ATM FRAUD AND ITS IMPACTS TO FINANCIAL INSTITUTIONS: THE CASE OF NMB AND CRDB BANKS IN ARUSHA

ATM FRAUD AND ITS IMPACTS TO FINANCIAL INSTITUTIONS: THE CASE OF NMB AND CRDB BANKS IN ARUSHA

By

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A dissertation submitted in partial/fulfilment of the requirement for Award of Master's Degree of Science in Accounting and Finance of Mzumbe University

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CERTIFICATION

We, the undersigned, certify that I have read and hereby recommend for acceptance by Mzumbe University a dissertation titled; **ATM fraud and its impacts to financial institutions: the case of NMB and CRDB banks in Arusha,** in partial fulfillment of the requirements for the award of the degree of Master of Science in Accounting and Finance of Mzumbe University.

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I, Nnko Frank Yona, declare that this thesis is my own work. It has not been and will not be presented for any other course of study.

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Date ……………………………………

ACKNOWLEDGEMENT

I take this opportunity to recognise the efforts from Mzumbe University and the people who contributed to this work. Dr. Madishetti Shrinivas is acknowledged for his supervision work leading to completion of this work.

This dissertation is also dedicated to my father Mr. Yona Andrew Nnko who is always treasured in my heart. He is a mentor and for the endless support he has offered me throughout my life and I owe this work to him as well.

My sincere dedication also goes to my mother Mrs. Erica Y. Nnko who has always showed me what a mother ought to be to her son.

In addition, the study would not have been possible without the support from my friends and finally my lovely family for the support during the whole time of writing this report.

DEDICATION

This work is dedicated to my family: my father Yona A. Nnko and my mother Erica Nnko and My family at large.

ABBREVIATIONS

ACB	Akiba Commercial Bank
ASB	Assurance Standard Boards
ATM	Automated Teller Machine
BOA	Bank of Africa
CCRC	Computer Crime Research Centre
CRDB	Cooperative Rural Development Bank
FI	Financial Institution
IAASB	International Auditing and Assurance Standard Boards
ICT	Information and Communication Technology
IP	Internet Protocol
MICE	Money, Ideology, Coercion and Ego
NMB	National Microfinance Bank
PIN	Personal Identification Number
SPSS	Statistical Package for Social Science
URT	United Republic of Tanzania
URT	United Republic of Tanzania
US	United States
USD	United States Dollar

ABSTRACT

This study was on ATM fraud and its impacts to Financial Institutions with NMB and CRDB banks as case of focus. The study was focusing on four specific objectives which were to: (i) analyze method through which customers' knowledge on ATM Frauds was acquired; (ii) analyze detection and protection methods used by financial institutions to control ATM frauds; (iii) determine the impacts of ATM frauds to the financial institutions and costumers, and (iv) find out strategies to adopt in order to improve ATM services.

The study was conducted in Arusha region where 98 respondents, 75.5% of them being bank customers and 25.5% being bank officers, were selected using both non probability and purposive sampling methods. Data was collected by survey, interview and documentary review methods and in turn analyzed using SPSS 14.0 program version.

The findings of this study showed that majority of the bank customers were aware of ATM frauds information, and they acquired this information from different sources such as media, fliers, billboards, and awareness campaigns. In addition, it was also discovered that bank institutions use different methods as control and protection mechanisms against ATM frauds, although most of these methods have been said to be ineffective in dealing with the emerging ATM fraud incidences. Furthermore, the study has found out that ATM frauds have numerous negative impacts not only ATM users but also to the Financial institutions.

The recommended the following in order to improve and enhance control of ATM frauds incidences in Tanzania and Arusha in particular and they included; enhancing ATM security through adoption of sophisticated technological means, enhancing corporation among stakeholders such as law enforcing organs in order to establish laws and regulations that should favor both ATM service providers and users in dealing with frauds incidences, monthly checking of bank statements closely and reporting any discrepancies to the responsible bank as earlier as possible, improve ATM services in order to preserve their reputation and credibility toward their service users, make additional efforts to raise ATM users' awareness on best use of ATM services and appropriate protection and control measures against ATM frauds.

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CHAPTER ONE

INTRODUCTION AND BACKGROUND TO THE STUDY

1.1 Introduction

This chapter presents the introduction and is divided as follows; background to the problem, statement of the problem, objectives of the study, significance of the study, scope and Limitations of the Study, and organization of the proposal.

1.2 Background Information of the Problem

An Automated Teller Machine (ATM) is a computerized telecommunication device that provides the customers of a financial institution with access to financial transactions in a public space without the need for human clerk or bank teller (Adeloye, 2008).

ATM is a terminal deployed by bank or other financial institutions, which enables the customers to withdraw cash, to make a balance enquiry, to order a bank statement, to make a money transfer and/or to deposit cash. The ATMs are basically self service banking terminals and are aimed at providing fast and convenient services to customers (Rasiah, 2010).

ATMs provide different services to cardholders without the help of any bank employee or teller. All these services have been segregated as financial and non-financial. A variety of payment cards such as Debit (Expense) Cards, Credit Cards, Prepaid Debit Cards and recently introduced Remittance Cards can be used in Tanzania and other part of the world on ATMs. Prominent services offered through ATMs are listed below in Table-1.1 :(International Journal of Business and Management; Vol. 7, No. 22; 2012)

Table 1.1: Financial and Non-financial Services Usually Offered Through ATMs

Financial Services	Non-Financial Services
Cash Withdrawal	Balance Enquiry
Utility Bills Payment	Mini Bank Statement
Inter (and Intra)-bank Fund Transfer	PIN Change
Mobile Balance Pop-up	Cheque Book Request

Source: Survey Data, 2014

The traditional and ancient society was devoid of any monetary instruments and that the entire exchange of goods and merchandise was managed by the 'barter system'. The use of monetary instruments as a unit of exchange replaced the barter system and money as the sole purchasing power. The modern contemporary era has replaced these traditional monetary instruments from a paper and metal based currency to 'plastic money' in the form of credit cards, debit cards. The evolution of these various 'plastic money' has resulted in the increasing use of ATM all over the world (CCRC, 2009).

In 1939, Simjian patented an early and not-so-successful prototype of an ATM used by the City Bank of New York. Some experts have the opinion that James Good fellow of Scotland holds the earliest patent date of 1966 for a modern ATM and he is the one who developed the idea of a PIN stored on the card and John D White of US is often credited with inventing the first free-standing ATM. Also, Barron of London invented and installed an ATM in Barclays Bank in 1967.

However, the modern networked ATM was invented in Dallas, Texas, by Don Wetzel in 1968. It is this system that is highly credited to be first ATM installed and used worldwide. Thus, the ATMs we see and use today owe their origin from the 1968 invention of Wetzel and started operation in February 1969 (Bellis, 2008).

In African context, South Africa was the first country to adopt ATM uses as early as 1980's by commercial banks (Standard Bank claimed to be the first to launch ATM in 1981). From there Nigeria and other nations came after (Bellis, 2008).

In Tanzanian context, in 2006 the parliament passed two acts namely, the Bank of Tanzania Act and the Banking and Financial Institutions Act (BAFIA) in order to keep control of the booming Tanzanian banking sector. Many banks in Tanzania started ATM programs mainly from 2006 following the law reforms in banking system. For example, NMB introduced ATM cards in 2008 and all its branches in the country have installed ATMs. Twiga Bancorp installed its ATMs in July 2008 under the name of UMOJA Switch having a link with ACB, Community Bank of Dar es salaam, Tanzania Investment Bank Ltd, Azania Bank and BOA. Any bank can join this Switch and form party of the UMOJA SWITCH extending its ATM transactions to its customers (Nyamaka, 2009).

