is because ATMs are capable of handling more transactions per unit of time than tellers. Although the relative cost of ATM is higher than telephone banking, PC banking and internet banking, ATM is the most commonly

used self-service delivery channel and unlike the other service delivery channels, it can dispense cash (Alsudairi, 2012).

ATM Usage

Usage is one of the main issues that have to be addressed with the introduction of e-services due to individual diversity and the need to operate a machine to access the service (Batagan, Pocovnicu & Capisizu, 2009). Usage can be defined as the demonstrable willingness within a user group to continuously employ technology for the tasks it is designed to support (Dillon & Morris, 1996). In the view of Delone and McLean (2003) it is the degree and manner in which users utilize a system. The authors maintained that the concept is different from intention to use, as it does not apply to situations in which users claim they will employ it without providing evidence of use or the use of a technology for purposes unintended by the designers or providers. Delone and McLean (2003) noted that usage has to do with the nature, extent, quality and appropriateness of a system's use in terms of assessing if the full functionality of the system is being used for the intended purposes. In this study, ATM usage is conceptualized as the degree and manner in which ATM users utilize the machine in terms of regularity of use, time of use, purpose of use and continuity of use.

ATM Banking Services that Customers Use

Initially, ATM was developed as a cash machine or cash dispenser but it has evolved to include several other services such as cash deposit, checking account balances, view/print statements, pay bills, transfer of funds, buying airtime and BVN linking. Bishnoi (2013) as well as Yazeed, Yazidu and Ibrahim (2014) found that bank customers exhibit high level of use of ATMs only in cash withdrawals. The other functions of ATMs which are collectively aimed at maximizing the use of ATM are not fully utilized. In a study by Onovo and Enwelu (2011) on farmers' awareness and use of ATMs in some selected communities in Enugu, Nigeria, majority of the farmers indicated the use of ATM for cash withdrawals while other transactions included are transfer of funds and payments.

In the study of Fawzi (2012) bank customers use ATMs for simple services such as cash withdrawals and balance inquiries. The author claimed that this is consistent with previous findings that more than 75 percent of all ATM transactions are cash withdrawals, with the remaining being balance inquiries

and deposits. The author opined that bank customers perceive cash withdrawals and balance checking to be easy, whereas all age groups perceive making payments and transfers as difficult. They further stated that the inability on the part of customers to exploit these opportunities provided by ATM is mainly due to reasons such as inadequate knowledge about the functions of the ATM apart from cash withdrawals, inability to perform the functions and fear of fraud.

Challenges Customers Encounter with ATM

Banks have extended ATM from bank branches to shopping malls, campuses, hospitals, filling stations, hotels and other strategic locations to offer customers easy and convenient access to banking services (Mwatsika, 2016). However, as with every other technology-based service, ATMs have generated challenges and problems for bank customers in Nigeria. In a study by Onyedimekwu and Oruan (2013) it was found that bank customers, who actively use ATM, are convinced that it is convenient, easy to use and appropriate for their banking needs however, network and the security of the system are major challenges to the users. Customers expect quality services but majority of the customers the authors studied were not satisfied with how banks handle their ATM complaints, functionality of the ATM and long queues in using ATM. Kevin and David (2008); Oludimu and Olayinka (2008) also noted that ATM customers are concerned about network failure, inadequate ATM, low speed, security and unavailability of cash. Onovo and Enwelu (2011) found that the serious constraints to the use of ATM include fraud, charges on the use of ATM and network problems. This indicates that there are issues with ATM and the literature has brought forth series of challenges and difficulties that customers encounter while using ATMs that could prevent its proper use (Kevin & David, 2008; Fawzi, 2012; Haruna, 2013). The most commonly mentioned challenges include:

Machine out of cash: ATM customers are sometimes confronted with machine out of cash situation. At times, ATM displays 'inability to dispense cash'. This is when there is no cash in the machine and so it will be unable to dispense cash.

Out of Service: There is also the problem of out of service as a result of network failure. When an ATM is out of service, it cannot be used for any transaction. As such, bank customers who would have used it will have no choice than to use teller.

Slow speed of ATM: There are also situations where ATM becomes very slow. When this is the case, the transaction processing time will be more than necessary. This problem usually gives rise to long queues.

Long queues experienced by customers: At times, the queue at ATM points is unbearable. This usually increases the time customers spend at the ATM. Such long queues usually give rise to manoeuvring and lack of privacy in the use of the machine. Long queues have been attributed to machine related problems, inexperience of some ATM users who waste time and difficulties in using the machine.

