

Analysis of the Negative Effects of the Automated Teller Machine (ATM) as a Channel for Delivering Banking Services in Nigeria

Chinedu N. Ogbuji (Corresponding author)

Department of marketing, University of Port Harcourt

PMB 5323, Choba, Port Harcourt, Nigeria

Tel: 234-80-3541-9583 E-mail: chiogbuji@yahoo.com

Chima B. Onuoha

Adjunct Professor of Management, University of Uyo

Uyo, Nigeria

Tel: 234-80-3707-8654 E-mail: chimaonuoha@yahoo.com

Emeka E. Izogo

Department of marketing, Ebonyi State University

Abakaliki, Nigeria

Tel: 234-70-3629-7276 E-mail: ernestizogo@yahoo.com

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Abstract

This paper titled, "Analysis of the negative effects of the automated teller machine (ATM) as a channel for delivering banking services electronically in Nigeria" proposed that the ATM system of delivering banking services not only contribute to the increasing rate of bank fraud but equally lures Nigerians into profligate expenditure. Using a sample of 600 respondents conveniently selected from two states of the federation (Lagos and Anambra), and analyzing the hypotheses formulated with chi-square, it was found that results were consistent with the propositions made. Against these backdrops, it was recommended that banks should; strive to increase their security layers to subvert the tricks of web scammers, limit the amount which customers may be allowed to withdraw at a time and provide electronic alerts to customers' phone for all transactions carried out on their bank accounts through ATMs, cooperate instead of competing in stemming the ATM fraud menace and educate customers on the need to safeguard their PINs. Government was encouraged to; promulgate laws that will guide e-business including ATMs in Nigeria, provide employment, check the indiscriminate issuance of ATM cards by banks and so on. Customers were advised to; avoid replying unsolicited mails and text messages, not to compromise their PINs, maintain a separate account which is not placed under ATM if they are given to impulsive expenditure. Interested researchers were as well given a focus for further research.

Keywords: Banking, Customers, Services, Channel, Automated Teller Machine (ATM)

1. Introduction and Statement of Problem

The converging forces of technology have tremendously altered manual systems of delivering banking services and have subsequently paved way for electronic delivery platforms in recent time. The Automated Teller Machines (ATMs) is one of existing replacements of the cascading labour-intensive transaction system effected through what is popularly referred to as paper-based payment instruments. Heli (2006) confirmed this assertion when he held that the use of electronic means of payment has increased at the expense of paper-based payment instruments. He further disclosed that in some countries, payment cards have replaced cheques, and Internet banking has become a popular means of paying invoices. Nigeria is not an exception; we have had a share of this revolution. Similarly, Adeyemi (2010) quoting the chairman of Chief Inspectors of Banks in Nigeria (CIBN), Lagos chapter,

Bayo Olugbemi noted that banking has undergone several changes and improvements as usually dictated by the dynamic nature of economies the world over, adding that banking and other financial services are becoming more sophisticated to the extent that cash paper work are fast disappearing from banking, rather, financial services delivery has moved to telephone (Telebanking), Automated Teller Machine (ATM), Internet and Smartcard/Electronic purse, which aimed at making transactions easier, more convenient for customers and others.

The upsurge in the adoption of electronic means of delivering banking services can also be partly attributed to the changes in government policies which have heightened the competitive tempo of the Nigerian banking industry. The 2004/2005 bank consolidation programme is an apt paradigm. In a recent empirical research conducted by Wole and Louisa (2009), they posit, "In Nigeria, the deployment of ATM by banks and its use by bank customers is just gaining ground and has burgeoned in recent times". Fasan (2007) further maintains that this has happened especially after the recent consolidation of banks, which has in all probability, made it possible for more banks to afford to deploy ATMs or at least become part of shared networks.

The dynamic dictates of technology has equally altered the tastes and preferences of consumers of financial services in Nigeria substantially. This has compelled banks to seek new procedures of delivering financial services to their customers electronically. According to Muhammad (2010) in an empirical study, the number of bank customers preferring to use self-service delivery systems is on the increase. It therefore follows that the adoption of the Automated Teller Machines (ATMs) as one of the electronic means of delivering banking services was partly occasioned by the need to adjust to the eternal wind of changes in modern banking operations.