The ATM advantage of safety and convenience has unfortunately been lessened by the frauds that are perpetrated by ‘plastic money’. The ease of settlement of bills such as electricity, school fees, phone bills, insurance premium, traveling bills and even petrol bills has made the use of plastic money more important (Adepoju,2010). According to estimates by Retail Banking Research (2010), there are more than 2.2 million ATMs deployed worldwide. This is a figure forecasted to exceed 3 million by 2016. As the number of ATMs in use increases, so do the frequency and sophistication of security threats, making the development of fraud prevention measures a top priority for financial institutions (FIs) and ATM manufacturers (Bradbury,2010).

The ATM fraud is not confined to particular regions of the world. To further complicate matters, perpetrators and victims are often on different continents, and the problems of one region can quickly become the problems of another. In Europe, Card skimming was the most prevalent crime affecting ATMs in Europe, according to a 2011 survey by the European ATM Security Team done for 394,296 ATMs in 27 European countries. Card skimming at ATMs resulted in losses of nearly 111 million Euros across Europe during the first half of 2011 (Christolav, 2011).

North America is currently the largest ATM market in the world. Canada leads the world in per consumer transaction volumes, while the U.S. has the largest installed base. But, the widespread use of ATMs with over 14 billion cash withdrawals in the US. Alone makes North America an attractive target for fraudsters around the globe. In the U.S., ATM card-related fraud has continued to rise. A study released in 2011 by the Aite Group estimates that card fraud costs the US card payments industry $8.6 billion annually. These amounts exclude secondary losses, such as negative publicity for the FI and lost consumer confidence (Aite Group, 2011).

In Tanzania in particular there have been many reported cases of ATM Frauds through newspaper and radio. Taking an example, in 24 June 2009 the American Embassy issued security notice to embassy community not to use ATM machines following significant money losses through ATM. Another example is the saga of two Bulgarian nationals who were detained in the biggest city of Dar es Salaam, for ATM fraud, Local police said the two perpetrators stole over USD 53 000 in illegal ATM transactions (allafrica.com reports, 2009).

Through considering their nature, the frauds perpetuated on ATMs and other E-Banking Channels have been divided among different categories as mentioned according to nature and the types of ATM frauds as Mentioned in Table 2 (International Journal of Business and Management; Vol. 7, No. 22; 2012)

Table 1.2: Nature and the Types of ATM frauds

Cash / Card Frauds	Card Skimming, Card/Cash Trapping and Transaction Reversal Fraud (TRF)
Operational Fraud	One of the examples of operational fraud is when the ATM cassettes holding cash in various denominations are purposefully filled with currency in the wrong denomination, therefore, giving customers or criminals more money than should be dispensed
Equipment Fraud	Installing a fake ATM machine in a shopping centre or a fake card reader or skimming devices
Digital Fraud	Hackers who author viruses or worms intended to exploit ATM operating Systems and/or Controllers.

Source: Survey Data, 2014

1.3 Statement of the Problem

Financial institutions and in particular banks have an important and critical role in the development of any economy. ATMs were invented to enable banks provide services efficiently to the general public. The use of ATM has not only been safe but is also convenient. ATMs have had the following advantages; providing 24 hours service, giving convenience to bank's customers, reducing the workload of bank's staff, providing services without any error, beneficial for travelers and providing privacy in banking transactions just to mention a few. Unfortunately ATMs have had an evil side due to their misuse by some group of people called fraudsters. This evil side is reflected in the form of “ATM frauds” that is a global problem (Adepoju, 2010). The ATM fraud is growing although it is considered to be fairly low risk relative to other crimes (Obiano,2009). On top of that fraudsters are becoming more organized and are using increasingly sophisticated methods to obtain and misuse consumer personal and financial information (Sakharova and Khan, 2011). This ATM fraud has not only caused financial loss to banks but they also undermine customers' confidence in the use of ATMs (Adepoju, (2010)).

This study therefore seeks to examine the issue of ATM fraud in banking institutions and its impact. The case of NMB and CRDB.

1.4 Research Objectives

1.4.1 General Objective

The general objective of the study is to assess the ATM Fraud and its impacts to Financial Institutions.

1.4.2 Specific Objectives

The following specific objectives are formulated to contribute to meeting the main objective:

- To analyze method through which customers' knowledge on ATM Frauds was required.
- To analyze detection and protection methods used by financial institutions to control ATM frauds.
- To determine impacts of ATM frauds to the financial institutions and costumers
- To find out strategies to adopt in order to improve ATM services

1.5 Research Questions

1.5.1 General Question

The major question for the study is:

- How do ATM frauds occur and what are its impacts to financial Institutions?

1.5.2 Specific Questions

The following secondary research questions are formulated in order to get data for answering the major research question:

- Do customers have adequate knowledge on ATM Frauds?
- What are detection and protection methods used by NMB and CRDB banks to control ATM frauds?
- What are the impacts of ATM frauds to financial institutions and costumers?

- What are strategies that bank management should adopt to improve ATM services?

1.6 Justification

The study assessed both challenges and prospects of ATM frauds in Tanzanian context hence helping different stakeholders such as law enforcing organs to devise methods to capture culprits in ATM frauds. Also the study will help banks to devise proper security measures and be helpful to clients to adopt protection measures against ATM frauds. Moreover, the knowledge or information on challenges and prospects are needed in the scientific world as ATM frauds emerge from science and technological point of view. Therefore, the solutions that were suggested would mitigate the ATM frauds in Tanzania banking system.

1.7 Significance of the Study

The knowledge generated in this study would be useful not only to Arusha but also to other regions and Tanzania in general, especially in the area of ATM frauds. The findings of this study with regard to the ATM frauds on the selected financial institution variables would likely be of interest to policy makers and financial practitioners in public and private financial institutions as well as to financial service providers. With regard to the knowledge gap in the area, the findings of this study would contribute to widening the experience from other countries that have rich literature on ATM frauds and control.

1.8 Scope of the Study

The study will be restricted to the ATM services of NMB Bank and CRDB Bank branches located in Arusha Municipality. The study is also limited to customers with ATM card compliant accounts namely current account, bank account and instant saving account holders in the Arusha Municipality and both bank Staff. It also focuses on only ATM even though there are other forms of electronic payments being offered by NMB and CRDB Bank.

1.9 Limitation of the Study

Doing any research work there are several limitations which may face the researcher while undertaking the research. Some of the limitations the researcher was expecting to encounter while undertaking the study are the follows:

1.9.1 Time constraints

The time specified for the study might sometimes be not enough to accomplish a certain task within the proposed time due to late response or poor cooperation from the respondent and therefore the researcher were forced to narrow the study so as to match the time that was proposed.

1.9.2 Data collection constraints

Sometimes the members of staff were not willing to give out the important information about their banks to outsiders.

1.9.3 Sample size constraints

The sample size of the study was difficult to get the exactly since the number of customers for both banks as to date, because the banks every day they enroll new customers, this means that today’s number of customers would not be same as the tomorrows number of customers for the both banks.