Debit without cash payment: It is common for ATM to debit a customer's account without release of cash only to credit such account after some time. In some cases especially if the ATM is for another bank, the credit could take some time. It becomes a major problem if the ATM user has immediate need for the money. There are also cases where customers are debited twice for a transaction. This is usually attributed to machine failure.

Non printing of statement: There are some bank customers that may want to print their account statement or completed transactions but due to inability of the machine to print, they will not be able to get the printed statement.

Card Jamming: At times, ATMs malfunction and swallow a user's card. The customer will then have to contact the bank to retrieve the card. When this occurs on a weekend, the user may have to wait for several days before getting the card.

Empirical Review

Socio-demographic Factors and ATM Usage

Socio-demographic factors group customers into segments. In this study, socio-demographic factor was measured on the basis of gender, age, level of education, monthly income/allowance and nature of occupation. Previous studies on the relationship between each of socio-demographic factors and ATM usage are discussed below:

Gender and ATM Usage

Joshua and Koshy (2011) investigated usage patterns of electronic banking services by urban educated customers in India and found that men are more likely to use electronic banking than woman as women are more concerned for privacy

and security issues. Similarly, in the study of Mohammed (2012) and Adelowo, (2015) gender was found to be a significant factor influencing ATM usage, however, this relationship was found to be non-significant by Izogo *et al.* (2012) and Yazeed *et al.* (2014). It has been found in some cases that gender influences technology usage whereas in some other cases gender differences were not discerned (Ananya & Sraboni, 2016). Hence, the following hypothesis is to be tested:

H₁: Gender does not have significant influence on ATM usage in Lagos State, Nigeria.

Age and ATM Usage

Some researchers (Rugimbana, 1995; Izogo *et al.*, 2012; Mohammed, 2012) have found a negative relationship between the age of a bank customer and the use of e-banking as mature customers find it difficult to learn and use new technologies. It has been observed that most ATM users belong to the young generation and the chance of its usage among old people is low (Amar *et al.*, 2014). That is why Stafford (1996) opined that age factor allows a marketer to determine how wants and needs change as an individual matures. It is believed that older customers are reluctant to use ATM due to technical complexities, security or due to fear of losing their money and so they are comfortable with branch banking (Olatokun & Igbinedion, 2009). Mohammed (2012) noted that older bank customers prefer personal service to machines and so they will always use branch banking even if they have ATM card. Therefore, the following hypothesis is to be tested:

H₂: Age does not have significant influence on ATM usage in Lagos State, Nigeria.

Level of Education and ATM Usage

Studies have also found that level of education has significant impact on the usage of technology-based services because as the level of education increases, the likelihood of adopting and using self-service increases (Rugimbana, 1995; Izogo *et al.*, 2012; Mohammed, 2012; Adelowo, 2015). Also, in the studies of Amar *et al.* (2014) and Yazeed *et al.* (2014) level of education was found to be a significant factor influencing ATM usage. Hence, the following hypothesis is to be tested:

H₃: Education does not have significant influence on ATM usage in Lagos State, Nigeria.

Income and ATM Usage

Income has also been found to influence the usage of technology-based services by some researchers (Amar *et al.*, 2014) while some other researchers (Izogo *et al.*, 2012) did not find it significant. Amar *et al.* (2014) observed that the usage of ATM is high among middle income group as compared to low income group and high income group indicating that level of income influences ATM usage. Consequently, the following hypothesis is to be tested:

H₄: Income does not have significant influence on ATM usage in Lagos State, Nigeria.

Occupation and ATM Usage

Another important factor that influences customer's usage of technology is occupation or employment status. Some studies (Rugimbana, 1995; Mohammed, 2012; Amar *et al.*, 2014) have found that occupation has significant impact on customer adoption and usage of ATM services and that students use ATM mostly. As such, the following hypothesis is to be tested:

H₅: Occupation does not have significant influence on ATM usage in Lagos State, Nigeria.

Methods

Research Approach

A quantitative research approach was chosen for this study. Quantitative research methodology attempts to uncover numerically the relevance of data to a problem by quantifying results from the study. It involves the collection and analysis of numerical data and the application of statistical test (Collins & Hussey, 2009). Quantitative unlike qualitative approach is best suited when emphasis is on testing and verifying hypotheses. It allows the researcher to develop hypotheses, which are tested and interpreted numerically (Mahoney & Goertz, 2006). Since this study is designed to test hypotheses, quantitative research approach was adopted.

Population

The population of this study comprises ATM users in Lagos State, Nigeria. Lagos State was chosen because it is the first State to commence the cashless policy initiated by the Central Bank of Nigeria (CBN). The pilot of the policy took effect in Lagos on January 1, 2012 (CBN, 2012, Okeke, 2013; Nwachukwu, 2014) while a full-scale implementation in the entire country took effect from 1st July, 2014 (Nwachukwu, 2014). These attributes make Lagos State the best single choice in Nigeria.

