**EFFECT OF AUTOMATED TELLER MACHINE ON THE PERFORMANCE OF NIGERIAN BANKS**

**Abstract**

This study investigates the effects of ATM on the performance of Nigerian banks. Available studies have concentrated on the significant dimensions of ATM (automated teller machine) service quality and its effect on customer satisfaction with a bias against ATM producers. This study examines the effect of Automated Teller Machine on the performance of the Nigeria bank in the banking industry in Nigeria. The objective of the study was to determine the contribution of ATM on the effectiveness of the banking sector, to determine the extent to which ATM has stimulate growth in the banking system and to examine the extent to which ATM has speedily improve bank profitability. The focus of this study is on three (3) banks to include Access bank, First Bank and Diamond bank. Primary data were source of data collection for this study, and the data were collected through the use of structured questionnaire. The results indicate that less than the benefits, the deployment of ATMs terminals have averagely improved the performance of Nigerian banks because of the alarming rate of ATM fraud. Similarly, ATM service quality is less correlated to security and privacy of users and providers.

**Abstract**

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**CHAPTER ONE**

**INTRODUCTION**

* 1. **Background of the Study**

In today’s business world, globalization and international experience has become critically important. Banking industries can no longer get away with operating loosely connected groups of businesses that happen to be located around the world, but must strategically integrate their activities. Mitroff [[1]](#_bookmark1) stated that, only the banks, businesses, industries, and whole by societies that clearly understand the new rules of doing business in a world economy will prosper. Global competition in the banking sectors has forced management and executives to recognize that they must think differently about banking activities and management. As a global banking, the only way to succeed is to develop an effective global banking management system with personnel capable of designing and implementing transnational business strategies through the use of modern technology such as automated teller machines (ATMs).

Technology has tremendously stimulated expansion of the banking networks and range of the offered services during recent years. All banking services, such as electronic payments, loans, deposits, or securities have become heavily dependable on information and telecommunication technology. This is the main reason why banks are the biggest users of modern technology equipment. Due to the complexity of banking services, every opportunity to speed up their performance or to make them more accessible for customers is very well welcomed by banks. However with improvements of the quality of services, the important question appears if this process can provide the economic values for banks? Unfortunately not every increase in the customers’ satisfaction transfers into the higher bank profits, especially in the case of very expensive investments in technology like automated teller machines (ATMs).

Although every banking operation requires some technology applications, researcher varies on the subject of the relationship between the level of employed automated teller machines, and the value of the banking efficiency increase. All researchers agree on the importance of ATMs for the further developments of the banking industry, but some of them have found lack of proportionality between the increased in the scale of technology utilization and the increase in banks profitability [[2].](#_bookmark2)

Automated Teller Machine (ATM), also known as a automated banking machine (ABM) or Cash Machineand by several other names, is a computerised telecommunications device that provides the clients of a financial institution with access to financial transactions in a public space without the need for a cashier, human clerk or bank teller. On most modern ATMs, the customer is identified by inserting a plastic ATM card with a magnetic stripe or a plastic smart card with a chip, that contains a unique card number and some security information such as an expiration date or CVVC (CVV). Authentication is provided by the customer entering a personal identification number (PIN). Using an ATM, customers can access their bank accounts in order to make cash withdrawals, credit card cash advances, and check their account balances as well as purchase prepaid cellphone credit.

Ogbuji, et al. [[3]](#_bookmark3) postulate that ATM allows a bank customer to conduct his/her bank transactions from almost every other ATM machine in the world. However, the spread of the machines has been generating a lot of heat, as customers face a splurge of frustration in using it; either the machines will not dispense cash, or debit transactions when cash is not dispensed or cards get stuck in them. Dapo [[4]](#_bookmark4) indicate that the proliferation of the machines is giving more concern. As with every other technological breakthrough the ATMs have generated astronomical challenges and problems for the beneficiaries of financial services in Nigeria. Most users of ATM have encountered the problem of Scam. Apart from epileptic services rendered by the machines, faceless crooks steal from the accounts of hundred of bank customers via the ATM technology. The fraudsters perpetrate this financial crime by stealing the personal identification number, PIN, a special secret code that grants access to the usage of the cards, and consequently, getting hold of the funds of the susceptible ATM users.

**1.2 Statement of the problem**

The relationship between banking efficiency and the use of ATM (Automated Teller Machine) is a complex one. This is because the overall levels of efficiency and productivity do influence the organization overall success [[5].](#_bookmark5) This explains why most modern banking sectors develop ways of increasing organization and workers’ efficiency. Some of these ways include goal setting, job enrichment, adoption information technology, globalization, training and development. All these represent several practical ways of increasing banking sector’s performance, which could also be a reflection of institutions efficiency.

The achievements, goals, profit and attainment of banking sector depends largely on the proper management and technology such as ATM adopted in the banking activities. It’s upon this basis that the level of efficiency, effectiveness and performance of banking sector and other organization is measured. The impact of ATM on the performance of banking institutions have been without some challenges. There have been near lack of empirical research efforts on the effect of ATM on performance of the providers, using FCMB as case study. Arguably, the most revolutionary electronic innovation in this country has been the ATM. In Nigeria, banks with ATM offerings have them networked and this has increased their utility to customers. The ATM has been the most successful delivery medium for consumer banking in this county. This calls for investigation which is in line with our aims and objectives.

**1.3 Aims and Objectives of the study**

The Aim of this study is on the effects of the automated teller machine on the performance of Nigerian banks.