1.10 Organization of the Study

The rest of the dissertation is organized as follows: Chapter two explores the relevant literature, theoretical perspectives and evidence from practice, as well as the conceptual framework. The research methodology and procedures are discussed in Chapter three while the data presentation, analysis and discussion of the findings are given in Chapter four. The summary of the findings, conclusion and recommendations are presented in Chapter six.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter presents the literature review for the study. Section two focuses on theoretical perspectives under which concepts are discussed and defined. These include Automated Teller Machine (ATM), fraud, ATM card, ATM fraud, card theft, and skimming devices. Others are PIN Fraud, Shoulder Surfing, fake PIN pad overlay and PIN Interception. Section three deals with evidence from practice and it focuses on findings from previous studies with regard to ATM frauds and related studies. Finally, a conceptual and analytical framework for the study is presented.

2.2 Review of Theoretical Literature

This section involves the definition of key concepts and different theoretical perspectives as used in different studies that were related to the topic this study.

2.2.1 Definition of Key Concepts

Automated Teller Machine (ATM): Ogunsemore (1992) defined ATM as a cash dispenser which is designed to enable customers enjoys banking service without coming into contact with Bank Tellers (Cashiers). 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. Adepoju (2010) defined Automated Teller Machine as a computerized telecommunications device that provides the customers of a financial institution with access to financial transactions in a public space without the need for a 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 smartcard with a chip that contains a unique card number and some security information, such as an expiration date. Security is provided by the customer entering a Personal Identification Number (PIN).

According to Steve (2002), in his study noted that ATMs were placed not only near or inside the premises of banks, but also in locations such as shopping centers/malls, airports, grocery stores, petrol/gas stations, restaurants, or any place large numbers of people may gather. These represent two types of ATM installations: on and off premise. On premise ATMs are typically more advanced, multi-function machines that complement an actual bank branch's capabilities and thus more expensive. Off premise machines are deployed by financial institutions and also Independent Sales Organizations (ISOs) where there is usually just a straight need for cash.

Fraud: Black’s law Dictionary-Sixth edition (2006) defined fraud as an intentional perversion of truth for the purpose of inducing another relying upon it to part with some valuable thing belonging to him or to surrender a legal right. A false representation of a matter of fact, whether by words or by conduct, by false or misleading allegation or by concealment of that which deceives and is intended to deceive another so that he shall act upon it to his legal injury. Anything calculated to deceive, whether by a single act or combination or by suppression of truth or suggestion of what is false whether it be by direct falsehood or innuendo, by speech or silence, word of mouth, look or gesture.

Nwankwo (1991), noted that fraud occurs when a person of trust and responsibility, in defiance of norms, breaks rules to advance his personal interests at the expense of the public interest which he has been entrusted to guard and promote. The study further noted that fraud occurs when a person through deceit, trickery or highly intelligent, cunning ways, gains an advantage he could not otherwise have gained through lawful, just or normal processes.

Fraud (criminal offence) could also be defined as a false representation of a matter of fact whether by words or by conduct, by false or misleading allegations, or by concealment of what should have been disclosed that deceives and is intended to deceive another so that the individual will act upon it to her or his legal injury (http://www.crimeresearch.com)

Whilst there is no single definition of fraud the following elements seem to be necessary; need for a victim, a willful act, misleading representation of facts (dishonesty), intention to achieve an economic advantage or to cause economic loss to a third party, and an unlawful act. For the purpose of this study fraud refers to willful act to achieve an economic advantage.

ATM card: A card that allows the consumer to make purchases from a savings or transaction account using their own funds, An ATM card requires a Personal Identification Number (PIN) when making purchases or withdrawing funds.

ATM Fraud: Emeka (2007) in his article stated that as the numbers of ATM card holders continue to grow daily as result of e-payment awareness activities of card fraudsters appear to be on the increase. Diebold (2002) stated that some ATM Frauds in a paper titled “ATM Fraud and Security”. The following Techniques were outlined:

***Card Theft**:* In an effort to obtain actual cards, criminals have used a variety of card trapping devices comprised of slim mechanical devices, often encased in a plastic transparent film, inserted into the card reader throat. Hooks are attached to the probes preventing the card from being returned to the consumer at the end of the transaction. When the ATM terminal user shows concern due to the captured card, the criminal, usually in close proximity of the ATM, will offer support, suggesting the user enter the PIN again, so that he or she is able to view the entry and remember the PIN. After the consumer leaves the area, believing their card to have been captured by the ATM, the criminal will then use a probe (fishing device) to extract the card. Having viewed the customers PIN and now having the card in hand, the criminal can easily withdraw money from the unsuspecting user’s account.

Skimming Devices: Another method of accessing a consumer’s account information is to skim the information off of the card. Skimming is the most frequently used method of illegally obtaining card track data. “Skimmers” are devices used by criminals to capture the data stored in the magnetic strip of the card. Reading and deciphering the information on the magnetic stripes of the card can be accomplished through the application of small card readers in close proximity to, or on top of, the actual card reader input slot, so it is able to read and record the information stored on the magnetic track of the card. The device is then removed, allowing the downloading of the recorded data.

PIN Fraud: This can take the following forms: (a) Shoulder Surfing which is the act of direct observation, watching what number that person taps onto the keypad. The criminal usually positions himself in close but not direct proximity to the ATM to covertly watch as the ATM user enters their PIN. Sometimes miniature video cameras that are easily obtained might be installed discretely on the fascia or somewhere close to the PIN Pad, to record the PIN entry information. **(b)**Utilization a Fake PIN Pad Overlay**:** This is placed over the original keypad. This overlay captures the PIN data and stores the information into its memory. The fake PIN pad is then removed, and recorded PINs are downloaded. Fake PIN pads can be almost identical in appearance and size as the original. An additional type of overlay that is more difficult to detect is a 'thin' overlay that is transparent to the consumer. This method used in conjunction with card data theft provides the criminal with the information needed to access an unsuspecting customer's account, **(c)** PIN Interception**:** After the PIN is entered; the information is captured in electronic format through an electronic data recorder. Capturing the PIN can be done either inside the terminal, or as the PIN is transmitted to the host computer for the online PIN check. In order to capture the PIN internally, the criminal would require access to the communication cable of the PIN pad inside the terminal, which can more easily be done, at off-premise locations.

2.3 Review of Theoretical Literatures

A number of precedent theories have been reviewed as developed and used by a number of scholars in the studies related to this study topic, namely Fraud Triangle Theory, Fraud Diamond theory, fraud Scale theory, and MICE model.

2.3.1 The Fraud Triangle

Cressey's hypothesis (1950) has become well known as "the fraud triangle". The first side of the fraud triangle represents a pressure or motive to commit the fraudulent act, the second side represents a perceived opportunity, and the third side stands for rationalization. He divided the non sharable financial problems into six categories: difficulty in paying back debts, problems resulting from personal failure, business reversals (uncontrollable business failures such as inflation or recession), physical isolation (trust violator is isolated from people who can help him), status gaining (living beyond one's means, and employer-employee relations (employer's unfair treatment). The below models are being regarded as an extension to Cressey's fraud triangle.

Vona (2008), in his study noted that the motive to commit fraud is often associated with personal pressures or corporate pressures on the individual. The motive to commit fraud may be driven by the pressures influencing the individual, by rationalization, or by sheer opportunity. He believed a person's position in the organization contributes to the opportunity to commit fraud. He also believed there is a direct correlation between opportunity to commit fraud and the ability to conceal the fraud.