Sampling Technique and Sample Size

Lagos State is made up of five divisions (Ikeja, Badagry, Ikorodu, Lagos and Epe). Simple random sampling technique was used to select three divisions (Ikeja, Ikorodu and Lagos) out of the five divisions. Thereafter, judgemental sampling was used to select ATM points in the three selected areas in Lagos State that had queues and security guards. This was necessary so that the respondents can complete the questionnaire while waiting to use the ATM. Also, respondents who could not complete the questionnaire immediately but are living within the vicinity were allowed to go with them and return them at a later time to a specified security guard. Purposive sampling technique was then used to select the respondents for the study. The ATM users selected were those who have used ATM for more than a year.

The sample size for the study was determined using qualitative approach. One hundred (100) ATM users were selected from each of the three divisions (Ikeja, Ikorodu and Lagos). Therefore, a total of three hundred (300) ATM users were selected for the study.

Instrumentation

Questionnaire was used to collect data for the study. The Questionnaire consists of thirty two (32) items categorized into three sections. Section A consists of six (6) items on socio-demographic factors which include gender, age, level of education, monthly income/allowance, nature of occupation and type of bank customer. The socio-demographic factors were adopted from Sindwani and Goel (2015). Section B which also comprised of six (6) items measured ATM usage. The items on ATM usage were adapted from Delone & McLean (2003) and Talukder, Quazi & Sathye (2014). The items were modified to fit this study. Section C consists of twenty (20) items relating to the level of use of ATM, purpose and challenges of ATM usage.

Method of Data Analysis (General Linear Model)

Most of the studies apart from Pooja (2013) that investigated the influence of socio-demographic factors employed ANOVA and t-test which cannot provide the extent to which socio-demographic factors predict. This implies that there is need for studies to determine the extent to which socio-demographic factors predict ATM usage by employing a more advanced statistical technique like General Linear Model (GLM) which is able to indicate the extent of prediction. If banks are to reap the benefits of ATM, then they need to understand the characteristics related to ATM customers and the extent to which they predict usage.

GLM was employed to determine the socio-demographic factors that influence ATM usage. GLM is a statistical analysis technique for testing and estimating relationships in which the independent variables could be nominal, ordinal, interval or ratio (Miller & Haden, 2006). GLM is one of the most appropriate parametric statistical tools when the dependent variable to be predicted is a continuous or interval (scale) data and the independent variables are categorical data or a combination of categorical and scale data because it is a combination of ANOVA and regression analysis (Miller & Haden, 2006; Chartier & Faulkner, 2008). It uses an ANOVA procedure in which the calculations are performed using a least squares regression approach to describe the statistical relationship between one or more independent variables of any nature but with a continuous or scale dependent variable. GLM examines predictive relationships (regression) that differ between groups (ANOVA). The dependent variable is linearly related to the factors (categorical) and covariates (scale) through a specified link function (Alan, 2011).

The general equation for GLM is given as:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_n X_n \quad (1)$$

Where:

Y = The Dependent Variable: This refers to the variable of interest which the study is trying to estimate based on the given values of the independent variables. In this study, the dependent variable is ATM usage.

β_0 = The intercept: The value the dependent variable will assume when the independent variables are zero.

X_1 to X_n = The independent Variables: This refers to the variables on which the estimate depends. In this study, the independent variables are the socio-demographic factors.

β_1 to β_n = GLM coefficients.

Results

Out of the three hundred (300) copies of questionnaire administered, two hundred and fifty six (256) were retrieved and used for the analyses.

Level of Use of ATM

Table 2: Respondents' Level of Use of ATM

Number of Bank Account	Frequency	Percent (%)
One	83	32.4
Two	129	50.4
Three	37	14.5
Four and above	7	2.7
Total	256	100
Number of ATM Card		
One	107	41.8
Two	118	46.1
Three	27	10.6
Four and above	4	1.5
Total	256	100
Duration of using ATM		
Less than 1 year	Nil	0.0
1-3 years	35	13.7
3-5 years	95	37.1
5 years and above	126	49.2
Total	256	100

Source: Field Survey (2017)