The ATM is an innovative service delivery mode that offers diversified financial services like cash withdrawal, funds transfer, cash deposits, payment of utility and credit card bills, cheque book requests, and other financial enquiries (Muhammad, 2010). An automatic teller machine allows a bank customer to conduct his/her banking transactions from almost every other ATM machine in the world. As is often the case with inventions, many inventors contribute to the history of an invention, as is the case with the ATM. In 1939, Luther Simjian patented an early and not-so-successful prototype of an ATM. However, some experts are of the opinion that James Goodfellow of Scotland holds the earliest patent date of 1966 for a modern ATM, and John D White (also of Docutel) in the US is often credited with inventing the first free-standing ATM design. In 1967, John Shepherd-Barron invented and installed an ATM in a Barclays Bank in London. Don Wetzel invented an American made ATM in 1968.

In Nigeria, ATM was conventionally introduced as an electronic delivery channel in 1989, and was first installed by National Cash Registers (NCR) for the defunct Societe Generale Bank of Nigeria (SGBN) in the same year. Since its introduction, many Nigerian banks have installed ATM in response to the changing nature of modern banking operations. According to Mohammad (2010), in Nigeria the deployment of ATM by banks and its use by bank customers is just gaining ground and has burgeoned in recent times. This follows from the number of advantages offered by ATM as a means of servicing the populace. In the words of Laderman (1990), two reasons for this are that they want to increase their market share, although due to the prevalence of ATMs, it is not likely to be the primary means by which ATMs increase profitability for most banks; or/and above a certain level of operations, the cost of a single transaction performed at an ATM is potentially less than the cost of a transaction conducted from a teller, as ATMs are capable of handling more transactions per unit of time than are tellers. In a separate affirmation, Mohammad (2010) similarly posits that by automating services that were previously completed manually, ATMs reduce the costs of servicing some depositor demands.

The import of the literature is that the ATM meant well for the Nigerian banking system. But unfortunately, it is now the root causes of copious challenges facing electronic banking in the country. Instead of being an agent of positive change as was initially anticipated, the ATM system has engendered a number of problems in the Nigerian banking system. This ranges from the rash spending of most Nigerian citizens to fraudulent practices.

This paper therefore proposes that the ATM system contributes to the increasing rate of bank fraud, establishes that the ATM system of delivering banking services lures people into extravagant spending, recommends ways of challenging these challenges in the Nigerian banking industry and gave focus for further research.

1.1 Objectives of the study

The major objective of this study is to explore the negative effects of the Automated Teller Machine as a channel for delivering banking services electronically in Nigeria. Specifically, the study seeks to;

- 1) Determine the existence of fraud or otherwise in the operation of ATM in Nigeria.
- 2) Determine whether there is a relationship between the increasing rate of bank fraud and the ATM as a means of delivering banking services in Nigeria.

- 3) Determine whether the ATM services delivery system has a negative effect on the saving propensity of Nigerians.

1.2 Research Hypothesis

H₁: There is no significant relationship between the increasing bank fraud and the ATM system in Nigeria.

H₂: There is no significant relationship between the ATM system and the level of expenditure of Nigerians.

2. Theoretical Context

2.1 ATM Fraud and Its Causes in Nigeria

The shift from manual processes of delivering financial services to electronic means in Nigeria is a function of technological developments. As with every other technological breakthrough, the ATMs have generated astronomical challenges and problems for the beneficiaries of financial services in Nigeria though it is grossly under reported and the financial institutions seem to be at loss as to what to do. ATM fraud is now a recurrent decimal that speaks ill of the Nigerian financial system which ought to be checkmated. In spite of the fact that ATM is an innovative service delivery mode that offers diversified financial services like cash withdrawal, funds transfer, cash deposits, payment of utility and credit card bills, cheque book requests, and other financial enquiries as acclaimed by Muhammad (2009), the level of ATM fraud tend to have overshadowed the improvements which it has brought into the service delivery systems of Nigerian financial institutions. Similarly, Adeyemi (2010) posit that despite the reality that the introduction of ATM terminals as a banking instrument was lauded by several customers as an alternative to the frustrating queues that characterized the country's banking hall, the situation today has changed drastically; it has become a source of worry to users and providers (banks) because the function it was meant to provide has been eroded seriously. Continuing, he rightly unfolded, "it has become a money wheel for fraudsters, who have found new heaven in compromising innocent people's personal identification numbers (PIN)". ATM users say that the persistent rise in fraud level is threatening the continual usage of the ATM, as more customers fall victim. Hence, instead of being a blessing, it seems more like a virus.