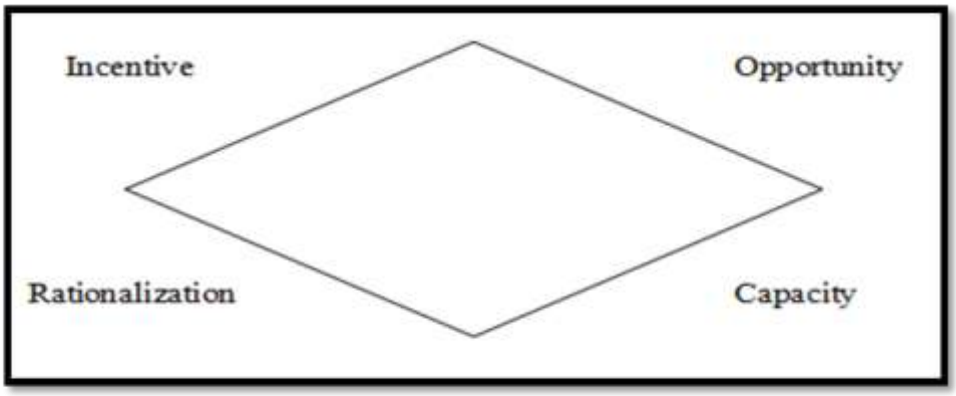
However, Rae and Subramanian (2008), noted that pressure relates to employees motivation to commit fraud as a result of greed or personal financial pressure, and opportunity refers to a weakness in the system where the employee has the power or ability to exploit, making fraud possible, while rationalization as a justification of fraudulent behavior as a result of an employee's lack of personal integrity, or other moral reasoning.

2.3.2 Fraud Diamond Theory

The fraud diamond theory is an expanded version of the fraud triangle theory that was first presented by Wolfe and Hermanson in the *CPA Journal* in December 2004. The difference between the fraud triangle theory and fraud diamond theory is an additional element of "capacity". Wolfe and Hermanson (2004) argued that, although perceived pressure or incentive might co-exist with an opportunity to commit fraud and a rationalization for doings so, fraud is unlikely to take place unless the fourth element, capacity, is also present. In other words, the potential perpetrator must have the skills and ability to actually commit fraud. Wolfe and Hermanson (2004) identified four observable traits related to individuals' capacity to commit fraud:

- Authoritative position or function within the organization
- Capacitytounderstandandexploittheaccountingandinternalcontrolsystems'weaknessestothe greatest advantage
- Confidencethatfraudulentbehaviorswillnotbedetected(orthatonecaneasilyescapepunishment if the behavior is detected)
- Capability to effectively deal with stress in order to manage the fraud over a long period of time

Figure 2.1: Fraud Diamond Theory



With the additional element presented in the fraud diamond theory affecting individuals' decision to commit fraud, the organization and auditors need to better understand employees' individual traits and abilities in order to assess the risk off raudulent behaviors. In addition, better systems of checks and balances should be implementedandmonitoredtoproactivelyminimizerisksandlossesasaresultoffraudulentactivi tiesinthe workplace.

2.3.3 The Fraud Scale Theory

The fraud scale theory was developed by Albrecht, Howe, and Romney (1984) as an alternative to the fraud triangle model. The fraud scale is very similar to the fraud triangle; however, the fraud scale uses an element called personal integrity instead of rationalization. This personal integrity element is associated with each individual's personal code of ethical behavior. Albrecht et al (1984) also argued that, unlike rationalization in the fraud triangle theory, personal integrity can be observed in both an individual's decisions and the decision-making process, which can help in assessing integrity and determining the likelihood that an individual will commit fraud. This argument is consistent with other research. Experts agree that fraud and other unethical behaviors often occur due to an individual's lack of personal integrity or other moral reasoning (Dormineyetal.,2010;Rae&Subramaniam,2008), as moral and ethical norms play essential roles In an individual's decisions and judgment.

2.3.4 MICE Model

Another model called "MICE" was suggested by Kranacher *et al* (2010 as cited in Dorminey *et al* (2010). In this model they suggested that motivation of fraud perpetrators, which is one of the sides in the fraud triangle, may be more appropriately expanded and identified with the acronym: MICE that stands for: Money, ideology, coercion, and ego. Ideological motivators justify the means where they can steal money or participate in a fraud act to achieve some perceived greater good that is consistent with their beliefs (ideology). Coercion occurs when individuals may be unwillingly pulled into a fraud scheme, but those individuals can turn into whistleblowers. Ego can also be a motive for fraud, where sometimes people don't like to lose their reputation or position of power in front of their society or families. This social pressure can be a motive to commit fraudulent act just to keep their ego. In addition, Dormineyet *al* (2010) argued that the model cannot solve the fraud problem alone because two sides of the fraud triangle, pressure and rationalization, cannot be easily observed.

Although Cressey's fraud triangle was supported and used by audit regulators (ASB and IAASB), critics argued that the model alone is an inadequate tool for deterring, preventing, and detecting fraud. This is because two sides of the fraud triangle (pressure and rationalization) cannot be observed, and some important factors, like fraudsters' capabilities are ignored. Thus, some researchers suggested the rationalization side should be replaced by personal integrity because it can be more observable, others suggested the motive side needs to be expanded to include non-financial factors like ego and coercion, while others suggested a fourth side to be added to the fraud triangle which is "fraudster's personal capabilities".

In these models also they suggested the acronym that can lead to frauds that are money, ideology, coercion, and ego. As it is stated in the model, Ideological motivators justify the means where they can steal money or participate in a fraud act to achieve some perceived greater good that is consistent with their beliefs (ideology). Coercion occurs when individuals may be unwillingly pulled into a fraud scheme, but those individuals can turn into whistleblowers. Ego can also be a motive for fraud, where sometimes people don't like to lose their reputation or position of power in front of their society or families. This social pressure can be a motive to commit fraudulent act just to keep their ego, thus fraud it cannot be managed easily due to the view as stated by the models since apart from the fraudsters from outside the institutions but staff and individuals within the institutions participate in it.

Finally; basing on the Rae and Subramanian (2008), and Kranacher*et al* 2010 as cited in Dorminey*et al* (2010) models are likely to be followed by this study because these models show the opportunity that give chance the fraud to take place as it refers to a weakness in the system where the employee has the power or ability to exploit, making fraud possible, while rationalization as a justification of fraudulent behavior as a result of an employee's lack of personal integrity, or other moral reasoning.

2.4 Empirical Literature Review

2.4.1 Overview of Review of Literature

The literature review was a critical discussion and summary of statistical literature that is of `general' and `specialized' relevance to the particular area and topic of the research problem. It describes how the proposed research is related to prior research; it shows the originality and relevance of a research problem. Specifically, any research is different from other researches and justifies the proposed methodology (Callaghan and Schönborn, 2004)

2.4.2 Evolution of ATM

In 1939, Simjian patented an early and not so successful prototype of an ATM used by the City Bank of New York. Some experts have the opinion that Good fellow of Scotland holds the earliest patent date of 1966 for a modern ATM and he is the one who developed the idea of a PIN stored on the card and White of USA is often credited with inventing the first free-standing ATM. Also, Shepherd-Barron of London invented and installed an ATM in Barclays Bank in 1967. However, the modern networked ATM was invented in Dallas, Texas, by Don Wetzel in 1968. It is this system that is highly credited to be first ATM installed and used worldwide. Thus, the ATMs we see and use today owe their origin from the 1968 invention of Wetzel and started operation in February 1969 (Bellis, 2008).

In Africa, South Africa was the first country to absorb ATM uses as early as 1980's by commercial banks (Standard Bank claimed to be the first to launch ATM in 1981). From there Nigeria and other nations came after (Bellis, 2008).