The specific objectives are;

1. To determine how the Automated Teller Machine (ATM) contribute immensely to effectiveness of banking sector.
2. To determine to what extent an Automated Teller Machine stimulate growth of banking system.
3. To find out the extent to which Automated Teller Machine speedily improve banking profitability.
4. To determine Extent to which Automated Teller Machine ATM influence fraud in banking sector

**1.4 Research Questions**

1. How has Automated Teller Machine (ATM) contribute immensely to effectiveness of banking sector?

2. To what extent has Automated Teller Machine stimulate growth of banking system?

3. How does the Automated Teller Machine speedily improve banking profitability?

4. How does the Automated Teller Machine ATM influence fraud in banking sector.

**1.5 Significance of the study**

This study is on the effects of the automated teller machine on the performance of Nigerian banks. The purpose of this research work is to find out the effects of Automated Teller Machines (ATM) on Bank’s services. Information technology, of which Automated Teller Machines are part of, has been the core tool of competitive strategies used by successful organizations for gaining competitive advantage over others. The rapid development in the banking sector has encouraged the accommodation of technology providers.

This research will be of great importance to the Banking industry and policy makers. It would also add to the existing literatures and general body of knowledge in the study area.

**1.6 Scope and Limitations of the study**

This work is limited to the effects of automated teller machine on the performance of Nigerian Banks.

**1.7 Operational Definition of Terms**

**Automated Teller Machine:** Is an electronic telecommunications device that enables the customers of a financial institution to perform financial transactions without the need for a human cashier, clerk or bank teller.

**Credit Card:** Is a payment card issued to users as a system of payment. It allows the cardholder to pay for goods and services based on the holder's promise to pay for them. The issuer of the card creates a revolving account and grants a line of credit to the consumer (or the user) from which the user can borrow money for payment to a merchant or as a cash advance to the user.

**Electronic Banking:** is an electronic payment system that enables customers of a financial institution to conduct financial transactions on a website operated by the institution, such as a retail bank, virtual bank, credit union or building society. Online banking is also referred as Internet banking, e-banking, virtual banking and by other terms.

**CHAPTER TWO**

**REVIEW OF RELEVANT LITERATURE**

**Literature Review**

The banking system with all its complexities, challenges and opportunities touches virtually all aspects of the daily lives. Using a credit card to make a purchase, writing a personal or business check, paying bills and moving funds online or accessing funds through an automatic teller machine (ATM) are just a few examples of how people may participate daily in the banking system. Even the micro-finance banks provides banking-related services such as loans and check cashing in communities where those services are either not readily available or where consumers perceive the micro finance bank to be their best or only-banking alternative.

The techniques of managing of banking industries through the use of Automated Teller Machine (ATM) towards improving banking industry performance is a basket full where every financial institution is expected to pick that which is applicable to it. According to the Fannie Mae Foundation, automated teller machine as used in banking sector serve approximately 420 million transactions annually for a total of $3.3 billion in gross annual revenues. In this article, we will address a number of topics including the types of services provided by full service banks, technological changes and the use and important of automated teller machine and fringe banking services.

ATMs are known by various other names including automatic banking machine (or automated banking machine particularly in the United States) (ABM), Automated Transaction Machine, Cashpoint (particularly in the United Kingdom), Money Machine, Bank Machine, Cash Machine, Hole-In-The-Wall, Autoteller (after the Bank of Scotland's usage), Cashline Machine (after the Royal Bank of Scotland's usage), MAC Machine (in the Philadelphia area), Bankomat (in various countries particularly in Europe and including Russia), Multibanco (after a registered trade mark, in Portugal), Minibank in Norway, Geld Automaat in Belgium and the Netherlands, and All Time Money in India.

Rose [[6]](#_bookmark6) cited by Abor, describes ATMs as follows: “an ATM combines a computer terminal, record-keeping system and cash vault in one unit, permitting customers to enter the bank’s book keeping system with a plastic card containing a Personal Identification Number (PIN) or by punching a special code number into the computer terminal linked to the bank’s computerized records 24 hours a day”. Once access is gained, it offers several retail banking services to customers. They are mostly located outside of banks, and are also found at airports, malls, and places far away from the home bank of customers. They were introduced first to function as cash dispensing machines. However, due to advancements in technology, ATMs are able to provide a wide range of services, such as making deposits, funds transfer between two or accounts and bill payments. Banks tend to utilize this electronic banking device, as all others for competitive advantage.

Using an ATM card, a debit card, or a credit card, bank patrons can electronically access their accounts and withdraw or deposit funds, make payments, or check balances. ATMs have eliminated the need to enter a bank for basic transactions and allow access to accounts at machines throughout the United States. Financial institutions started charging fees to use their ATMs in the mid-1990s, making the transactions very profitable for the host banks. The use of ATMs has cut service staff in traditional banks, impacting employment in the industry. As many machines are now commercially owned and leased in public venues, a technical industry for cresting, leasing, and maintaining the machines has developed [[7].](#_bookmark7)

Ogbuji, C. N. et al. (2012), observed 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. An automatic teller machine allows a bank customer to conduct his/her banking transactions from almost every other ATM machine in the world.The ATM, therefore, performs the traditional functions of bank cashiers and other counter staff. It is electronically operated and as such response to a request by a customer is done instantly.

The combined services of both the Automated and human tellers imply more productivity for the bank during banking hours. Also, as it saves customers time in service delivery as alternative to queuing in bank halls, customers can invest such time saved into other productive activities. ATMs are a cost-efficient way of yielding higher productivity as they achieve higher productivity per period of time than human tellers (an average of about 6,400 transactions per month for ATMs compared to 4,300 for human tellers Rose (1999). Furthermore, as the ATMs continue when human tellers stop, there is continual productivity for the banks even after banking hours.

Automated Teller Machine (ATM) machine works on the ATM cards, as when a user inserts an ATM card into the card reader component of the ATM machine, then it prompt for the authentication through ATM PIN (Personal Identification Number [[8].](#_bookmark8) Each and every ATM machine is programmed with a unique TID (Terminal ID number) assigned to identify the ATM machine in different location. The ATM transactions are done through over the phone line via internet connection (lease line). All the ATM machines are globally interconnected with each other with the financial institutions through the global ATM network like Master Card, Maestro, Cirrus, Visa, etc. In back side of every ATM card some logos are printed which refers to the ATM network. So the ATM machine connects to ATM network through processing center and the card holder’s bank. After the authorization step, if there is sufficient fund in the ATM card holder’s account, then the transaction is completed successfully.

