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ATM Technology and Banking System in West African Sub-Region: Prospects and Challenges (Pp. 104-114)

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Abstract

Automated Teller Machine (ATM) technology has had its significant impact in banking system in Nigeria and some other West African Countries. The most significant impact of ATM technology is the customer's ability to withdraw money outside banking hours. But this feat achieved by ATM technology is not without challenges. ATM technology is prone to fraud, and this has made many people shun its use. In view of the above, this paper explores the prospects and challenges of ATM application in banking in West African sub region and how the challenges posed by its use can be removed or minimized.

Keywords: ATM, Technology, Prospects and Challenges.

Introduction

In recent times, it has become clearer that intellectual capital and technology now rule the world. National resources, such as gold, diamond, oil etc, are no longer the primary determinant of wealth (Emeagwali, 2009). Almost all businesses, especially in advanced economy, have become aware that they must adapt to the changing technology or be left behind. Most organizations are now making frantic efforts to keep track of technological changes and implement them in their competitive strategies.

One of the newest computer technologies in business world today is the customer – integrated system (CIS). A Customer Integrated System is an extension of a transaction processing system that places technology in the hands of an organization’s customers and allows them to process their own transactions. ATMs are perhaps the most common example of a CIS (Haag, Cummings and Rea, 2004).

At this point in time, it is pertinent to ask, what is ATM? ATM is Automated Teller Machine. It is a banking terminal that provides customers with 24 hours deposit and withdrawal services. ATMs or cash dispenser machines are installed in the banks and other strategic locations for convenience of the customer (.Anand, 2006)

According to O’Leary and O’Leary (2005), many banks have found that Automated Teller Machines (ATMs) are vital to retail banking. Not only do the banks require fewer human tellers, but they can also be made available for 24 hours a day. ATM provides you with the ability to do your own banking anywhere at any time.

Due to restricted banking hours, it is often difficult for people to get access to their money when needed. ATM, therefore, represents greater customers’ satisfaction and cost savings device. Customers become their own teller when they use ATM.

There is no-gainsaying the fact that ATM has a lot to offer mankind in terms of unrestricted hours of service, cost and flexibility. But the level of ATM fraud in West African sub-region is becoming worrisome – hence the need for this research paper.

The current upsurge and nefarious activities of Automated Teller Machine (ATM) fraudsters are threatening electronic payment system in West African sub-region, especially in Nigeria, with users threatening massive dumping of the cards if the unwholesome act is not checked. The activities of these fraudsters cut across all the banks having ATM facilities (News Desk, 2009)

In Ghana, a WESTEC security officer and an employee of Ecobank, Ghana Limited was arrested for illegally unlocking the Automated Teller Machine at Osu RE branch of the bank and stealing 65 million Cedis from it.

In Liberia and Sierra Leone the story is the same. In short, no country in West Africa is spared by a wide spread of ATM fraud.

From the foregoing, the fact that ATM fraud is causing a lot of havoc to ICT development in West African sub-region is not in doubt. Odachi (2009) observed that due to ATM fraud, a good number of people now shun the use of ATM and other cyber applications and concluded that cyber threat is an impediment to ICT development in West African sub-region.

The Nature/Architecture of Automated Teller Machine

The knowledge of the nature and the architecture of ATM is essential as this will reveal how ATM fraud is made possible and how the problems can be solved.

(A) ATM Hardware and Software

An ATM is typically made up of the following components - the hardware and the software. Hardware is the physical part of the machine which we can see and touch. They include: the Central Processing Unit (CPU), the Magnetic and/Chip Card Reader, PIN Pad, Secure Crypto Processor, Display Unit, Record Printer, Vault, Dispenser ,etc. The software used is mainly Microsoft (MS) Windows XP Professional, MS Windows XP embedded, Linux. ATM uses suitable Application software such as CEN XFS (Wikipedia, 2010).