Table 2 shows the number of bank account owned by the respondents. 32.4 percent of the respondents had one bank account, 50.4 percent had two bank accounts, 14.5 percent had three bank accounts while 2.7 percent had four and above bank accounts. The result indicates that majority of the respondents (over 50 percent) had two bank accounts. This seems to suggest that most bank customers have more than one bank account. The Table further shows the number of bank account that the respondents had ATM card. 41.8 percent of the respondents had one ATM card, 46.1 percent had two ATM cards, 10.6 percent had three ATM cards while 1.5 percent had four and above ATM cards. The result indicates that majority of the respondents had one or two ATM cards. From the result, it appears that most bank customers (over 50%) have multiple ATM cards and it seems that some of the respondents do not have ATM card for all their bank

accounts. The Table also shows the number of years that the respondents have been using ATM. The result shows that 13.7 percent have been using ATM for between 1-3 years, 37.1 percent have been using ATM for between 3-5 years while 49.2 percent have been using ATM for 5 years and above. The result indicates that majority of the respondents (almost 50 percent) have been using ATM for over 5 years. None of the respondents have used ATM for less than 1 year.

Purpose for Using ATM

Table 3: Banking Transactions Respondents use ATM for

Banking Transaction	Frequency	Percent (%)
Cash withdrawal	256	100
Deposit cash	19	7.4
Check account balances	225	87.9
View/print account statements	58	22.7
Pay Bills	26	10.2
Transfer of funds	33	12.9
Airtime top-up	38	14.8
BVN linking	8	3.1

Source: Field Survey (2017)

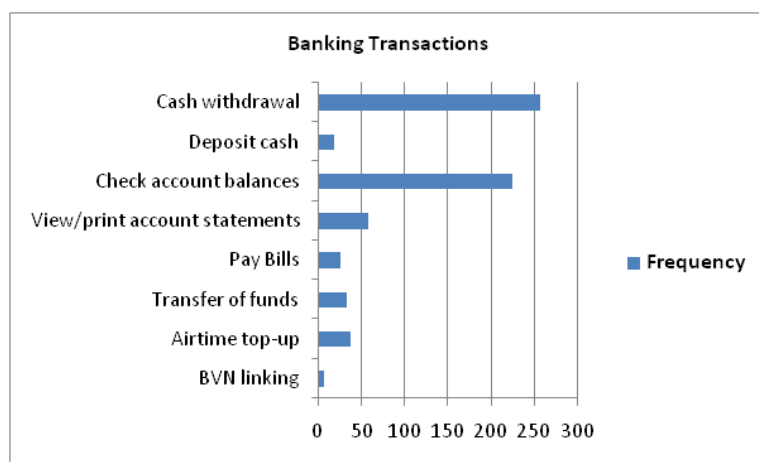


Figure 1: Banking Transactions Respondents use ATM for
Source: Field Survey (2017)

As depicted in Table 3 and Figure 1, 100 percent of the respondents have used ATM for cash withdrawal, 7.4 percent have used it for cash deposit, 87.9 percent to check account balance, 22.7 percent to view/print account statements, 10.2 percent to pay bills, 12.9 percent to transfer funds, 14.8 percent for airtime top-up while 3.1 percent have used it for BVN linking. The result indicates that most ATM users employ ATM for cash withdrawal and for checking account balance. This seems to suggest that most ATM users perceive it as a cash dispenser and the practice of using ATM for other banking transactions is yet to gain ground in Nigeria.

Challenges of ATM

Table 4: Challenges encountered while using ATM

Challenges encountered while using ATM	Frequency	Percent (%)
Card jamming	133	51.9
Machine out of cash	248	96.9
Debited without cash payment	164	64.1
Debited twice for a transaction	37	14.5
Slow speed of ATM	123	48.0
Out of service	243	94.9
Inadequate ATM points	88	34.4
Non printing of statement	56	21.9
Long waiting time in queue	176	68.8

Source: Field Survey (2017)

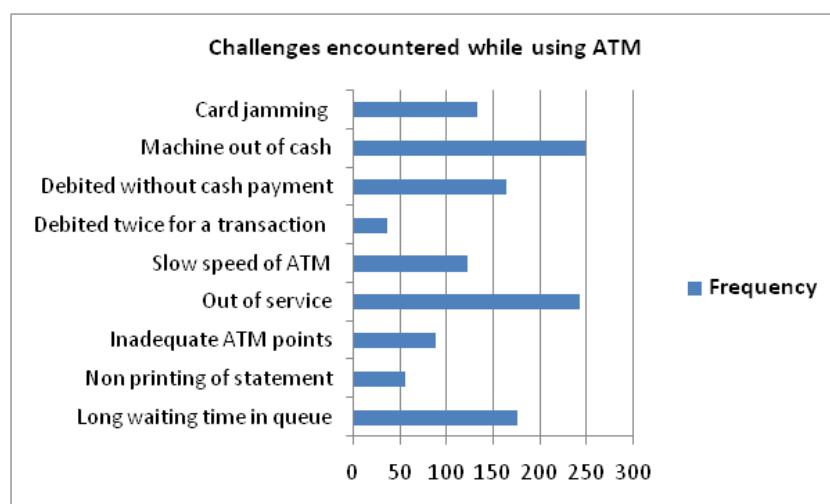


Figure 2: Challenges Respondents Encounter while using ATM

Source: Field Survey (2017)