According to Ugwu [[9],](#_bookmark9) ATMs are set up to provide 24 hour services to bank customers, who cannot expect to be able to transact with banks in the same period of time. ATM technology allows customers carry out the above- mentioned transactions using an ATM card, which could be a debit or a credit card. An ATM machine authenticates the card by reading and verifying the magnetic strip, card number, expiration date, and an already provided or pre- selected PIN number. Like with most technological advances, there is always a flaw which criminal-minded individuals identify and exploit to perpetuate fraud. Technology is being constantly evolved so that ATM transactions can be an enjoyable experience to its customers, especially if one has to pay for goods or services in cash by 1.00am in the morning and has no money.

**Concept of E-banking System**

Dabholkar (2004), assert that the past decade has seen dramatic losses in the banking industry. Firms that had been performing well suddenly announced large losses due to credit exposures that turned sour, interest rate positions taken, or derivative exposures that may or may not have been assumed to hedge balance sheet risk. In response to this, commercial banks have almost universally embarked upon an upgrading of their risk management and control systems. Online banking (or Internet banking or E-banking System) allows customers of a financial institution to conduct financial transactions on a secure website operated by the institution, which can be a retail or virtual bank, credit union or building society.

Davis, (2006) adds that to access a financial institution's online banking facility, a customer having personal Internet access must register with the institution for the service, and set up some password (under various names) for customer verification. To reduced risk password for online banking is normally not the same as for telephone banking. Financial institutions now routinely allocate customer numbers (also under various names), whether or not customers intend to access their online banking facility. Customer numbers are normally not the same as account numbers, because a number of accounts can be linked to the one customer number. The customer will link to the customer number any of those accounts which the customer controls, which may be cheque, savings, loan, credit card and other accounts.

For banks to access online banking, the customer would go to the financial institution's website, and enter the online banking facility using the customer number and password. Some financial institutions have set up additional security steps for access, but there is no consistency to the approach adopted.

Davis, et al (2009) the effectiveness of SMES access to Financial resources in banks depends on efficient Management Information System, computerization and net working of the branch activities. The data warehousing solution should effectively interface with the transaction systems like core banking solution and risk systems to collate data. An objective and reliable data base has to be built up for which bank has to analyze its own past performance data relating to loan defaults, trading losses, operational losses etc., and come out with arks so as to prepare themselves for the future risk management activities. Any management model is as good as the data input.

Delone, et al (2005), E- Banking underscores the fact that the survival of an organization depends heavily on its capabilities to anticipate and prepare for the change rather than just waiting for the change and react to it. The objective of E-banking System is not to prohibit or prevent risk taking activity, but to ensure that the risks are consciously taken with full knowledge, clear purpose and understanding so that it can be measured and mitigated. It also prevents an institution from suffering unacceptable loss causing an institution to fail or materially damage its competitive position. Functions of risk management should actually be bank specific dictated by the size and quality of balance sheet, complexity of functions, technical/ professional manpower and the status of MIS in place in that bank. There may not be one-size-fits-all module for all the banks to be made applicable uniformly. Balancing risk and return is not an easy task as risk is subjective and not quantifiable where as return is objective and measurable. If there exist a way of converting the subjectivity of the risk into a number then the balancing exercise would be meaningful and much easier.

Banking is nothing but financial inter-mediation between the financial savers on the one hand and the funds seeking business entrepreneurs on the other hand. As such, in the process of providing financial services, commercial banks assume various kinds of risks both financial and non-financial. Therefore, banking practices, which continue to be deep routed in the philosophy of securities, based lending and investment policies, need to change the approach and mindset, rather radically, to manage and mitigate the perceived risks, so as to ultimately improve the quality of the asset portfolio (Frischtak, 2002).

In today's fast moving business, customers need faster and more secure services for their financial transactions. Commercial banks in Nigeria have the privilege of various delivery channels for their products and services. This includes the brick and mortar branch office networks, automated teller machines (ATM‟s), tele-banking or mobile banking via the telecommunication channel and Internet banking (Market Intelligence, 2003).

**The development of ICT and banking service relations**

Through online banking, customers are better able to act and interact by removing the various constraints that are liable to be imposed by a third party (such as constraints of time, space or expertise), thus enabling them to act independently of an adviser but with the support of online banking resources. The capacity of an online customer for action, information and interaction are thereby increased; the customer thus emerges as a new agent in the banking process ([Mavri and Ioannou, 2006](http://onlinelibrary.wiley.com/doi/10.1111/j.1468-005X.2011.00266.x/full" \l "b25" \o "Link to bibliographic citation)). Although many studies have shown how ICT tend to alter the socio-professional and organisational factors of customer service advice and banking in general ([Al-Taitoon and Sorensen, 2004](http://onlinelibrary.wiley.com/doi/10.1111/j.1468-005X.2011.00266.x/full" \l "b2" \o "Link to bibliographic citation); [Joseph](http://onlinelibrary.wiley.com/doi/10.1111/j.1468-005X.2011.00266.x/full" \l "b18" \o "Link to bibliographic citation)*[et al](http://onlinelibrary.wiley.com/doi/10.1111/j.1468-005X.2011.00266.x/full" \l "b18" \o "Link to bibliographic citation)*[., 2005](http://onlinelibrary.wiley.com/doi/10.1111/j.1468-005X.2011.00266.x/full" \l "b18" \o "Link to bibliographic citation)), far fewer studies have taken account of their impact on customers and the effects of these impacts on the modalities of the service subsequently delivered in customer contacts based on an approach shifting from an intra-organisational to an extra-organisational perspective ([Peterson and Balasubramian, 2002](http://onlinelibrary.wiley.com/doi/10.1111/j.1468-005X.2011.00266.x/full" \l "b29" \o "Link to bibliographic citation); [Plé and Lefebvre, 2004](http://onlinelibrary.wiley.com/doi/10.1111/j.1468-005X.2011.00266.x/full" \l "b30" \o "Link to bibliographic citation)). The present study aims to remedy this defect.