Nuruddeen (2008) postulates that, less than two years after bank customers have taken solace in the ATMs, the scourged is gradually but inexorably changing into another splurge of frustrations. He further noted that this technology that enables Nigerians to access their funds 24 hours, which is beyond the traditional hours of banking operations, is not without its consequences. To cap it all, he finally submitted that account owners, who were hitherto discouraged by the nauseating attitude of account officers and the banking halls long queues; now have to bear the brunt of losing their huge savings to a specialized racket of fraudsters that hack their accounts through ATMs.

The alarming rate of ATM fraud can be attributed to a number of factors. Afam (2009) confirmed this when he submitted that there is no where in the world that experiences the embarrassingly high level of ATM card fraud other than Nigeria because the implementation of the technology in Nigeria is characterized by ineptitude, lack of knowledgeable programmers and security experts that could guide and implement a secure transaction channel regardless of the level of education of the ATM card users. He further accused the Nigerian ATM technology of being too simplistic. What this means in essence is that the ATM cards we carry about in Nigeria is not well suited for electronic transactions. In fact, it should not be used for electronic transactions without address verification and an extra security layer that can make it impossible for anyone to use someone else's ATM card to make unauthorized withdrawals electronically. The reason is that the uncomplicated nature of Nigeria ATM system has widened the latitude for scammers to gain unauthorized access into people's account which in turn lead to ATM fraud.

Apart from the simplicity of the ATM technology being used in Nigeria, insincerity of bank staff is another reason that has contributed to the widening rate of ATM scam in Nigeria. This has aborted virtually all the attempts made by banks to fight the ATM scam improprieties. The banks, too, open a window for fraudsters in their indiscriminate issuance of cards to customers without regard to their ability to utilize them. Furthermore, it was recently noted at the 12th Quarterly General Meeting of the Committee of Chief Inspectors of Banks in Nigeria (CCIBN) that the lack of co-operation among banks in the fight to stem the incidence of ATM frauds plaguing the industry is not helping to abet it. It has been said "that the various ATM service providers, whose fierce competition for market share makes the possibility of a united attack on the menace of ATM fraudsters impossible, are another factor that sustains the peril".

Furthermore, empirical evidences have justified that network failure is another common cause of ATM fraud. In the view of Ellen (2009), mass compromise of merchant networks and card processors is viewed as the main cause of payment-card fraud. According to the survey, sponsored by a security firm, Actimize, 94% of the 113

financial-services firms could trace some percentage of payment-card fraud they experienced directly back to mass compromises of networks. Also in the survey, several examples of mass compromise events were given, including those known to have occurred at Heartland Payment Systems, grocery retailer Hannaford Brothers, retail-store chain TJX, as well as HNRC. RBS, BJs, DSW and Countrywide.

An idle mind, they say, is the devil's workshop. The unemployment crisis in Nigeria tends to have equally contributed to the growing rate of ATM fraud in the country. The government in power should not expect a slowdown in the tempo of ATM fraud if the youth remains perpetually idle. It is only an idle mind that can perpetrate fraud. When an individual is heavily occupied with responsibilities, he will think less of criminal practices, but when idleness is inevitable, fraudulent tendencies will ensue.

Despite recent attempts to reduce the ATM scam, evidences show that perpetrators have not relented because carelessness on the side of the customers still exist as some banks issue ATM cards indiscriminately without considering the customers' literacy level. Ihejiani, the Fidelity Bank's Managing Director, Adeyemi (n.d) asserted that one of the frequent causes of fraud is when customers are careless with their cards and pin numbers as well as when they respond to unsolicited mails and text messages or provide card and pin details to unknown persons among others. Ihejiani blamed Inter-switche and other service providers whose fierce competition for market share makes possibilities of a united attack on the menace of ATM fraudsters impossible.