Table 4 and Figure 2 show that 51.9 percent of the respondents have experienced card jamming, 96.9 percent have encountered machine out of cash, 64.1 percent have been debited without cash payment, 14.5 percent were debited twice for a transaction, 48.0 percent have experienced slow speed of ATM, 94.9 percent have encountered ATM out of service, 34.4 percent reported inadequate ATM points, 21.9 percent non printing of statement while 68.8 percent have experienced long waiting time in queue. The result seems to suggest that most of the respondents (over 90 percent) have experienced machine out of cash and out of service. This indicates that there are times when some of the respondents wanted to use ATM but were unable to use the machine due to temporary inability to dispense cash or out of service.

Influence of Socio-demographic Factors on ATM Usage **Descriptive Statistics**

Table 5: Descriptive Statistics of Socio-demographic Factors with respect to ATM Usage

Table 5: Descriptive Statistics of Socio-demographic Factors with respect to ATM Usage

Socio-demographic Variable		Frequency	Mean	Std. Deviation
Gender	Male	134	3.56	0.716
	Female	122	3.44	0.759
	Total	256		
Age	Below 21	29	3.30	0.710
	21-30	64	3.89	0.691
	31-40	83	3.88	0.787
	41-50	61	3.56	0.702
	51 and above	19	2.82	0.699
	Total	256		
Education	Secondary	71	3.08	0.675
	Graduate	105	4.01	0.746
	Post-graduate	80	3.46	0.673
	Total	256		
Income	Below N100,000	112	3.56	0.679
	N100,000 - N300,000	76	3.55	0.770
	N300,001- N500,000	38	3.46	0.728
	N500,001 and above	30	3.42	0.780
	Total	256		
Occupation	Government Service	70	3.26	0.765
	Private Service	82	3.95	0.699
	Self-employed	56	3.39	0.703
	Student	48	3.46	0.721
	Total	256		

Source: Field Survey (2017)

Table 5 shows the descriptive statistics of ATM usage among the socio-demographic factors. The mean values indicate that ATM usage is higher among males (3.56) than females (3.44). With respect to age, ATM usage was found to be higher among those within the age bracket of 21-30 (3.89) and 31-40 (3.88). For level of education, ATM usage is higher among graduates (4.01). With respect to income, ATM usage is higher among those with income up to N300,000 (below N100,000=3.56 and N100,000-N300,000=3.55) while for nature of occupation, ATM usage is higher among those in private service (3.95). The results seems to suggest that ATM users who are using the machine more adequately and appropriately are males who are aged between 21 to 40 years, have graduate education, earn up to N300,000 and are in private service.

Hypotheses Testing

To examine if the differences in ATM usage among the socio-demographic factors are significant, General Linear Model (GLM) analysis was employed.

Table 6: Summary of GLM Analysis of Socio-demographic Factors and ATM Usage

Source	Type III Sum of Squares	Df	Mean Square	F	t-value	p-value	R ²
Corrected Model	41.777	5	8.355	18.339		0.000	0.171
Intercept	15.311	1	15.311	33.605	1.255	5.797	0.000
Gender	0.651	1	0.651	1.429	-0.077	-1.195	0.233
Age	19.470	1	19.470	42.733	-0.272	-6.537	0.000
Education	32.775	1	32.775	71.937	0.380	8.482	0.000
Income	1.419	1	1.419	3.114	-0.054	-1.765	0.078
Occupation	0.477	1	0.477	1.047	0.033	1.023	0.307
Error	203.203	250	0.456				
Total	1728.361	256					
Corrected Total	244.981	255					

Source: Field Survey (2017)