**ICT and the development of customer competence**

Some customers use online banking to improve their banking knowledge and competence and to pre-produce the service they require ([Bernard, 2001](http://onlinelibrary.wiley.com/doi/10.1111/j.1468-005X.2011.00266.x/full" \l "b6" \o "Link to bibliographic citation)). Internet banking users typically compare or search for the most appropriate online services ([Curry and Penman, 2004](http://onlinelibrary.wiley.com/doi/10.1111/j.1468-005X.2011.00266.x/full" \l "b10" \o "Link to bibliographic citation); [Lassar](http://onlinelibrary.wiley.com/doi/10.1111/j.1468-005X.2011.00266.x/full" \l "b1002" \o "Link to bibliographic citation)*[et al](http://onlinelibrary.wiley.com/doi/10.1111/j.1468-005X.2011.00266.x/full" \l "b1002" \o "Link to bibliographic citation)*[., 2005](http://onlinelibrary.wiley.com/doi/10.1111/j.1468-005X.2011.00266.x/full" \l "b1002" \o "Link to bibliographic citation); [Kuisma](http://onlinelibrary.wiley.com/doi/10.1111/j.1468-005X.2011.00266.x/full" \l "b19" \o "Link to bibliographic citation)*[et al](http://onlinelibrary.wiley.com/doi/10.1111/j.1468-005X.2011.00266.x/full" \l "b19" \o "Link to bibliographic citation)*[., 2007](http://onlinelibrary.wiley.com/doi/10.1111/j.1468-005X.2011.00266.x/full" \l "b19" \o "Link to bibliographic citation); [Liao and Wong, 2008](http://onlinelibrary.wiley.com/doi/10.1111/j.1468-005X.2011.00266.x/full" \l "b1003" \o "Link to bibliographic citation)). The identified uses show that some customers use consultations to acquire a form of banking ‘knowledge’ or ‘know-how’ (knowledge of products and their methods of calculation, use of accounts, acquisition of data in the context of a loan, comparison and simulation) and to develop greater proactivity ([Prahalad and Ramaswamy, 2000](http://onlinelibrary.wiley.com/doi/10.1111/j.1468-005X.2011.00266.x/full" \l "b31" \o "Link to bibliographic citation); [Liao and Tow Cheung, 2002](http://onlinelibrary.wiley.com/doi/10.1111/j.1468-005X.2011.00266.x/full" \l "b23" \o "Link to bibliographic citation)). The result is a ‘wiser and more rigorous’ behaviour displayed by some customers ([Rodie and Kleine, 2000](http://onlinelibrary.wiley.com/doi/10.1111/j.1468-005X.2011.00266.x/full" \l "b33" \o "Link to bibliographic citation)). The role of pre-information and the pre-analysis of their situation are qualitatively different in the exchange situation and in the modalities of service production in customer contacts used to confront and finalise decisions. Initial virtual transactions (through emailing) increase and imply new interpersonal skills for CAs; this is because they require a conception of a customer contact as a ‘moment’ in a temporal sequence formerly constructed by the customer autonomously. The relation is inscribed simultaneously in a real triadic relation (CA–Information Technology (IT)–customer), although with the active participation of new virtual agent (online banking technologies and previous uses) that redefines certain conditions of exchange and negotiation. Faced with an increasingly independent and autonomous customer, professional agents thus tend to lose certain prerogatives and a degree of power. To this extent, virtual services foster more reactive and opportunistic attitudes in customers during customer contacts ([Prahalad and Ramaswamy, 2000](http://onlinelibrary.wiley.com/doi/10.1111/j.1468-005X.2011.00266.x/full" \l "b31" \o "Link to bibliographic citation)). In fact, before the development of banking ICT, the adviser and the customer operated exclusively in a distinctly asymmetrical position in access at information in face-to-face customer contacts. The development of Internet banking services may be seen to affect the roles, responsibilities and power relations of the actors involved in the production and delivery of services. It is precisely these trends and their consequences for the use of CA competence and available IT applications that will be explored throughout this study.

**Nigerian Banks and ATM**

Automated Teller Machine made its way into the Nigerian market in 1989. It was first installed for the defunct Societe Generale Bank of Nigeria by NCR (National Cash Register) in the same year. In recent years, banks and financial services industry have embraced the concept of e-money. These increased changes in the financial landscape have raised the hope for expectations for quality customer services. The banks now offer convenience to customers and provide services far beyond the traditional brick and mortar service periods. Today, customers can withdraw cash that they need immediately, thereby eliminating the risk of loss through theft and fire. In addition, they don’t need to travel long distances carrying bulk cash as cash can be withdrawn from destination point.

According to Uzor (2009), all the development in the e-payment sector is in line with Nigeria’s quest to keep its payment at par with international best practices and standards by leveraging on technology. Uzor also claimed that Nigeria’s e-payment rose to 360 billion in 2008. As of January 2009, Nigeria has about 7300 Automated Teller Machines installed in various bank branches across the country. Interswitch, a provider to about 25 banks in Nigeria had about 60 million transactions recorded (Uzor , 2009).

It is important to note that it is not a win-win situation. There are problems associated with the e-payment implementation and operations in Nigeria. These new problems include:

1. Irregular printing of statements due to printer error or lack of papers.
2. Always out-of-service due to epileptic internet connection.
3. Money always deducted from customers’ accounts even when ATM machines do not dispense cash.
4. ATM cards are being swallowed or retained without prior warning.
5. Intra bank charges for using other banks’ ATM machine either by being charged each time or through regular maintenance fee.
6. ATM machines situated in banks that are out-of-cash.
7. ATM machines waste up to five minutes playing music only for the card to be ejected.