2.2 Previous Research Efforts

Researches on the ATM as an unprecedented means of delivering financial services are one of the most championed in recent years across the globe. Haddan and Almahmeed (1992), Marshall and Heslop (1988) and Swinyard and Ghee (1987) studied Kuwaiti, Canadian and Southeast Asian population respectively and all achieved an unswerving results of adopter characteristics of ATM, wherein ATM users tend to be young and have above average incomes and at least some high school education. The mini-survey conducted by eShekels and Taube in 2006 and 1988 respectively yielded similar results. Also, Lee and Lee (2000) investigated the diffusion of various electronic banking technologies, such as ATMs, debit cards, smart cards, direct deposit, and direct payment, along with the characteristics of adopters and non-adopters based on the DOI theory. They used the 1995 Survey of Consumer Finances and 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. Despite this, the specific factors that described adopters and non-adopters varied across different types of banking technologies.

Di Angeli et al. (2002) looked at technology adoption in different cultural contexts, analyzing the relationship between Hofstede's cultural value dimensions and ATM's adoption in urban India. They proposed that the underlying inhibitors to ATM adoption in India were not intrinsically different from those determined earlier in Europe and North and South America. These inhibitors could be traced back to a few main factors, such as feelings of inadequacy, preference for human contact, lack of need and safety concerns. They believed that those who used ATM did so because they had a need for it, perceived it was easy to use, felt safe using it, and had positive attitude towards technology in general. These reasons appeared to be caused by different factors in different contexts due to different cultural values. In India, Di Angeli et al. (2002) stated that the feeling of inadequacy was the result of a strong value dimension expecting different access to resources as a function of people's social status. The long-term orientation of Indians explained why they did not mind queuing to access basic financial services.

In 2004, Darch and Caltabiano explored the relationship between demographic, user-situational, attitudinal variables and ATM use in an Australian sample of older adults. These adults were Volunteers aged 60 years and above, who conducted their own banking transactions. Technology, perceived control and perceived user comfort were found to have an independent significant effect on ATM usage. Age, education, attitudes and user-situational variables were found to be related to ATM use, only technology experience, perceived user comfort and control were found to be determinants of ATM use.

In 2004 also, Helmut studied the Impact of ATM transactions and cashless payments on cash demand in Austria. The aims of this study are twofold: to determine the levels of cash inventories held by Austrians and to examine how ATM transactions and cashless payments affect their demand for cash. The key results of this study are based on survey data on the cash withdrawal habits of Austrians aged 14 and over. The results suggest that the cash held by this group of individuals for transaction purposes accounts for only a relatively small share of the total cash in circulation (approximately 10%). Furthermore, it can be seen that individuals who use ATMs withdraw cash more frequently and consequently hold significantly smaller amounts of cash than individuals who do not use ATMs. The study also deals with cashless payments, which were found to have had an impact on the use of cash: the share of cash payments has fallen since 2000 (projections suggest a decline of some 6 to 7 percentage points from 2000

to 2002). This development is attributable primarily to robust growth in debit card transactions. Despite the rise in cashless payments, currently the share of cash payments (in value terms) is likely to be above 70%, so that cash remains by far the most important means of payment in Austria. The results of this study therefore show that ATM transactions and the increased use of cashless payments have had a significant impact on cash demand in Austria and will probably continue to do so in future. A similar study by Kenneth and Neil (2005) yielded similar results.

Through archival research, Batiz-Lazo and Barrie (2005) investigated the impact of the introduction of Automated Teller Machines (ATM) in British retail banking. They argued that during the 1990s, Information Technology in banking (as measured by ATM) led to reduced operating costs, coupled with increased output (number of transactions) that resulted in greater efficiency. They concluded that the introduction of ATM was profitable for banks as well as customers. Their study indicated that banks' adoption of ATM was in overall, beneficial for banks.

Heli (2006) studied the effects of the Automated Teller Machine (ATM) network market structure on the availability of cash withdrawal ATM services and cash usage. Using a unique data set on 20 countries including Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Japan, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, UK and USA for the period 1988–2003, he found that monopolization of the ATM network market structure is associated with a smaller number of ATMs and that the influence of the number of ATMs on cash in circulation is ambiguous.

Santiago and Francisco (2008) explored the interaction between Automated Teller Machines (ATMs) and Point of Sales (POS) devices as well as the effects of these interactions on the overall demand for currency in Australia. It was found that the growth of ATMs negatively affect POS adoption which, in turn, suggests that the promotion of cards relative to cash is diminished by the co-existence and joint promotion of these two rival technologies. Additionally, the researchers provided estimates of the effects of these technologies on the demand for currency, showing that POS devices and higher debit and credit POS transactions may significantly reduce the demand for currency and offset the negative effects that the deployment of ATMs and ATM usage may have on the demand for currency.