(B) The Working of ATM

The ATM has two compartments to store cash in. The first is the ‘deposits’ compartment. This is a small area that receives the daily deposits. It is located in the upper-part of the machine, near all the mechanical devices. The second part is withdrawal compartment. Due to the fact that most ATM transactions are withdrawals the complete bottom-half is filled with cash where the withdrawals are extracted from. The automated teller is connected by wires and cables to a “main computer”. During each transaction the teller sends signals to main computer. The main computer records each transaction (a deposit or withdrawal) and updates the card-holders account. It also sends approval or denial signals to the ATM as regards the transaction requested. For instance, if a card-holder tries to withdraw ₦5, 000 from his account and he has only ₦4, 500 in it, the main computer will tell the ATM to deny the transaction.

(C) The ATM Card and Its Function:

The front-side of the ATM card is embossed with information about the card holder. The back-side of the card has a thin strip of magnetic tape which also holds some important information.

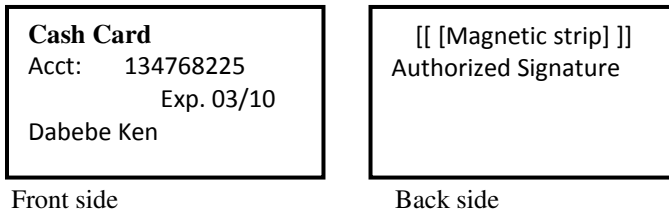


Fig 1: Front and Back sides of ATM card.

The information on the front-side is easily readable with the naked eyes. But the information on magnetic-strip cannot be read. The same information as embossing and some confidential information concerning the cardholders financial status is stored there. The magnetic strip has 3 tracks on it.

By simply inserting a plastic card into the machine and key padding-in the owners' account password, one can access one's bank account and receive cash-in hand. When a cardholder inserts his card into the machine and requests a transaction, the machine reads the embossed information from the front side and compares it with the data stored on the magnetic strip, on the back side looking for a "match" of information on both sides. When the card is being processed the ATM tries to match the account number, expiration date and name stored on each track. Once the information on the tracks are confirmed to match, the ATM compares them to the embossed information on the front-side. If all the information matches then transaction will proceed.

Prospects / Benefits of ATM

There is no-gainsaying the fact that ATM technology, if left un-tampered with by cyber criminals has a lot to offer mankind now and in future. Tague (2010) observed that a plastic Automatic Teller Machine card linked to your bank account makes financial transactions a breeze by eliminating the waste of writing cheques or the dangers of carrying large sums of cash. The debit cards benefit both the card holders and the banks.

Some of the benefits of ATM technology is bank decongestion, reduced cost of transactions for both customers and banks. This has drastically reduced banking time. The ability of ATM card holder to make withdrawal at any point in time and anywhere close to him or her is one of the greatest benefits of ATM technology. This has reduced the agony of one running out of cash.

Another nice opportunity provided by ATM to users is the flexibility to move around with minimal cash and thereby reduce incidence of theft. ATM technology when properly used will make the building of cashless society possible.

ATM card has assisted travellers in obtaining cheaper exchange rate. Foreign ATM machines offer users access to the wholesale exchange rate, which is often less expensive than paying service fees when exchanging cash or travellers cheques in foreign bank or currency exchange office.

Some banks do not collect bank service charge to ATM users, while across the counter transactions are charged. This leaves more money in the account of ATM users than that of non-ATM users.

In Nigeria, the central Bank of Nigeria has embarked on promotion of operation cashless society so as to remove the huge amount of money in circulation. ATM technology now adopted in banking system in Nigeria is bound to rapidly move Nigeria away from a cash-based economy to a card-based nation.

According to recent survey (Matali, 2006), one of the most visible outcomes of post-consolidation exercise in banking in Nigeria is aggressive development of Automated Teller Machines (ATMs) by the consolidated banks. As at today, over 900 ATMs have already been deployed by the banks on the Interswitch network in the last three years, making Nigeria one of the fastest growing ATM market in Africa. This goes to show that Nigeria is quite aware of the fact that ATM technology has great potentials for effective and efficient management of bank sector.

Nigeria Debit Cards are payment cards that can be used to withdraw cash from Automated Teller Machines, make purchases at restaurants, supermarket, hotels and related merchant locations through point of sales terminals.

The Challenges of ATM Technology

The fact that ATM technology has the potentials for transforming West Africa sub-region into card-based economy as opposed to cash-based economy is not in doubt. This notwithstanding, ATM technology is faced with many challenges. These challenges are categorized into two - machine and human related challenges.