The result in Table 6 shows the GLM analysis on the determination of the socio-demographic factors that influence ATM usage. The analysis indicates an R Square value of 0.171 meaning that socio-demographic factors explain 17.1 percent of the variation in ATM usage. The result also reveals that age ($F=42.733$, $\beta = -0.272$, $t = -6.537$, $p=0.000<0.05$) and education ($F=71.937$, $\beta = 0.380$, $t = 8.482$, $p=0.000<0.05$) have statistical significant influence on ATM usage while gender ($F=1.429$, $\beta = -0.077$, $t=-1.195$, $p=0.233>0.05$), income ($F=3.114$, $\beta=-0.054$, $t = -1.765$, $p=0.078>0.05$) and occupation ($F=1.047$, $\beta = 0.033$, $t=1.023$, $p=0.307>0.05$) have no statistical significant influence on ATM usage. This implies that some of the socio-demographic factors (age and education) influence ATM usage while others (gender, income and occupation) do not influence ATM usage. The result in Table 6 further shows that age has a negative relationship with ATM usage while education has a positive relationship with ATM usage. This implies that the higher the age of a bank customer, the lower ATM usage. Although, the mean values for level of education with respect to ATM usage do not show a perfect consistent flow (see Table 5), the positive sign do reveal that the higher the level of education of a customer, the higher ATM usage. This seems to suggest that young bank customers with high level of education are more likely to use ATM regularly for different ATM services than older and less educated customers. Based on the results, hypotheses 2 and 3 were accepted while hypotheses 1, 4 and 5 were rejected.

Discussion

The objective of this study was to determine the socio-demographic factors (gender, age, education, income and occupation) that influence ATM usage in Lagos State, Nigeria. The results of the hypotheses tested reveal that ATM usage is influenced by age and education. This finding supports the finding of Izogo *et al.* (2012) that e-banking usage is high among young people because e-banking usage pattern tend to decrease with age. Also, Izogo *et al.* (2012) noted that e-banking usage requires some level of education to be able to operate and follow instructions. Joshua and Koshy (2011); Mohammed (2012) found that gender significantly influence ATM usage, but this study did not find gender to be significant. However, it is in agreement with the finding of Bishnoi (2013) and Yazeed *et al.* (2014) that gender does not influence ATM usage. The finding that gender does not influence ATM usage may likely be explained by the change in the role of women. Currently, most women are working and so they have bank

accounts which necessitate ATM usage. Also, due to the increase in the level of education of women, the gender divide seems to be disappearing. Moreover, in this study, income and occupation were found to be non-significant but Mohammed (2012) and Bishnoi (2013) found income and occupation as significant factors influencing ATM usage.

Implications of the Study

Based on the analyses and the results obtained, it is established that there is some level of association between socio-demographic characteristics of ATM users and ATM usage. This has implication for bank marketers and banking industry regulators. The study has provided a broad indication of the market segments that banks should focus on in designing ATM marketing strategy. The identification and understanding of customers' socio-demographic characteristics and the profile of customers play a vital role in understanding the behaviour of customers in different segments and when the characteristics are identified, they can be used to develop services according to customers' specific requirement and preference. Such understanding can also assist banks in formulating appropriate marketing strategies to improve ATM service as well as to develop carefully targeted strategies aimed at boosting adequate use of ATM. Moreover, it will provide a basis for the Nigerian banking industry to better target the right customers for their ATM service and to attract more bank customers to use ATM. This will help to reduce cash in circulation, thus, promoting a cashless Nigeria.

Conclusion and Recommendations

Attempt has been made in this study to determine the socio-demographic factors that influence ATM usage in Lagos State, Nigeria. The results of the analysis revealed that ATM usage is influenced by age and education. Contrary to the expectations of this study that the selected socio-demographic factors will significantly influence ATM usage, gender, income and occupation do not have significant influence on ATM usage. As the transition from conventional banking practices to e-banking increases, this study will provide useful information to financial institutions, banking industry regulators, policy makers and government in their efforts to make ATM relevant in the banking system.

Based on the findings, the study recommends that socio-demographic factors should not be overlooked when designing ATM marketing strategies. Especially, there should be financial literacy education for the less educated and aged bank customers so that they can function appropriately in the modern banking system.

Also, bank customers should be informed and encouraged on how to use ATM for other banking transactions such as payment of bills and fund transfer and not just for cash withdrawal and balance inquiry only. There is need for banks to promote other banking transactions that ATM can be used for. This could involve educating ATM users on how to use ATM for other banking transactions. Apart from writing all the possible banking transactions ATM can be used for at every ATM gallery, banks should also indicate the step-by-step procedure to perform the functions. The steps can be displayed on the ATM screen when not in use. Finally, banks should make efforts to eradicate or minimize the challenges customers face when they use ATM.