**History of Automated Teller Machine in Nigria**

The Automated Teller Machine (ATM) was introduced into Nigeria market in 1989, as a matter of fact the very first Automated Teller Machine (ATM) in Nigeria was first installed by National Cash Registers (NCR) for the defunct Society General Bank in 1987.

Adeoti [[8]](#_bookmark8) disclosed that in Nigeria, the first bank to introduce ATM was the Moribund Societe Generale (SGBN) in 1990. The trade name for SGBN’s ATM was “Cash Point 24”. One of the first generation banks then, First Bank Plc came on stream with their own ATM in December 1991, a year behind SGBN. They also gave a trade name “FIRST CASH” to their ATM. While that of SGBN was the drive-in-system, that of the First Bank ATM was through-the-wall. Access to ATM is through the use of Personal Identification Number (PIN) and a plastic card that contains magnetic strips with which the customer is identified. Banks usually hand over the PIN to the customer personally and the customer is usually instructed not to disclose the number to a third party. ATM card is about the size of a normal credit card and apart from the need to ensure its safety, its surface strips could be mutilated which may make the machine to reject it even though the PIN number is entered correctly.

Automated Teller Machines (ATM) are located in banks and customers convenience areas. This allows customers to drive up and complete financial transaction without ever leaving the safety of their belongings. Automated Teller Machine (ATM) are interconnected to allow anyone with a bank card, debit card, or credit card to have access anywhere in the world because each station is connected to an inter-bank network such as PULSE, PLUS, CIRRUS and LINK to mention but few.

The Figure 1, Figure 2 and Figure 3below show the different types and categories of ATM.

**Figure 1:** Sample of ATM Machine



**Figure 2:** ATM Machine

**Figure 3:** ATM Machine Source: Compiled by the Author.

Other functions which the machines are capable of performing include:

* + 1. Printing of statements
    2. Transfer of funds
    3. Payment of bills
    4. Cash advances
    5. Display of promotional messages (Adeoti, [[10]](#_bookmark10)).

# Nigerian Banking System and Information Technology

# Information technology is the pivot on which process engineering is hinged. If properly strategized, it can improve information use and context that can enhance performance and coordinate activities across functional business units. Most technologies have had significant impact on people’s lives since the twentieth century, but none as profound as information technology (IT).

# The Nigerian banking system has gone through several eras since 1892 that the country first embraced the free banking system. Noticeable among the eras is the period of banking distress in 1994. This era witnessed a lot of recklessness in banking practice which range from poor management, illegalities to fraudulent practices by bank directors. Consequent upon this, the banks lost public confidence. The after effect of the distress was mergers and acquisitions of weak banks. To restore public confidence and to continue in business, the new banks had to reengineer their systems and operations with information technology. Their numerous branches were networked with computers that support Very Small Aperture Technology (VSAT); thus enabling the implementation of electronic banking system including Automated Teller Machines. Automated Teller Machines can offer significant benefits to both the banks and their depositors. The machine can enable depositors to withdraw cash at more convenient times and places other than banking hours. ATM reduces the number of human deployment by banks thereby reducing cost of operations. These potential benefits are multiplied when banks share their ATM, allowing depositors of other banks to access their ATM.

# Apart from the application of ATM in banking, Nigerian banks are using information technology to enhance their business decision making. The banks have used information technology to package other products such as: E-money, online banking etc.

# Deployment of ATM and Network Affiliation

# The motivation of banks to deploy ATM and share their ATM with customers of other banks is an area that economists have investigated. Humphrey (1993) examines the motive and concluded that cost savings or reduction was the prime motive. He studied the cost of banking in the United States and how the costs are influenced by the deployment of ATM. His study also revealed that ATM transactions cost about half the amount that the same transaction would cost if it were conducted in a branch of a bank. However, no savings were realized from the significant expansion of ATM services that Humphery observed. Instead, banks’ customers, taking advantage of the increased conveniences of ATM services, increased the number of transactions, leaving total bank costs roughly the same as if no ATM was deployed. Humphrey’s findings indicate that in United States, satisfying consumers’ demands is an important consideration in the decision to deploy ATM, even more important than to reduce cost.

# Saloner and Shephard (1995) examined the deployment of ATM by individual banks prior to the advent of sharing ATM in the United States. By considering the size of the bank and the geographic dispersion of the bank’s depositors, they were able to detect a significant network effect in the demand for ATM services by bank customers. Their work revealed that, bank whose customers are willing to pay for ATM services will invest in providing the ATM service sooner than other banks. McAndrews (1991) measures an indicator of demand-side network effect of ATM, the number of “on-others” transactions increased as ATM network were formed among banks. Carlton and Frankel (1995) examine the effect of a merger for two ATM networks in Chicago Illinois, and found that the merger led to a significant growth rate of total transactions. It therefore implies that co-operation among banks in ATM deployment policy increases transactions among ATM user and reduces banks’ cost of operating such transaction by half.

**Impact of Automated Teller Machine on Banking Performance**

Bank customers in Nigerian have a collective sign-of- relief when the Automated Teller Machine (ATM) was introduced as an instrument to aid banking operations in 2006. The introduction of the ATM by financial institutions changed the face of banking in Nigeria but with some inherent challenges.

According to [[11]](#_bookmark11) in his paper, Automated Teller Machine and Electronic Payment System in Nigeria, “ATM played a key role in any retail banks’ efforts to use technology as a quality weapon to defeat competition”. Automated Teller Machine provides a major role in offeing conevenience, speedy and round the clock services. Adeoti (2011), stressed that the use of ATM is safe and convenient. The ATM has made settlement of bills in the Nigerian banking system easy and saver. These benefits have resulted into phenomena growth in number of ATMs

in Nigeria. The growth of ATMs in Nigerian banks has rose from 83% in 2006 to 289% in 2007 (Adeoti, 2011). Almost all banks introduced the ATM in their bank premises in 2007.