In 2006 two Acts of parliament were passed namely, the Bank of Tanzania Act and the Banking and Financial Institutions Act in order to keep control of the booming Tanzanian banking sector. Many banks in Tanzania started ATM programs mainly from 2006 following the law reforms in banking system. For example NMB introduced ATM cards in 2008 and all its branches in the country have installed ATMs. Twiga Bancorp installed its ATMs in July 2008 under the name of UMOJA Switch having a link with ACB, Community Bank of Dar es salaam, Tanzania Investment Bank Ltd, Azania Bank, and BOA. Any bank can join this Switch and form party of the UMOJA SWITCH extending its ATM transactions to its customers (Nyamaka, 2009).

2.4.3 ATM Frauds at Global Level

According to estimates by Retail Banking Research (2008), the study noted that there are more than 2.2 million ATMs deployed worldwide. This is a figure forecasted to exceed 3 million by 2016. As the number of ATMs in use increases, so do the frequency and sophistication of security threats, making the development of fraud prevention measures a top priority for financial institutions (FIs) and ATM manufacturers (Bradbury, 2010).

North America is currently the largest ATM market in the world. Canada leads the world in per consumer transaction volumes, while the U.S. has the largest installed base. But, the widespread use of ATMs with over 14 billion cash withdrawals in the US alone makes North America an attractive target for fraudsters around the globe. In the U.S., ATM card related fraud has continued to rise. A study released in 2011 by the Aite Group estimates that card fraud costs the U.S. card payments industry $8.6 billion annually. These amounts exclude secondary losses, such as negative publicity for the FI and lost consumer confidence (Aite Group, 2011).

2.4.4 Customers' Perception on ATM Users

The ease of settlement of bills such as electricity, school fees, phone bills, insurance premium, traveling bills and even petrol bills has made the use of ATM more important in the Banking system. The convenience and safety that ATM cards carry with their use has been instrumental in increasing both ATM card volumes and usage in Nigeria, (Adepoju, 2010). However, ATM uses face some challenges, for example Nyamaka (2009) asserted that some banks guarantees that all ATMs are operational and loaded with sufficient cash 24 hours a day and seven days a week but contrary many ATM are not operating on 24 hours fashion following system problem, a call to the banks is to reload and repair its ATMs within a reasonable time. Also Mboma (2008) pointed out that the level of this satisfaction is reduced by technological and processing failures, the perception that the service delivery mode is expensive and insecure regarding stand-alone ATMs, which creates customer dissatisfaction. There is no consideration being given to people with disabilities such as blindness and people in wheel chair negates the role of serving customers, as they cannot access ATMs.

Mwaikali (2014), in his study noted the challenges facing customers of ATM in Tanzania highlighting different factors including card locking, insecurity, machine breakdown, machine out of cash, and longtime in cash dispensing to work as hindrances to the convenience, speed, security, reliability and cost for more customers to use ATM and get customer satisfaction in banks in Tanzania. The study further noted that security was among the factors that influenced bank customers to use Automated Teller Machines in Tanzania. Thus, to large extent security influenced bank customers to use Automated Teller Machines in Tanzania. Security talks about how customers feel secured in engaging intransactions.

Islam, et al (2008) in their study on customer satisfaction of ATM that was carried out at HSBCATM with the intention of examining the satisfaction level of ATM cardholders of a leading bank (HBSC) in Bangladesh found out significant relationship between ATM service quality and customers' satisfaction. The study identified that location, personnel response, quality of currency notes, promptness of card delivery and performance of ATM were positively and significantly related to customers' satisfaction. On the other hand, security, frequent breakdown of machine, and insufficient number of ATM were seen as major contributors to customers’ dissatisfaction. The findings of Islam, et al (2008) were similar to the study of Shamsuddoha et al (2005) which found out that 24hours service, accuracy, and convenient locations were the main predictors of customer satisfaction. However, the study also indicated lack of privacy in executing the transaction, fear of safety and complexity of the machine as the major cause of concern for the customers’ dissatisfaction.

Shamsuddoha, et al (2005) in their study on Automated Teller Machines, in the bank service of Bangladesh found that lack of privacy in executing the transaction; security concerns and the complexity of the machine were the major concerns for ATM customers in Bangladesh. Thus, it was evident that convenience, efficient operation, security and privacy, reliability and responsiveness are not the only characteristics that influence customers’ satisfaction. The other factors that contribute to customer satisfaction include trust, value, and image of the bank. This study of Shamsuddoha et al.(2005) though was done in Bangladesh; but is has helped a lot this study undertaken to broaden the base of challenges which face bank customers when using ATMs.

Issahaku (2013) in his study on ATMs and customer satisfaction that was carried out in Ghana, using the experiences of Ghana Commercial Bank (GCB) and Barclays bank customers with Automatic Teller Machines (ATMs) in the Tamale. The study revealed that, the main reasons why customers preferred ATM included convenience, speed, security, reliability and cost effectiveness of ATM services. While machine running out of cash, link failure and longtime in dispensing cash were found to be the most occurring ATMs’ challenges.

Oko and Oruh, (2012) in their study on the use of ATMs point out that the concern of customers about security and privacy remain a major cause of their dissatisfaction in using ATM service. Also, Oko et al.(2012) expressed concern about the lack of cooperation among banks in the fight to stem the incidence of ATM frauds now plaguing the industry.

Adeloye (2008) identified security as well as power outage as major challenges facing the ATM users in Nigeria. Brunner et al. (2004) in their study concluded that the location of ATM is a high determinant to fraud or crime carried out at ATM point. ATM within the banking premises is more secure than ATMs outside the bank premises. Also, it is obvious that the location of ATM in attractive place doesnot make it prone for fraud. Diebold (2002) in his view states that the major form of ATM fraud is PIN theft which is carried out by various means; skimming, shoulder surfing, camera, key pad recorder etc.

The findings of the study conducted by Curranetal. (2012) on banks service delivery through ATMs in UK state despite the usefulness of ATMs service to banks' customers still these face numerous challenges when using ATMs. Some of which include waiting in the queue to use the ATM. For instance, if users ahead of you in the queue experience difficulties in using the machine, this increases the time for waiting in the queue. Other challenges include Customers to have difficulties in finding the ATM screen well depending on the location of the ATM in relation to the position of the sun, wrong insertion the ATM card where by this problem is more common with new ATM users who are not familiar with their new card and the ATM. Getting the required amount of money as some ATM's may not offer to the user the required amount of money they want on the initial cash withdrawal screen. The user will then have to use a few more key strokes to select the required amount understanding how to perform operations as some ATM users find the instructions on how to perform operations quite difficult to understand. Often the ATM card is returned to the user while further operations are required (e.g.the card is returned once the user requests a sum of cash. However, the user may want to do further transactions; such as check balance or top-up a mobile phone). This will lead to the customer having to re-insert their ATM card, further increasing their time spent at the ATM. Also on some ATM machines the menu options are not aligned with their corresponding menu key.

2.4.5 Customers' Protection Measures against ATM Frauds

Steve (2002) asserted that consumers should only use an ATM where and when they feel completely comfortable. They should pay attention to the machine before using it. If something appears unusual or unfamiliar, they should use another machine. They should never accept help from strangers at ATMs. They should never disclose their PIN to anyone. They should check that no one is trying to look over their shoulder to observe them entering their PIN. They should also look after their bank cards as carefully as they would handle cash and not leave wallets, purses or any form of personal identification lying around in public places. Finally, customers should check their monthly bank statements closely and report any discrepancies to their bank.