REFERENCES

- Adelowo O.T. (2015). The perception and use of Electronic Banking among business executives in Lagos State, Nigeria. *Greener Journal of Business and Management Studies*, 5(2), 47-56.
- Agboola, A (2006). Growing information: Part 1. Retrieved January 20, 2016 from www.books.google.com.ng.
- Alan, T. (2011). *Using the GLM Procedure in SPSS*. Retrieved January 10, 2016 from www.psy.mq.edu.au/psystat/documents/GLMSPSS.pdf
- Alsudairi, M.A.T. (2012). E-service quality strategy: achieving customer satisfaction in online banking. *Journal of Theoretical and Applied Information Technology*, 38(1), 6-24.
- Amar, D., Banodita, A. & Kshitiz, U. (2014). Perception of bank customers about Automated Teller Machine (ATM) service quality. *Banking Journal*, 2(2), 23-38.
- Ananya, G. & Sraboni, D. (2016). Gender differences in technology usage- a literature review. *Open Journal of Business and Management*, 4(1), 51-59.
- Asabere, N.Y., Baah, R.O. & Odediyah, A.A. (2012). Measuring standards and service quality of Automated Teller Machines (ATMs) in the banking industry of Ghana. *International Journal of Information and Communication Technology Research*, 2(3), 216-226.
- Batagan, L., Pocovnicu, A. & Capisizu, S. (2009). E-service quality management. *Journal of Applied Quantitative Methods*, 4(3), 372-381.
- Bishnoi, S. (2013). Demographic variables and ATM services: An empirical survey. *GMJ*, VII (1&2), 34-53.
- Central Bank of Nigeria (CBN, 2012). Cash-less Nigeria. Retrieved March 12, 2016 from <http://www.cenbank.org/cashless/>
- Central Bank of Nigeria (CBN, 2016). Guidelines on operations of electronic payment channels in Nigeria. Retrieved May 20, 2016 from <https://www.cbn.gov.ng/out/2016/bpsd/approved%20guidelines.pdf>
- Chaffey, D., Ellis-Chadwick, F., Mayer, R. & Johnston, K. (2006). *Internet marketing: strategy, implementation and practice*. Harlow: Prentice Hall.
- Chartier, S. & Faulkner, A. (2008). General Linear Models: an integrated approach to statistics. *Tutorials in Quantitative Methods for Psychology*, 4, 65-78.
- Collis, J. & Hussey, R. (2009). *Business research: a practical guide for undergraduates and postgraduate student*. Basingstoke: Palgrave.

- DeLone, W. & McLean, E. (2003). The DeLone and McLean Model of information system success: a ten year update. *Journal of Management Information System*, 19(4), 9-30.
- Dillon, A. & Morris, M. (1996). User acceptance of new information technology: theories and models. In M. Williams (ed.) *Annual Review of Information Science and Technology*. Medford NJ: Information Today, 3-32.
- Edward, C. & Kristopher, R. (2010). Socio-demographic Determinants of Economic Growth: Age-Structure, Preindustrial Heritage and Sociolinguistic Integration. *Social Forces*, 88(5), 2217–2240
- Fasan, O. (2007). The adoption of ATM in Nigeria. Retrieved January 20, 2016 from iist.org/Vol6//SITv6,P373-393,olatokun63.pdf.
- Fawzi A.S. (2012). Customers' financial needs satisfaction and self-service technology banking: the case of Automatic Teller Machines (ATMs) in Jordan. *International Journal of Business and Social Science*, 3 (9), 191-200.
- Ganesan-Lim, C., Russell-Bennett, R. & Dagger, T. (2008). The impact of service contact type and demographic characteristics on service quality perceptions. *Journal of Services Marketing*, 22(7), 550-561.
- Haruna, I. (2013). Customers' experiences with ATM: a comparative analysis of GCB and Barclays bank ATM services. *Advances in Agriculture, Sciences and Engineering Research*, 3(3), 724-734.
- Ibrahim, A. & Mohammed, R. (2014). Online purchase behaviour among professionals: a socio-demographic perspective for Turkey. *Economic Research*, 27(1), 689-699.
- Izogo, E.E., Nnaemeka, O.C., Onuoha, O.A. & Ezema, K.S. (2012). Impact of demographic variables on consumers' adoption of e-banking in Nigeria: an empirical investigation. *European Journal of Business and Management*, 4(17), 27-39.
- Joshua, A.J. & Koshy, M.P. (2011). Usage patterns of electronic banking services by urban educated customers: glimpses from India. *Journal of Internet Banking and Commerce*, 16(1), 1-12.
- Kevin, C. & David, K. (2008). Investigating the human computer interaction problems with Automated Teller Machine navigation menus. *Interactive Technology and Smart Education*, 5 (1), 59-79.
- Kotler, P. (2003). *Marketing management* (11th ed). Singapore: Pearson Education, Inc.
- Kumbhar, V.M. (2011). Customers' satisfaction in ATM service: empirical evidence from public and private sector banks in India. *Management Research and Practice*, 3(2), 24-35.