Another great impact of automated teller machine and information Technology is that it contributes immensely to the promotion of marketing banking services. With the aid of Information Technology, funds can be moved one account to another at the push of a button, essential information relating to a transaction could be made available thousands of miles away within minutes.

Today, banks are developing and deployed better – personalized services through the use of automated teller machine. For example in Nigeria today, banks are providing customers with “Access Terminals”with which they (customers) can access their balances and view or print movement in their accounts. These are special services, enjoyed by special, customers, which has been impossible hitherto.

Among other schools that highligthed the usefulness of of ATM are [[12,13,14,15,16].](#_bookmark12) They identified the advantages of ATM to the bank as follow: investment opportunities, reduction in costs (i.e. cost savings), effective service delivery, branding of shared network, satisfaction of customers and competitiveness etc. Moutinho [[17]](#_bookmark13) established that ATM facility resulted in speed of transactions and saved time for customers.

Other value added services of ATM include college fee payment, online collection of application fee, mobile top up, religion/trust Donation, bill settlement, insurance premium payment, funds transfer card to account, amongst others. Increased ATM usage is also helped by the fact that customers have now the flexibility of using ATMs of other banks, as most of the banks are part of major interbank networks. The interbank networks have brought together ATMs of several banks so that consumers would gain access to any of the participating banks’ ATMs. Banks find it cheaper to pay membership fees to these networks as against setting up additional units in expensive-to-deploy areas. According to the Director, Switching and Processing, Interswitch cited in Siyanbola (2013), 16 out of the 26 million ATM cards currently in Nigeria were interswitch verve cards issued by over 16 commercial banks and well over 14 microfinance banks; while the remaining 10 million e- Payment cards are shared by Mastercard and Visa, two global payment card players.

Many ATM vendors have devised specialised machines, embedded with biometric devices for authentication. Catering to the rural population, these machines have enabled them to interact with the machine in their local language and on a graphical user interface. The rural customer has seemed to accept this new medium. This has the potential to further widen the scope of ATM usage in the interior parts of the country. There is also interest towards white-label ATMs. Many companies are interested in this model, where the ownership of the ATM will not be with the banks but with third parties who deploy them and make money on fees charged on every transaction. The concept is prevalent in the American continent. Wide acceptance of ATMs by consumers, introduction of biometric ATMs, and increasing scope of value-added ATM services will maintain growth in the industry.

However, the advantages of safety and convenience of ATM has unfortunately been lessened by the frauds that are perpetrated by ‘plastic money’. The increase in number of customers using ATM has also increased the propensity to fraudulent practices by the ATMs fraud perpetrators. Ihejiahi [[18]](#_bookmark14) cited in [[10]](#_bookmark10) expressed concern about the lack of cooperation among banks in the fight to stem the incidence of ATM related frauds now plaguing the industry. He expressed that the silence among banks on ATM frauds makes it difficult for banks to share vital information that will help curb the menace.

Muhammad [[19]](#_bookmark15) postulates that 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, [[18]](#_bookmark14) 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.

Obiano [[19]](#_bookmark15) blamed the menace of ATM frauds on indiscriminate issue of ATM card without regard to the customer’s literacy level. According to him one of the frequent causes of fraud is when customers are careless with their cards and pin numbers as well as their response to unsolicited e-mail and text messages to provide their card details. Omankhanleu [[20]](#_bookmark16) opined that the current upsurge and nefarious activities of Automated Teller Machine (ATM) fraudster is threatening electronic payment system in the nation’s banking sector with uses threatening massive dumping of the cards if the unwholesome act is not checked.

As with any device containing objects of value, ATMs and the systems they depend on to function are the targets of fraud. Fraud against ATMs and people’s attempts to use them takes several forms. These include: ShoulderSurfing; Lebanese Loop; Using Stolen Cards; Card Jamming; Use of Fake Cards; Duplicate ATMs; Card Swapping: Diversion; and ATM Burglary (A Report on Global ATM Frauds, 2007). Some if not all are found in the Nigerian banking environment which ultimately undermined the effectiveness of ATM facility. ATM fraud is now a recurrent decimal that speaks ill of the Nigerianfinancial system which ought to be checkmated.

**Theoretical Framework**

During the 1960s, the influence which affluent nations had over less developed nations became a prominent topic of research. This study is based on Modernization theory assume that we live in a network society. These networks burst across territorial borders, rupturing the cultural and economic self-sufficiency once experienced by nations. The overall implication of these interconnections implies that societies co-exist with one another. At the same time, the once clear-cut separation between the sphere of national life and the international sphere has largely been broken down. Thus, this theory was considered to be more appropriate and suitable as it stresses the relationship between Automated Teller Machine and banking industry performance as a result of globalization which enhance political-economy and socio-economic development of a nation.

**CHAPTER THREE**

**RESEARCH METHODOLOGY**

**1.1 Introduction**

In academic environments, research is essentially an investigation, a recording and improvement on existing knowledge. Research is a systematic method of acquiring knowledge other than by chance trial and error. According Ezeani (2011:2), Research is the process of arriving at dependable solutions to problem through the planned and systematic collection, presentation analysis and interpretation of data. Research introduces system planning and purpose into investigation hence kerlinger (1979) sees it as empirical, controlled, systematic and critical investigation of hypothetical prepositions about presumed relations among natural phenomenon.

According to the Encarta dictionary (2009) methodology means the methods or organizing principles underlying a particular art, science, or other area of study. Merriam-Webster’s dictionary and thesaurus (2008) sees methodology as a body of methods, rules and postulates employed by a discipline: a particular procedure or set of procedure.

In carrying out this research work, certain methods are employed. This chapter explain in depths the procedures the researcher intends to follow in arriving at the inferences of this work .In this chapter issues concerning the research design, population of the study, sample and sampling techniques, sources of data collection, Instrument for the data collection, validation and reliability of instrument and the method of analysis will be discuss in depth.