2.4.6 Level of Security Put in Place as Regards the Use of ATM

Perpetrators insert a card reader with a memory chip, which copies the data from the ATM card, in the machine. In China banks have already installed fraudulent detection inhibitors (FVI) in ATM card slots so the machines won't be installed with card readers. Cover shields to protect customers' PINs have also been put in place (Bellis, 2008). Bradbury (2010) insisted the use of Fraud detection and prevention software that analyzes patterns of normal and unusual behavior as well as individual transactions in order to flag likely fraud. Profiles include such information as IP address**.**

2.4.7 Banks Prospects towards Tackling ATM Frauds

With the recent globalization trends all world over it is difficult for any nation big or small, developed or developing, to remain isolated from what is happening around specifically the recent global problem of ATM fraud (Majid, 2011). Majid also suggested need to develop a comprehensive regulatory and legal framework for e-banking, raise public awareness on the use of ICT, e-commerce, ATM and e-banking. CCRC (2009) insisted the need to provide incentives for financial institutions to invest rigorously on ICT and use of e-banking to combat ATM fraud also encourage the current efforts to develop and expand ICT infrastructure and improvement of network security. Diebold (2002) saw the need to look and design long-term strategic planning for better implementation and elimination of obstacles for development of e-banking specifically to tackle ATM fraud.

2.5 Conceptual Framework

A conceptual framework guides the research, determining what will be measured, and what statistical relationships will be looked for (Kombo & Tromp, 2006). With regard to the study there is some interrelationship between the independent, intermediate and dependent variables.

The proposed study has first to see some of various studies carried out by other researchers and through that it will lead to see the results identified and variables used in those studies and serve as guidance in the preparation the conceptual framework concerning this study, some of these studies are shown in Table 2.1 below.

Table 2.1: Some studies based on ATM Fraud and results identified

Researcher name	**Country**	**Year**	**Theme of study**	**Variables**	**Methodology**	**Results identified**
Aijaz A. Shaikh and Syed Muhammad	Pakistan	2012	ATM Fraud	ATM fraud, Poor banking internal control, Literacy of customers, Inadequate governing ATM transaction	Interview Documentary review Tools of analysis Sample size	Fraud occurrences are due to poor banking internal control and lack of higher management involvement in understanding of ATM operations.
Ade owo Solomon Adepoju	Nigeria	2010	Challenges of ATM usage and fraud occurrences	• ATM usage and challenges, • Fraud occurrences, • Location of ATM, • Pin theft, • Victim robs, • Knowledge on use of ATM • Law	Structured questionnaire	According to the study the location of ATM is a high determinant to fraud. From this research over 75% of respondent affirm that the location of ATM is secluded place to contribute to ATM frauds and it states also the Pin theft carried by skimming , shoulder surfing

Researcher name	Country	Year	Theme of study	Variables	Methodology	Results identified
				governing ATM transactions • Network failure • Technology • Data breaches • Lost or stolen cards • Law governing ATM transactions		
Irinasakharova and LatiLatifur Khan	U.S.A	2011	Payment card fraud challenges	Card not received fraud Absence of security guard at the ATM Mail theft Home or work place Inside sources Social networking Lost or stolen	• Documentary review • Interview	This study identify that there number of causes to frauds which mostly are due to card not present transactions, social networking and card not received are the major sources of frauds in ATM

Researcher name	Country	Year	Theme of study	Variables	Methodology	Results identified
				card		

2.5.1 Independent Variables

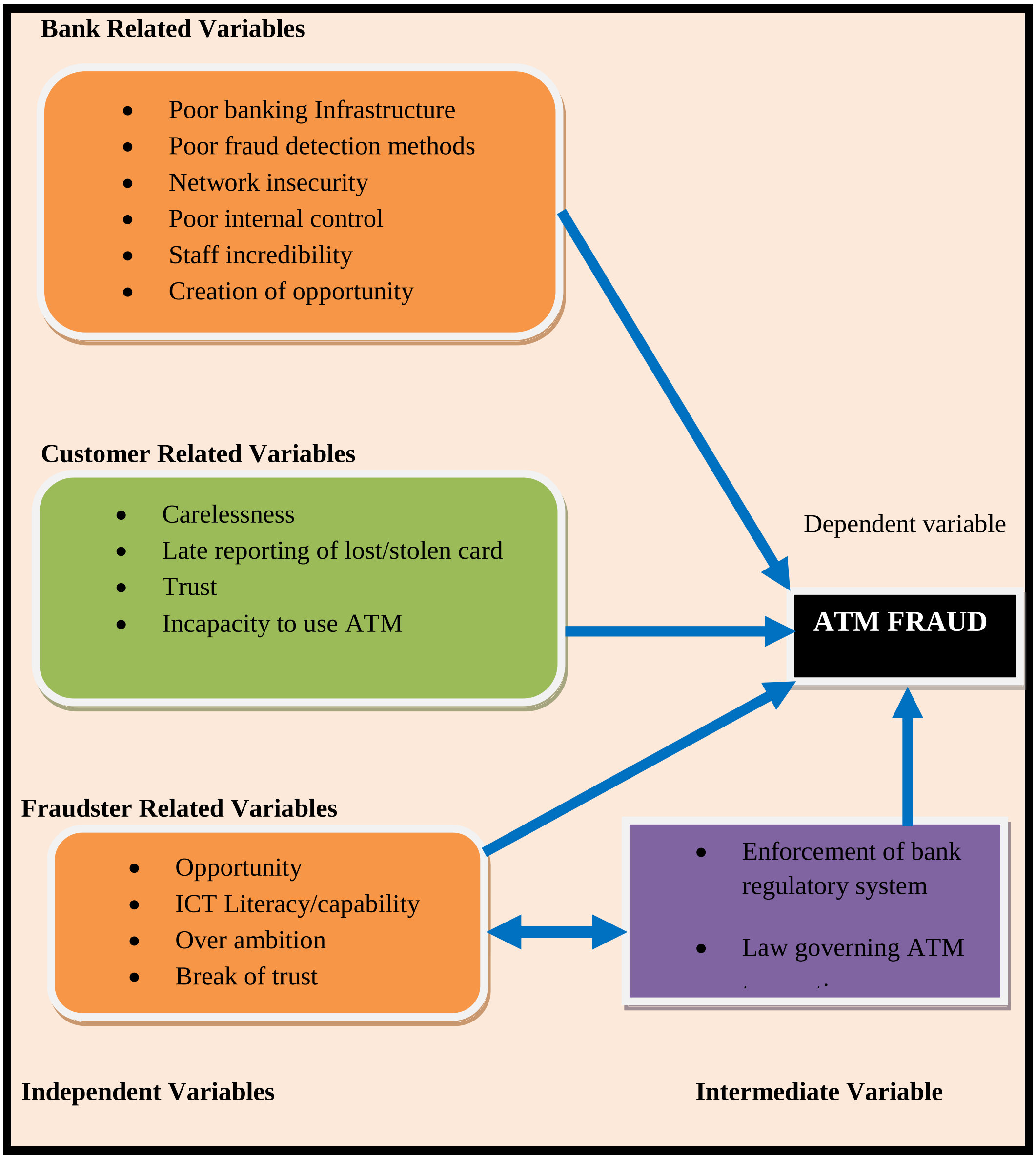
Independent variable is a factor or phenomenon that causes or influences another associated factor or phenomenon called a dependent variable. For example, income is independent variable because it causes and influences another variable consumption. In here we are going to see the independent variables that influence the occurrences of dependent variable which is ATM Fraud in this study. Independent variables in here are classified in three groups like customer related, bank related protection measures and Fraudster related variables. More information is as illustrated in the conceptual framework below.