Wole and Louisa (2009) tested the attributes of the theory of diffusion of innovation empirically, using Automatic Teller Machines (ATMs) as the target innovation. This study which was situated in Jos, Plateau state, Nigeria examined 600 respondents and found that attitudinal dispositions significantly influence the use of ATM.

Muhammad (2010) investigated the significant dimensions of ATM service quality and its effect on customer satisfaction in Pakistan. He used questionnaire to collect the data from a convenience sample of 500 customers of multinational and national banks. Regression results indicated that convenience, efficient operation, security and privacy, reliability and responsiveness are significant dimensions of ATM service quality and that ATM service quality positively and significantly contributes toward customer satisfaction.

From the past research efforts, diffusion and adoption of ATM seems to have been the most defended with more emphasis on demographic profile of adopters in both early and the late studies reviewed. The studies showed that users of ATM tend to be young and educated. However, one area that remains largely unexplored is the negative influences of the ATM as a means for delivering banking services. The present study strives to fill this gap.

2.3 Theoretical Framework

The micro-economic theory of money demand holds that the demand for money is influenced by three basic reasons: transactionary, precautionary and speculative motives. Here, our concentration is on the demand of money for transaction purposes. Baumol (1952) discusses the transactions demand for cash. According to this model, the demand for cash depends on the value of transactions, cost of withdrawing cash and interest opportunity cost. Tobin (1956) discusses the interest elasticity of the transactions demand for cash. Romer (1986) presents a general equilibrium version of the Baumol-Tobin model, in which money is both the store of value and the medium of exchange, and the consumer's cash holdings depend on the inconvenience of trips to the bank and interest rate losses from holding cash instead of higher-yield assets. Santomero (1979) analyses the demand for currency and for deposits. The average deposit balance depends on the fraction of total transactions paid by cash, the expenditure, the rate of return on the deposit account, the costs of transfer from the interest-bearing asset, and the cost of purchasing the commodity with demand deposits.

3. Methodology

This study surveyed users of ATM in two states of Nigeria, namely; Anambra state (South East) and Lagos state (South West). The rationale for selecting these two states is that they constitute people from different parts of the country. A total of six hundred (600) users of ATM were examined. This sample constitutes students of higher

institutions, businessmen, civil servants, politicians and lecturers. 300 respondents representing 50% were selected from Anambra state while the remaining 300 respondents representing another 50% were selected from Lagos state. Again, 396 respondents (66%) were male, while 204 respondents (34%) were women. Out of 600 which is the sample population, 63(10.5%) respondents were under 20 years; 361(60.17%) respondents were between 20 and 29 years. Another 115(19.17%) were between 30 and 39 years, while 33(5.5%) respondents were between 40 and 49 years. Yet, 23 respondents which stood at 3.83% were between 50 and 59 years, while 5 representing 0.85% were 60 years and above. Equally, 213 respondents (35.5%) were students, 191 respondents (31.83%) were businessmen and 112 respondents representing 18.67% were civil servants. Another 58 respondents which stood at 9.5% were politicians while 27 respondents corresponding to 4.5% were lecturers. The above is detailed in table 1.

A convenient sampling method was adopted. This was done because it is the most accessible method for reaching the users of ATM. However, a questionnaire containing dichotomous, open-ended and multiple choice questions were distributed to the respondents at the various ATM installation centers such as banks, restaurants, hotels, markets and schools. The respondents filled and returned the questionnaires to the researchers at the same time and venue. Respondents who insisted on going home with the questionnaire were ignored. This was to help the researchers ensure that all the questionnaires distributed were recovered.

To analyze the data collected, tables, frequencies, percentages, mean, variance and standard deviations were employed. The hypotheses formulated were tested using chi-square.