- Maditinos, D., Tsairidis, C. & Grigoriadis, C. (2009). *Internet Banking user acceptance: evidence from Greece and Bulgaria*. 5th Conference, HSSS Democritus University of Thrace, Xanthi, Greece, 1-26.
- Mahoney, J. & Goertz, G. (2006). A tale of two cultures: contrasting quantitative and qualitative research. *Political Analysis*, 14, 227-249.
- Miller, A.W. (2007). Who invented the ATM machine? it depends on who you ask! Retrieved January 30, 2016 from www.atmmachine.com/atm-inventor.html
- Miller, J. & Haden, P. (2006). Statistical analysis with General Linear Model. Retrieved January 30, 2016 from <http://www.otago.ac.nz/psychology/otago039309.pdf>
- Mohammed, S. (2012). Factors affecting ATM usage in India: an empirical analysis. *UTMS Journal of Economics*, 3(1), 1-7.
- Mwatsika, C. (2016). Factors influencing customer satisfaction with ATM banking. *International Journal of Academic Research in Business and Social Sciences*, 6(2), 26-41.
- Nwachukwu, O. (2014). Bank transfers jump to N1.5trn monthly on CBN's cashless policy. Retrieved January 20, 2016 from <http://businessdayonline.com/2014/07/banktransfers-jump-to-n1-5trn-monthly-on-cbns-cashless-policy/#.VBMMid0n9kg>
- Nynne, L. (2010). *Market segmentation-a framework for determining the right target customers*. BA-Thesis, Retrieved January 20, 2016 from <http://pure.au.dk/portal/files/11462/BA.pdf>
- Odugbesan, A.O. (2000). *Market segmentation strategy for effective marketing planning and analysis*. Lagos: Concept Publications.
- Odusina, A.O. (2014). Automated Teller Machine usage and customers' satisfaction in Nigeria. *Elite Research Journal of Accounting and Business Management*, 2(3), 43-47.
- Ogbuji, C.N., Onuoha, C.B. & Izogo, E.E (2012). Analysis of the negative effects of the Automated Teller Machine (ATM) as a channel for delivering banking services in Nigeria. *International Journal of Business and Management*, 7(7), 180-190.
- Okeke, T.C. (2013). Perceived risk/security and consumer involvement with electronic payments in Nigeria: a discriminant analysis. *IOSR Journal of Business and Management (IOSR-JBM)*, 14(6), 57-67.

- Okere, A. (2014). Demystifying ATM and customer experience in Nigeria. Retrieved October 20, 2016 from: <http://www.nigeriacommunicationsweek.com.ng/efinancial/demystifying-the-atm-customer-experience-in-nigeria>
- Olatokun, W.M. & Igbinedion, L.J. (2009). The adoption of Automatic Teller Machines in Nigeria: an application of the Theory of Diffusion of Innovation. *Issues in Informing Science and Information Technology*, 6, 373-393.
- Oludimu, O.E. & Olayinka, M. (2008). The ATM dimension in Nigerian banking: issues, challenges and prospects. *Nigerian Accounting Horizon*, 2(1), 13-26.
- Onovo, C.L. & Enwelu, I.A. (2011). Farmers' awareness and use of Automated Teller Machines (ATMs) in selected communities in Enugu North Senatorial Zone, Enugu State. *Journal of Agricultural Extension*, 15(1), 40-50.
- Onyedimekwu, O. & Oruan, M.K. (2013). Empirical evaluation of customers' use of Electronic Banking Systems in Nigeria. *African Journal of Computing & ICT*, 6(1), 7- 20.
- Pooja, J. (2013). Service assurance perception and customer demography: empirical study of State Bank of India. *Global Journal of Management and Business Studies*, 3(7), 689-694.
- Renuka, R. & Paulraj, A. (2014). Customers' satisfaction towards Automated Teller Machine. *Indian Journal of Applied Research*, 4(5), 333-336.
- Rugimbana, R. (1995). Predicting Automated Teller Machine usage: the relative importance of perceptual and demographic factors. *International Journal of Bank Marketing*, 13(4), 26-32.
- Sindwani, R. & Goel, M. (2015). Technology Based Self Service Banking service quality evaluation: A Graph Theoretic Approach. *International Journal of Advanced Science and Technology*, 80, 1-18.
- Stafford, M.R. (1996). Demographic discriminators of service quality in the banking industry. *Journal of Services Marketing*, 10(4), 6-22.
- Talukder, M., Quazi, A. & Sathye, M. (2014). Mobile phone banking usage behaviour: an Australian perspective. *Australasian Accounting, Business and Finance Journal*, 8(4), 83-104.
- Yazeed, A.M., Yazidu, U. & Ibrahim, Y. (2014). Automated Teller Machine (ATM) operation features and usage in Ghana: implications for managerial decisions. *Journal of Business Administration and Education*, 5(2), 137-157.