2.6 Intermediate Variable

An intervening variable is a hypothetical internal state that is used to explain relationships between observed variables, such as independent and dependent variable in empirical research. In this study intervening variables include enforcement of law governing ATM transactions and banking regulatory system in general. The two will eventually play an important part in enabling preventing and control ATM frauds occurrence.

Due to the various variables been drawn in different studies and general understanding as well documentary analysis from different reports, conceptual framework has been drawn as seen in figure 2.1.

Figure 2.2: Conceptual Framework



Source: Researcher Own Construct, 2014

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents methodological process which had to generate important information needed to achieve the objective of the study. The chapter mainly involves the research area, research design, population and sample size, and data collection techniques and data analysis methods.

3.2 Research Area

This study was conducted in Arusha Region at NMB and CRDB, these banks have been selected because are the dominating banks in terms of clients base in Arusha and Tanzania in general, Arusha Region has been chosen due to convenience in terms of accessibility, affordability following the limitation of financial resources and time as well. Arusha Region is one of the Tanzanian's 30 administrative regions. Its capital and largest city is Arusha. The Region is boarded by kajiado country and naroik country in Kenya to the North, the Kilimanjaro region to the East, the Manyara and Singida Regions to the South, and Mara and Simiyu Regions to the West. Major towns include Monduli, Namanga, Longido and loliondo to the North, MtowaMbu and Karatu to the West, and Usa River to the East.

3.3 Research Design

This study is a survey research design as it intended to learn the problem and make full examination of ATM fraud as a challenge. Olsen (2004) said, this type of research study, is a method of collecting information by asking questions. Sometimes interviews are done face-to-face with people at home, in school, or at work. Other times questions are sent in the mail for people to answer and mail back. Increasingly, surveys are conducted by telephone.

3.4 Population and Sample Size

The targeted population of the study included bank clients from NMB and CRDB and also bank officers from respective banks from which a sample was drawn. The two banks NMB and CRDB have been chosen by the researcher because they are old and dominant banks in Arusha having many clients from both formal and informal sectors therefore are good representative of target population.As the banks (NMB and CRDB) have more than 10,000 clients and bank officials, the formula below as described by Rwegoshora (2006) was used to estimate the sample size. Precision level will base on 1-10%.

$$n = \frac{N}{1 + N(x)^2} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \text{(1)}$$

Where by n = Sample size,

N= Total population

x = Precision (10%)

1= constant

Hence, according to the Rwegoshora, (2006) formulary the sample size is as follows; whereby the Total number of population is 10,000 people/employees.

$$N = \frac{10000}{1 + 10000\ (10\%)\ 2}$$

$$N = \frac{10000}{1 + 10000\ (0.1)\ \text{^}2}$$

N = 98

From the calculation, the study used a sample size of 98 people among which 74 banks' clients and 24 bank officials. This was an adequate number of representative that posses all characteristics of the target population.

3.5 Sampling Techniques

Both the probability and non-probability sampling techniques were used to select the appropriate respondents from the selected banks studied. With probability sampling, simple random sampling was used to pick respondents for interview from the bank clients. But the non probability sampling and purposive sampling used in getting response from key informants who were bank officers.

3.6 Data Collection Methods

3.6.1 Customer Survey

This method involves the use of written questions to which the respondent individually responds in writing. The major advantage of questionnaire is stable and can be reviewed repeatedly. The questionnaires in this study were administered to all selected respondents in regard to research objectives. The questionnaires were purposively distributed to bank officials.

3.6.2 Interview

The interview had been guided by structured and semi structured questions which were used to obtain information from respondents about particular situation, problem or topic. A semi-structured interview using check list was conducted to all respondents from bank clients' cluster and to some to key informants (bank officers) to get in-depth view especially from branch manager, bank teller, customer care manager and system administrator.

3.6.3 Documentary Review

Payne and Payne (2004) described the documentary method as the techniques used to categorize, investigate, interpret and identify the limitations of physical sources, most commonly written documents whether in the private or public domain. This study used both sources of information from reports, professional journals and books. For the purpose of this study the researcher has reviewed annual reports of NMB and CRDB, business newspapers and articles on ATM fraud.

3.7 Data Analysis Methods

3.7.1 Data Processing

The Statistical Package for Social Sciences (SPSS) Computer program version 14.0 has been used in data processing. The collected data were processed and verified prior to the analysis. Data processing began with editing to detect errors and omit them before they be coded into numeral to make them ready for analysis.

3.7.2 Data Analysis

Data were analyzed by using measure of central tendency such as frequencies, percentages, mean, median and mode to get the proportions of respondents in the main issues regarding to each research objective.

CHAPTER FOUR

PRESENTATION, ANALYSIS AND DISCUSSION OF THE FINDINGS

4.1 Introduction

This chapter presents and discusses the results of the study on Challenges and Prospects of ATM frauds in financial institutions. The findings of the study were based on the collected and analyzed data; they are discussed in detail and entail how the current study answers the research questions. These findings are presented in accordance to the research objectives developed in chapter one of this report. Therefore, this chapter is divided into five sections. The first section presents the basic demographic and socio economic characteristics of respondents, the second section concerns customers' understanding on ATM Frauds, and the third one is all about the detection and protection methods used by financial institutions to control ATM frauds while the fourth section highlights the impacts of ATM frauds to the financial institutions and costumers. The strategies to adopt in order to improve ATM services are presented in section five.

4.2 Respondents' Demographic Profile

Basically, the study grouped the respondents into two clusters namely ATM users or bank clients and employees of the banks which were taken as cases of the study. Therefore, the study involved a total number of 98 respondents among which 74 were from the ATM users' cluster and 24 selected from bank staff. Demography is discussed in terms of gender, education, professional status, marital status,bank staffs position, respondent usage of ATM services and experience in use of ATMs

4.2.1 Respondents Gender

Table 4.1 shows the responses about gender of the respondents from clients and bank staff groups along with total and their percentages collected through questionnaires and interview.

Table 4.1: Gender of Respondents

	No. of Clients	No. of Bank Staff	Total	Percent (%)
Male	42	17	59	60.2
Female	32	7	39	39.8
Total	74	24	98	100

Source: Survey Data, 2014

The findings in the table above showed that 59 (60.2%) were male and 39 (39.8%) were female out of the total respondents of 98. Further the males In relation to the gender of the respondents from both groups, it can be said that males (42 from clients, 17 from female)are more likely to hold ATM cards or use ATM services than their females'(32 from clients, 7 from bank staff)counterpart. This is due to the fact that, the respondents of this study were randomly selected on basis of holding an ATM card.

4.2.2 Respondents' Education Level

The education level of the respondents from both the groups is classified into three levels based on number of years school attended viz; less than 8 years study,8-15 years study and 16 years plus. Table 4.2 presents the education level information of the respondents.

Table 4.2: Number of Years Attended at School

Number of years	No. of clients	No. of bank staff	Total	Percentage
Less than 8	7	0	7	7.1
8-15	33	9	42	42.9
16+	34	15	49	50
Total	**74**	**24**	**98**	**100**

Source: Survey Data, 2014

The findings in the table above showed that among clients 7 are from less than 8 years of study,33 are from 8-15 years study and 34 are from more than 16 years study.
Among bank staff 9 are from 8-15 year study, and 15 are fro more than 16 years of study. On the whole 7.1% are from less than 8 years, 42.9% are from 8-15 years and 50% are from more than 16 years of school study.