**3.2 Research Design**

This is the specification of procedures for collecting and analyzing the data necessary to help solve the problem at hand; such that the difference between the cost of obtaining various levels of accuracy, and the expected value of information associated with each level of accuracy is maximized.

The research design applied here is aimed at examining the effects of the Automated teller machine on the performance of Nigerian Banks. The type of research design adopted for this research is the survey approach which is carried out through observational studies and selecting sample from the population (of the staff) ranging from The Administration Office to various departments in the organization.

**3.3 Population of the Study**

This simply means the aggregate of persons from whom data to the study were collected. The population of this research work constitutes an aspect of the employees from 5 banks were randomly sampled For the purpose of the study. These include Access bank, Diamond Bank, First Bank, EcoBank Plc, and First City Monument Bank Plc. The choice of the banks is that they are all new generation banks with large customer base.

* 1. **Sample and Sampling Techniques**

According to Nwizu.G (2008), a sample is a truly representative subset of a population. Sampling arises in research, because of the need to avoid bias and also because of neither time nor other resources would permit a complete census in other words it is a plan on how elements should be drawn from the entire population. They are various method of sampling techniques but for the purpose of this research, The Purposive sampling method is adopted. The responses of an aspect of the employees are chosen on purpose.

**3.5 Sources of Data Collection**

Data are defined as research relevant information. Two sources of data collection was used in obtaining the research relevant information, they are the primary and secondary source of data.

Primary sources of data collection are source of materials which contain direct accounts of phenomena or events. The primary source of data collection adopted is questionnaire methods, which is said to be a list of question sent to the respondents to complete and return to the researcher. The type of questionnaire used, are structured questionnaire.

The second sources of data collection which is the secondary source of data collection, were derived from the used of document, both published and unpublished which include text books, articles, official reports and statistics, newspapers and journals.

* 1. **Instrument Used in Data Collection**

The instrument used in the research work is questionnaire method.Questionnaires were served to 25 staff per sampled banks in Lagos metropolis.

The response format is as follows:

VHE Very high extent HE High extent

AE Average extent LE Low extent VLE Very low extent

* 1. **Validation an Reliability of the Instrument**

Validation refers to the extent to which the researcher is measuring what he intends to measure. The research instrument used by the researcher as certified content validity, face validity, predictive validity and construct validity. Reliability according to Nzeribe (1994), is the accuracy and precision of the results obtained over time.

The instruments used for data collection were objectively constructed and the questionnaire was submitted to the researcher’s supervisor for validation. The questionnaires constructed were simple and direct to enable the employees of the FIRS to be able to understand the questions easily and give accurate information.

* 1. **Method of Analysis**

A Likert Scale of 5- points was used to measure the level of agreement or disagreement by the respondents.

Frequency distributions were used to analyze the data collected and examined the pattern of response to each variable under investigation... The data collected from the respondent were presented and analyzed in a tabular form. The table is showing respondent views based on the questionnaire administered to them.

**CHAPTER FOUR**

**DATA ANALYSIS, INTEPRETATION AND PRESENTATION**

A total of 125 questionnaires were administered and 100 were answered and returned which represented 80% of the total respondents. Though the questionnaire covered various issues, only the relevant findings are reported in following tables.

**Question 1:** Automated Teller Machine (ATM) contribute immensely to effectiveness of banking sector.

**Table 1: Effect of Automated Teller Machine (ATM) on effectiveness of banking sector**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | Average extent | 17 | 17.0 | 17.0 | 17.0 |
|  | High extent | 35 | 35.0 | 35.0 | 52.0 |
|  | Very-high extent | 48 | 48.0 | 48.0 | 100.0 |
|  | Total | 100 | 100.0 | 100.0 |  |

Source: Questionnaire returned

The analysis whether Automated Teller Machine increase banking sector efficiency in table above reveals that 48% of the sample size indicate very high extent, 35% of the population sample state high extent while 17% of the respondent say average extent and none of the respondent indicate low extent and very low extent. It could be deduced from the table that Automated Teller Machine contributes to the effectiveness of banking sector.

**Question 2:** To what extent as Automated Teller Machine stimulate growth of banking system.

**Table 2: Impact of Automated Teller Machine on the growth of banking sector**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | Very low extent | 4 | 4.0 | 4.0 | 4.0 |
|  | Low extent | 9 | 9.0 | 9.0 | 13.0 |
|  | Average extent | 20 | 20.0 | 20.0 | 33.0 |
|  | High extent | 30 | 30.0 | 30.0 | 63.0 |
|  | Very high extent | 37 | 37.0 | 37.0 | 100.0 |
|  | Total | 100 | 100.0 | 100.0 |  |

Source: Questionnaire returned

The above table also reveals that Automated Teller Machine stimulate banking industry growth when 37% of the population sample indicate very high extent, follow by 30% of the respondent with high extent while 19% of the sample size says average extent and 10% state low extent, just few that 4% indicate very high extent to this effect. This shows that automated teller machine stimulate banking industry growth.

**Question 3:** Extent to which Automated Teller Machine speedily improve banking profitability.

**Table 3: Impact of Automated Teller Machine on the profitability of banks**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | Very low extent | 3 | 3.0 | 3.0 | 3.0 |
|  | Low extent | 9 | 9.0 | 9.0 | 12.0 |
|  | Average extent | 41 | 41.0 | 41.0 | 53.0 |
|  | High extent | 26 | 26.0 | 26.0 | 79.0 |
|  | Very high extent | 21 | 21.0 | 21.0 | 100.0 |
|  | Total | 100 | 100.0 | 100.0 |  |

Source: Questionnaire returned

From the table above, 42% of the sampled respondent indicated that Automated Teller Machine speedily improve profitability of banking to an average. This would indicate that banks staff are also aware of various challenges and fraud confronting the ATM facility. In fact, observation in the ATM points of most banks reveals that most customers experienced several cases of issues using ATM Machines either the machines will not dispense cash, or debit transaction when cash is not dispensed or cards get stuck into them and so on. These challenges have made ATM users to dissatisfied about the facility. Therefore, it can can be deduced that Automated Teller Machine has averagely improve banking industry profitability.