(1) Machine Related Challenges

Network Connectivity Problem: This is one of the problems facing ATM application in West African sub region, especially in Nigeria. It is very disappointing when one goes to ATM to withdraw some money and will be told that ATM is out of Service.

No Cash in the Vault Syndrome: This is a situation where ATM runs out of cash and not replaced immediately.

Inability of the Machine to Print out Receipt: At times ATM machine gives the user a screen message showing its inability to print receipt. This is very disappointing too.

Wrong Debiting: There are cases of ATM machine debiting the account of a customer without releasing the money to him. It takes time to rectify this problem.

Card Trapping: At times the ATM card is trapped inside the machine, thereby frustrating the owner. There have been cases of ATM giving out money without debiting the account, or giving a higher value notes as a result of incorrect denomination loaded in the money cassettes.

(2) Human Related Challenges

Robbery: Robbery at ATMs takes various shapes. The couriers who fill ATMs with cash are usually robbed, and the money in their possession taken away. Another ATM crime is the issue of a robber waiting outside ATM for a valid user to complete his transaction and be attacked and robbed. This has happened to many ATM users in Nigeria and some other West African countries.

Other robbery cases include theft of money from ATMs by bank/ATM service employees; theft of personal identification numbers (PINs) through shoulder surfing; robbery of ATM cards and forcing the owners to reveal the PINs etc.

Production of Counterfeit ATM: Valid ATM customer's card can be cloned and used to withdraw from the customer's account. This is done by copying information from valid card into the counterfeit card. The counterfeit card is now used to withdraw people's money. The fraudsters use a special machine to copy the magnetic strip. For instance one Kayode Opeyemi was arrested on Wednesday morning at a bank in Accra central with five ATM cards – three of them fake and two genuine. The fraudster and his group used the

ATM cards to withdraw money from customers' accounts.(Ghanaian Times, 2010)

Fraud through E-mail or Text Message: At times ATM card holders receive text messages or e-mail from the fraudsters alleging that certain amount of money was withdrawn from their accounts by unknown persons and would want them to reveal certain information including their account number and ATM PIN. They claim the information will help them to rectify the problem. The fraudsters, in most cases, claim the messages are from Interswitch.

Stealing of the Customers PIN by Sophisticated Means: There have been also a number of incidents of fraud where criminals have used fake machines or attached fake keypads or card reader to existing machines. These, then have been used to record customers' PINs and bank account details in order to gain unauthorized access to their account.

Other sophisticated devices include spy cameras, phishing through the internet etc. They use these devices to get customers bank details including the PIN. The criminals are improving on a malicious software program that can be installed on ATMs running Microsoft Windows XP operating system that records sensitive card details. The malware, which steals PINs and card data works on ATMs running windows XP (KirK, 2009). These devices, emanating from Eastern Europe are finding their ways into developing countries, especially Nigeria. (Metadi, 2006)

Illiteracy/Lack of Skill: In West Africa, some people cannot read and write. These people find it difficult to use ATM card. Others lack the basic skill on how to use ATM card. The result is that they seek for assistance. A dubious assistant can steal vital information from the card such as the cardholder's PIN and use it to defraud the person being assisted.

Data-link Intercept: In this case the fraudsters tap into the wires that connect the ATM to the main computer. By doing so, they intercept and send signals to ATM. Some criminals netted \$600,000 from various ATMs, using this method.

Basic ATM Infrastructure: The managing director of Interswitch observed that in Nigeria, lack of basic infrastructure such as power is a major challenge to ATM application.

Solution to ATM Challenges

The challenges of ATM technology discussed earlier show that ATM is facing serious threat from cyber criminals. The ATM card holders are becoming restless about large scale fraud witnessed in application of ATM technology in financial matters. This has resulted to some of them calling ATM “Automated Thieving Machine”. This notwithstanding, ATM technology has done a lot to improve bank services, as long queue in all the banks before the introduction of ATM has disappeared. This has led to almost real time bank services. The citizens of West African sub region should not be daunted because of ATM fraud. All the stake-holders need do is to come together and give the challenges the fight they deserve.

In view of the above, the researcher has proffered solution to ATM fraud. This is contained in the solution model shown below.