4. Results and Discussions

This study investigated the negative effects of the ATM as a system of delivering banking services electronically in Nigeria. It was proposed that the ATM system has contributed to the increasing rate of fraud in the Nigerian banking sector and that it equally has an influence on the rate of expenditure of users in Nigeria. In general, the mean scores of all the 600 responses were high, ranging from 3.9 to 4.16 on a 5-point scale (table 3). This indicates that the ATM as an electronic system of delivering banking services has not only contributed to the increasing rate of bank fraud, but equally has a negative influence on the spending habit of Nigerians. Furthermore, the standard deviations of the responses, ranging from 1.15 to 1.28 were equally low, indicating consistent and reliable results. Before proceeding to test the formulated hypotheses, simple percentages were used in analyzing the responses on the reality of the claim of banks with respect to whether their ATMs operate 24 hours on daily basis. Results faulted this claim as respondents indicated that inability of the machine to deliver services 24 hours daily is a problem (table 3). Apart from this, out of service, inability of the machine to deliver seamless service, poor maintenance by management, frustrating network, irregular deductions from users' accounts (service charges), unswerving efforts expended by users in protecting their pins were other problems which the users of the ATM pointed out in the open-ended question posed. Among these views, the problem of network failure remains outstanding. According to Ellen (2009)'s survey of 113 financial services firms, mass compromise of merchant networks and card processors is viewed as the main cause of payment-card fraud. This was further validated by the number of responses from the respondents de-tasting this abnormally.

The results of the two hypotheses formulated (H_1 and H_2), were shown in table 4 and 5 respectively. However, table 6 captured the summary. Since $X^2_{cal} > X^2_{tab}$ for the two hypotheses tested, both H_1 and H_2 were rejected. For H_1 , at 4 degree of freedom and 5% (0.05) level of significance, $X^2_{tab} = 9.49$, while $X^2_{cal} = 523.2$. This showed that the ATM system of delivering banking services has contributed to the increasing rate of bank fraud in Nigeria. This can be attributed to the insincerity of banks staff, card theft, PIN compromise, indiscriminate issuance of cards by banks due mainly from competitive pressures, network failure, unemployment, lack of cooperation among banks to stem the menace of ATM fraud, customers' responses to unsolicited mails and text messages as a result of illiteracy and the low level of security embedded in the ATMs used in Nigeria which were unveiled in the literature. For H_2 , at 4 degree of freedom and 5% (0.05) level of significance, $X^2_{tab} = 9.49$, while $X^2_{cal} = 355.34996$. This implies that the ATM system of cash withdrawal lures users into profligate expenditure. This is as a result of the indiscriminate installations of ATMs at public places such as hotels, markets, restaurants, schools, hospitals and supermarkets. This may be why in current national network news; the Nigerian government has insisted that the ATMs installed in public places should be removed. People especially those that find themselves in "bars" with their friends tend to spend more money if ATM is installed in that place. Students spend unbudgeted money if they have ATM mounted in the school premises especially when peer influences come to play. This follows from the fact that most Nigerians are not financially disciplined, as they tend to spend recklessly when the opportunity to do so offers itself.

5. Managerial Implications

It has been posited that in spite of the convenience provided by ATMs, the rate at which cases of ATM-related

frauds are reported by customers to their banks has become a source of serious concern to the users and the banks that provide such services. This study provides the necessary inputs to the banks' management, government authorities as well as ATM users to do battle with the escalating rate of ATM scam in Nigeria and other related improprieties. First, to curb ATM-related frauds, it is recommended that banks should not only limit the amount that may be allowed for a customer to withdraw at a time through the ATM card, but should similarly limit the number of times a customer may be allowed to withdraw cash from his account. The current maximum of N20, 000 withdrawals at a time as is the case with some banks at the moment could be maintained. However, if an account holder decides to direct the bank to allow unlimited access as to the number of withdrawals per day from his account, this could be considered but the customer must be made aware of the risks. To make this approach valid, banks should make it their statutory responsibility to provide electronic alert to customers' phones for all transactions carried out on their bank accounts through the ATMs.

Since the security layer of ATMs used in Nigeria has been accused of being too simplistic, banks is therefore advised to sort ways of improving the security level embedded in their ATMs, or better still, deploy ATMs with more sophisticated security layers in order for the interest of the users to be protected. In the view of Valentine (2010), in developing countries such as Nigeria, according to reports, ATM fraud seem to be committed by mostly individuals linked to bank officers who are able to provide pin numbers and other relevant information required to commit such crimes; but with biometrics, such fraudulent incidents can be minimized, as an added layer of authentication is now introduced that ensures that even with the correct pin information and in possession of another person's ATM card, a fraudster will not be able to withdraw any money since the biometric features of every individual is unique. Even at this, we still recommend that banks should strive on continuous basis to enhance their security level because as one security cover is invented, fraudsters make frantic attempts to subvert it.