**Question 4:** Extent to which Automated Teller Machine ATM influence fraud in banking sector

**Table 4: Effect of Automated Teller Machine on fraud control in banking sector**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | | Frequency | Percent | Valid Percent | Cumulative Percent |
| Valid | Average extent | 13 | 13.0 | 13.0 | 13.0 |
|  | High extent | 21 | 21.0 | 21.0 | 34.0 |
|  | Very high extent | 66 | 66.0 | 66.0 | 100.0 |
|  | Total | 100 | 100.0 | 100.0 |  |

Source: Questionnaire returned

**Findings of the Study**

The study finds that Automated Teller Machine contribute to the effectiveness of banking sector. The tremendous growth and development of technological advancement has been the driving force of the market nowadays. The deployment of ATM facilitieshas revolutionized the banking sector. The Nigerian banks are aggressively promoting issue and use of ATM cards, credit cards, debit cards, and smart cards to enhance their performance and kill competition.

It also finds that Automated Teller Machine stimulate banking industry growth. This is expressed in the number customers using the ATMs. However the number of transaction per ATM remains a significant measure of the efficiency of these ATMs.Such transaction volumes can also be used to measure the kind of returns banks are getting from the regular patronage of their ATMs.

The high level of ATM fraud and scam is threatening the continual usage of the ATM by the users. These have become a source of worry to users and providers (banks) because the function it was meant to provide has been eroded seriously. A lot need to be done to create confidence in the minds of customers about the benefits and security of the automated delivery channels. Lack of use of ATM channels is expressed in lack of confidence 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.

Also, the absence of direct interaction with bank staff has increased customers’ apprehensions about the perceived risk ATM delivery channels. To reduce the customers concerns about perceived risk because of security and privacy concerns, the bank should improve the quality of interaction with the customers to alleviate these apprehensions with a view to improve ATM service quality.

**CHAPTER FIVE**

**SUMMARY, CONCLUSION AND RECOMMENDATIONS**

**5.1 Introduction**

This work is on the effect of automated teller machine on the performance of Nigerian Banks.

This study investigates the effects of ATM on the performance of Nigerian banks. Available studies have concentrated on the significant dimensions of ATM (automated teller machine) service quality and its effect on customer satisfaction with a bias against ATM producers. The study is motivated by the astronomical challenges confronting the proliferation of ATM infrastructure and attendant financial loss to banks which are often under- reported. Also, there are serious debate on the relevance of ATM technology as most countries in the world are moving away from the virus technology to the more secured chip cards free of credit and debit frauds.

**5.2 Conclusion and Recommendations**

The paper reveals that Automated Teller Machine is important and very effective, and its discussion is not whether it is desirable or not, but to determine how the emerging technologies can be better annexed and channeled to promote banking sector growth, more productivity, more trade, improve banking records keeping, greater modernization and better living standard among Nigerians. The activities of banking industry has been able to rise up, thus, the advent of Automated Teller Machine has enable bank management and investors aware of some of the techniques being used by their foreign counterpart in achieving competitive advantage.

In view of the findings and problems associated with the use and introduction of Automated Teller Machine in banking industry which significantly influence economic growth, promote trading system, national income, and general welfare of the people, the following recommendations are suggested:

1. Government should protect financial institution by creating laws, which must be followed accordingly to enable them to improve in performance and activities.
2. Banking managers and government should properly adopt strategy that will encourage businessmen and general public in using automated teller machine which will improve effectiveness and efficient of the banking sector.
3. In a way of promoting the banking sector and micro finance banks, government should hold firm the laws on ATM fraudsters and scammers so as to boost economic of the nation.

The banks can employ customized software that records relevant information on ATM cards so that banks can establish whether unauthorized transaction has taken place or not.

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**APPENDIXE**

**QUESTIONNAIRE**

**PLEASE TICK [√] YOUR MOST PREFERRED CHOICE(s) ON A QUESTION OF YOUR CHOICE**

**SECTION A**

**PERSONAL INFORMATION**

1. **Gender**

Male [ ]

Female [ ]

**3. Age**

20-30 [ ]

31-40 [ ]

41-50 [ ]

51+ [ ]

**4. Education**

HND/BSC [ ]

MSE [ ]

PHD [ ]

1. **Marital Status**

Single [ ]

Married [ ]

Divorced [ ]

Widowed [ ]

**SECTION B**

Please indicate the extent to which you are satisfied with the following items by ticking in any option presented in the boxes below.

**Question 1:** Effect of Automated Teller Machine (ATM) on effectiveness of banking sector.

|  |  |
| --- | --- |
| **Options** | **Please Tick** |
| Average extent |  |
| High extent |  |
| Very-high extent |  |

**Question 2:** Impact of Automated Teller Machine on the growth of banking sector

|  |  |
| --- | --- |
| **Options** | **Please Tick** |
| Very low extent |  |
| Low extent |  |
| Average extent |  |
| High extent |  |
| Very high extent |  |

**Question 3:** Impact of Automated Teller Machine on the growth of banking sector

|  |  |
| --- | --- |
| **Options** | **Please Tick** |
| Very low extent |  |
| Low extent |  |
| Average extent |  |
| High extent |  |
| Very high extent |  |

**Question 3:** Extent to which Automated Teller Machine speedily improve banking profitability.

|  |  |
| --- | --- |
| **Options** | **Please Tick** |
| Very low extent |  |
| Low extent |  |
| Average extent |  |
| High extent |  |
| Very high extent |  |

**Question 4:** Extent to which Automated Teller Machine ATM influence fraud in banking sector.

|  |  |
| --- | --- |
| **Options** | **Please Tick** |
| Average extent |  |
| High extent |  |
| Very high extent |  |