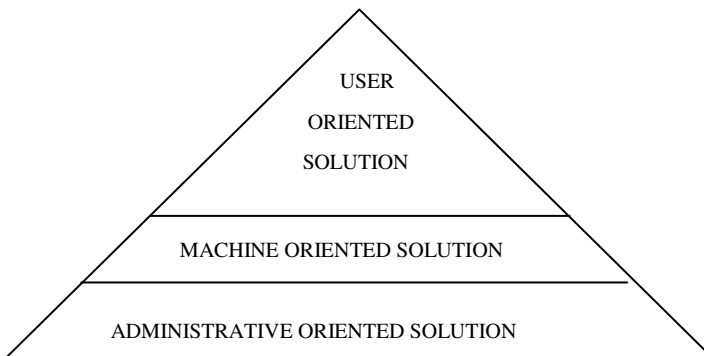


Fig 2: Solution Model

Source: The Author

1. User Oriented Solution

ATM cardholders should adopt the following measures to check ATM fraud, which is an ill wind that blows nobody any good.

- (i) ATM cardholders should stop asking people to assist them in using their ATM cards as these people might steal vital information from the cards.

- (ii) The cardholders are equally advised to avoid replying to suspicious e-mails or text messages especially the ones requesting them to give their account details including their ATM card PIN.
- (iii) Customers ATM cards should be securely kept by them. It should not be found in other people's hands no matter the relationship.
- (iv) ATM users must ensure that they do not reveal their PIN to anybody. They should be careful and make sure that nobody is very close to them when entering their PIN number into ATM.

2. Machine Oriented Solution

This is the solution of the problems created by ATM machine itself. These include:

- (i) Faulty ATM Machine: ATM machine, just like any other machine, at times breaks down. Trapping of cards and non-issuance of receipts are not palatable to customers. Financial institutions should ensure that there is alternative solution. Provision of more ATMs at location/prompt maintenance of the faulty machine is recommended.
- (ii) Network Problem: Network service providers should ensure that their service is regular. ATM is meant to give 24 hours service and needs steady network service.
- (iii) No Money in the Vault: Financial institutions should not allow this problem to crop up at all. The amount of money in the vault should be monitored and replaced as soon as it is finished. Correct bank note denomination should be loaded in the money cassettes meant for that denomination.

3. Administrative Oriented Solution

Administrative oriented solution to ATM fraud involves the government, the bank and the network providers. These three bodies should put their heads together to find lasting solution to problems arising from the use of ATM technology. The solutions include:

- (i) Robbery Cases: Stiff Legislative measures should be taken against cyber criminals by governments of various West African countries. Security operatives should mount serious search for these criminals.
- (ii) Security – the government should assist the banks in providing security in and around ATM sites.

- (iii) Banks have to ensure that ATMs are installed where there is a lot of natural surveillance. This will ensure that prompt action is taken against the robbers.
- (iv) Banks should also install surveillance cameras and mirrors in and around ATMs. This enhances the ability of the police to identify offenders and potentially deter intending offenders.
- (v) Banks are advised to embark on sensitization campaign to enlighten their customers on how to use ATM cards.
- (vi) The operators and regulators of ATM are advised to be up to date with the latest technology and methods employed by the criminal elements to be able to reduce their operation. Prompt deployment of latest technology is needed to chase away these cyber criminals. As these criminals are targeting windows xp operating system, anti-fraud network operating system should be sought for. Bankers should bankroll their bright tech-driven banking bliss to bar us from bank-bug.

It is worthy of note that following the central Bank of Nigeria (C.B.N) directive, Interswitch(the Nations ATM network Provider) has come out with a more secure ATM card known as Verve Card. Verve is the most secure chip and PIN around Nigeria and environs. The chip technology guarantees that information stored is not accessible to unauthorized persons.

The Ghana Central Bank (GCB) has promised Ghanaians improved ATM services in the years ahead, following on-going work to upgrade its IT platform.

Conclusion

Despite the pain ATMs have brought to many, it is without doubt a good banking innovation in West African sub-region. ATM technology still remains the only way to achieve a cashless society. If the three-tier solution advanced above is strictly adhered to, the ATM bug – will be minimized or debugged entirely. No system is free from bad influence of bad people, people who derive pleasure in making their fellow human beings miserable.

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