More so, instead of continuously engaging in competition among themselves for customers, banks can come together to find a solution to the alarming rate of ATM fraud in Nigeria. This is crucial because recently, at the 12th Quarterly General Meeting of the Committee of Chief Inspectors of Banks in Nigeria (CCIBN) in Lagos, the Managing Director of Fidelity Bank of Nigeria, Mr. Reginald Ihejiahi, expressed concern about the lack of co-operation among banks in the fight to stem the incidence of ATM related frauds now plaguing the industry. According to him, to fight this scourge, banks must co-operate to fight this battle. He observed that the current silence among banks on ATM frauds makes it difficult for banks to share vital information that will help curb the menace. Banks should equally work hard to minimize the rate of network failures since ATM-related fraud can equally be attributed to it. Equally important is the need to advice users of ATM not to respond to unsolicited mails and text messages or provide card and pin details to unknown persons.

When the relevant technology is combined with best practice and an effective procedure, the results can be rewarding but they certainly need to be deployed hand in hand (Valentine, 2010). As the banks in Nigeria strive to install ATMs with complex security layers, it is necessary that they educate customers/users on best practices- such as to always change one's pin number, not to use obvious numbers as one's pin number like, one's date of birth, car registration number, etc This will certainly go a long way in reducing the level of ATM fraud currently experienced in Nigeria. Installing all ATMs in a secure, properly lit environment, with CCTV coverage will also assist in minimizing ATM fraud.

The indiscriminate issuance of ATM cards by banks without considering users' level of literacy should equally be checked by the government. This is because the pursuance of market shares by banks has made it impossible for them to put the literacy level of the customers into consideration before issuing those cards. Furthermore, the MD of Fidelity Bank PLC Nigeria would like to see the promulgation of enabling laws under which e-business including ATM transactions can be conducted in the country, which will ensure that switches are properly regulated and supervised.

Since banks have taken to competition among themselves, instead of cooperating to stem the menace of ATM fraud in Nigeria, the federal government can equally promulgate law mandating banks to take responsibilities of ATM-associated frauds in the country. It can also be proven that banks have remained adamant to the problem. For instance, Mr Azubuike Okoro, the CBN Branch Controller of Anambra State at the Awka meeting expressed worry that commercial banks appeared not interested in finding a lasting solution to the problem of ATM fraud, wondering why only four banks could be represented in such an important meeting.

The Economic and Financial Crimes Commission (EFCC) can set up a department responsible of dealing with financial cyber crimes. This department can extend their powers to ensuring that for anybody to own and operate a website; he must be duly registered by the commission. This will give them the latitude to monitor those sites

thoroughly. Also, government should create more awareness among Nigerians on electronic banking transactions just as it is necessary that CBN should issue directives for ATMs installed in public places such as restaurants, markets, schools, etc to be removed. Ultimately, government should provide employment opportunities for our teeming youths because an idle mind, they say, is the devil's workshop. If the youths are gainfully employed, government will be surprised on the rate at which this scourge will be reduced.

On the side of the customers, it must be noted that the only security your ATM card has is the PIN. Once this is compromised, such cards have lost its security. In bid to ensure that they are protected from scammers, users are encouraged to change their PINs periodically. Again, customers are advised to abstain from using ATMs if they know that their literacy level can not challenge the challenge of keeping confidential, the PINs of their ATM cards. It is equally important that customers desist from sending proxies to operate their ATM cards, nor replying unsolicited mails or text messages.

Finally, since it has been proven that some users of ATM are given to impulsive spending; it is the stand of the author that such customers can open a separate account without placing it under the ATM. This will go a long way in keeping them financially disciplined.

6. Research Limitations and Further Research

Even though the study found that the ATM system of delivering banking services has contributed to the increasing rate of fraud in the banking sector, the extent of bank fraud peculiar with ATM was not established. This is a largely unexplored area for interested future researchers. Also, it was found that users of ATM live extravagant life vis-à-vis spending. A sample comprising mainly adults can also be employed to test the validity of this verification. In addition, the sampling technique and size adopted in this study equally has certain limitations. The study has used convenience sample. Efforts should be made to investigate the study using a random sample to enhance its generalizability.

Survey design has been used in the study. A mix of interviews and qualitative data gathering techniques could be used to make the results more comprehensive and generalizable. Future research could focus on diversifying the sample across different states, ethnic groups, income, and education.

Finally, given the current rate of ATM fraud in Nigeria and the unresponsive attitude of government and the banks, the strategies for abating ATM scam can be of great concern for the Nigerian economy in the near future. This remains an untilled ground for future researchers.

7. Conclusion

The introduction of Automated Teller Machine (ATM) terminals as a banking instrument was lauded by several customers as an alternative to the frustrating queues that characterized the country's banking hall. However, the situation today has changed drastically; it has become a source of worry to users and providers (banks), because the function it was meant to provide has been eroded seriously. It has become a money wheel for fraudsters, who have found new heaven in compromising innocent people's personal identification numbers (PINs). This study which was aimed at digging into the negative effects of this innovation in the Nigerian banking industry concludes as follows;

- 1) ATMs have contributed to the alarming rate of fraud in the Nigerian banking industry but the proportion of bank fraud attributable to ATM was not ascertained.
- 2) ATM fraud can only be reduced but can no longer be absolutely stamped out from the Nigerian banking system.
- 3) ATM as an electronic means of delivering banking services makes people live riotous life at spending.

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Table 1. Respondent profiles (n=600)

Characteristics	Group	Rate	Percentage (%)
State	Anambra	300	50
	Lagos	300	50
Gender	Male	396	66
	Female	204	34
Age	Below 20	63	10.5
	20-29	359	60.17
	30-39	117	19.17
	40-49	33	5.5
	50-59	23	3.83
	60 and above	5	0.83
Occupation	Students	213	35.5
	Businessmen	191	31.83
	Civil servants	112	18.67
	Politicians	58	9.5
	Lecturers	27	4.5

Table 2. Responses on whether inability of ATM to deliver services 24 hours daily is a problem

Alternative responses	Frequency (f)	Percentage (%)
Yes	477	79.5
No	123	20.5
Total	600	100

Table 3. Items, means, variances and standard deviations

statement	Scores									
	5	4	3	2	1	N=Σf	\bar{X}	Var	SD	Ranks
The ATM can be said to have contributed to the increasing rate of fraud in recent time	324	156	36	60	24	600	4.16	1.33	1.15	The \bar{X} is above 3, we accept
Since you started using the ATM as a means for withdrawing money you tend to spend more than when you were not using ATM as a cash withdrawal channel	285	130	46	118	21	600	3.9	1.64	1.28	The \bar{X} is above 3, we accept

Note: $3 = \frac{5 + 4 + 3 + 2 + 1}{5} = \text{Decision criteria } \bar{X} \text{ (mean)}$

Hypotheses 1

Table 4. Computation of X^2 for Hypothesis 1

Responses	O	E	(O-E)	(O-E) ²	$(O - E)^2 / E$
SA	324	120	204	41616	346.8
A	156	120	36	1296	10.8
NAND	36	120	-84	7056	58.8
D	60	120	-60	3600	30
SD	24	120	-96	9216	76.8
Total	600	-	-	-	523.2

Note: SA= Strongly Agree; A= Agree; NAND= Neither Agree nor Disagree; D Disagree and SD=Strongly Disagree; O= Observed frequencies; E= Expected frequencies.

Table 5. Computation of X^2 for Hypothesis 2

Responses	O	E	(O-E)	(O-E) ²	$(O - E)^2 / E$
SA	285	120	165	27225	226.875
A	130	120	10	100	0.83333
NAND	46	120	-74	5476	45.6333
D	118	120	-2	4	0.33333
SD	21	120	-99	9801	81.675
Total	600	-	-	-	355.34996

Note: SA=Strongly Agree; A=Agree; NAND= Neither Agree nor Disagree; D= Disagree and SD= Strongly Disagree; O= Observed frequencies; E= expected frequencies.

Table 6. Summary of hypotheses testing

Hypotheses	DOF	LOS	X^2_{cal}	X^2_{tab}	Ranks
H_1	4= (5-1)	0.05	523.2	9.49	Reject H_1
H_2	4= (5-1)	0.05	355.34996	9.49	Reject H_2

Note: DOF=degree of freedom, LOS= Level of significance, X^2_{cal} = Chi-square calculated, X^2_{tab} = Chi-square table, H_1 =hypotheses one (1); H_2 =hypotheses two (2)