Basing on the data presented in Table 4.2 above, it is obvious to say that the many the number of years of school attendance, the more the degree of probability of holding an bank account or using ATM services.

4.2.3 Bank Staff's Positions/Titles

The involvement of different categories of the selected banks' staff in this study was purposively done in order to get the views from different levels that could enable the study to obtain useful data free from biases. Taking into account that once a bank or client faces any case of ATM fraud, the case should not be dealt by a staff of only one level but people from different levels should be involved.

Table 4.3: Bank Officials' Tittles

		Frequency	Valid Percent
Valid	Branch Manager	4	16.7
	Customer Care Manager	4	16.7
	System Administrator	4	16.7
	Bank Teller	12	50.0
	Total	**24**	**100.0**

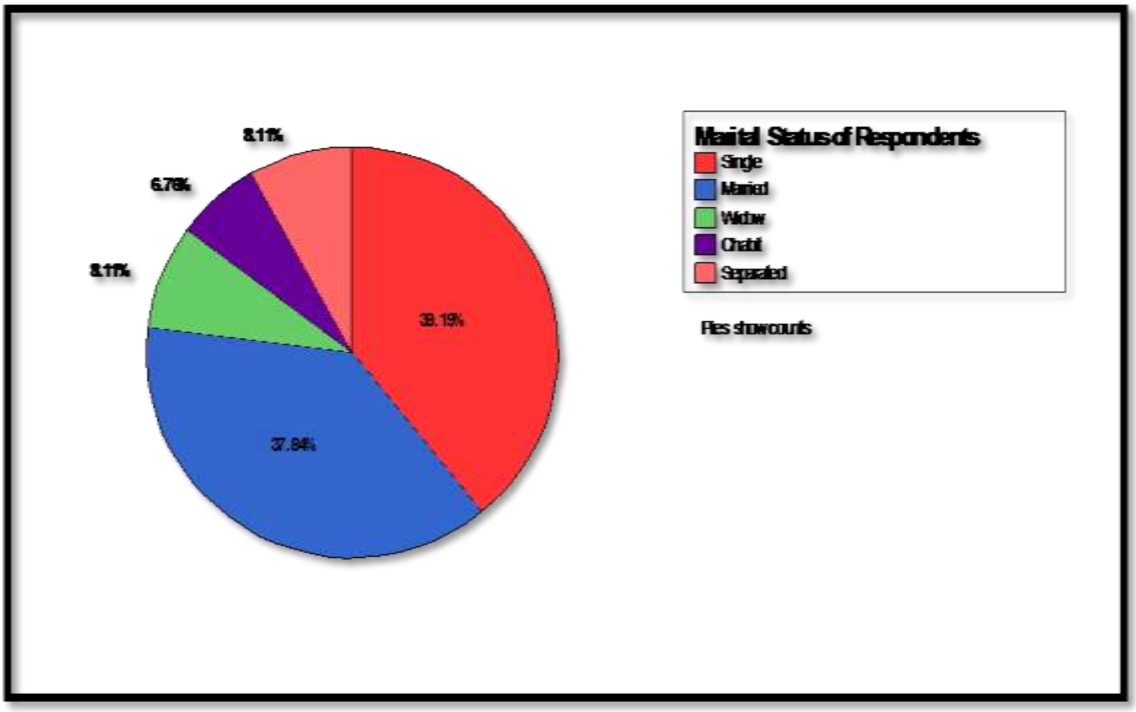
Source: Survey data, 2014

The findings showed that among the bank officials (staff) who voluntarily participated in this study they included; branch managers that were 16.7% of the total number of respondents, customer care managers that were 16.7% of the total number of respondents, system administrators that were 16.7% of the total number of respondents and finally the bank tellers that were 50% of the total number of respondents.

4.2.4 Marital Status of ATM Users

This was aimed at showing the marital status of the 98 ATM users who were the respondents who participated in this study.

Figure 4.1: Marital status of ATM user



Source: Survey Data, 2014

The findings from the figure above showed that the ATM services were being used by people from different marital status although the single dominated with 39.19% (29) f respondents, followed by 38.8 % (28) of respondents who were married and those with widow and separated representing 8.1 % (6) each while 5 respondents presenting 6.7% were in cohabitation.

4.2.5 Respondents Usage of ATM services

The usage of ATM services was considered as one of the important indicator (especially number of years for the respondents to use the ATM services) that would inform this study on the respondent's awareness regarding ATM frauds as it is discussed in following sub-sections.

Table 4.4: Duration in Using ATM Services

Time (years)	No. of Respondents	Percentage
<5	37	37.8
5-10	51	52
10+	10	10.2
Total	**74**	**100.0**

Source: Survey Data, 2014

The findings showed that some of the conditions for selecting a respondent to participate in the study were to be a either a holder of an ATM card (ATM user) or being one of NMB or CRDB staff. With this regard, 100% of the respondents complied with those conditions. In relation to those conditions, the respondents were asked to mention their duration of being users of ATM services.

The findings showed that majority of respondents (51) representing 52% of the total respondents reported the duration of between 5 to 10 years of usage followed by those with less than 5 years (37 or 37.8%), and finally 10 respondents (10.2%) who said to have started using ATM services more than 10 years ago.

4.3 Method through which Customers' knowledge on ATM Frauds was acquired

On respondents' knowledge, the questions were addressed to both banks' clients and staff. On the side of customers, the study intended to determine whether they are knowledgeable about ATM frauds that are likely to happen, and what were the methods used to make them aware of those frauds. Two customers profile factors were considered in the presentation and analysis of their awareness. The following aspects were dealt with knowledge about ATM frauds customers' views, knowledge about ATM frauds views of customers based on ATM usage period, ATM fraud knowledge bank staff views, customers' ATM fraud knowledge bank staff views, types of ATF frauds, ATM Fraud incidences facing ATM users.

4.3.1 Customer's knowledge on ATM Frauds – customer's views

This was applied in this study with the aim of finding out whether the respondents hand any knowledge on the existence of ATM Fraud and the different ways their banks used to raise awareness among the clients.

Some of the conditions for selecting a respondent to participate in this study were one to be a either a holder of an ATM card (ATM user) or being one of NMB and CRDB staffs.

Table 4.5: Customers knowledge on ATM Frauds

Customers knowledge on ATM Frauds			Respondent Level of Education			Total
			Tertiary	**Secondary**	**Primary**	
Yes	What are the methods used by your bank to raise knowledge to its clients on ATM frauds?	Flier	10	3	2	15
			66.7%	20.0%	13.3%	100.0%
		Media	12	9	0	21
			57.1%	42.9%	.0%	100.0%
		Awareness campaign	6	4	2	12
			50.0%	33.3%	16.7%	100.0%
		Seminar/Trainings	4	7	1	12
			33.3%	58.3%	8.3%	100.0%
		Posters	2	5	1	8
			25.0%	62.5%	12.5%	100.0%
		Bank bill boards	2	2	1	5
			40.0%	40.0%	20.0%	100.0%
	Total		36	30	7	73
			49.3%	41.1%	9.6%	100.0%
No	What are the methods used by your bank to raise knowledge to its clients on ATM frauds?	Flier		1		1
				100.0%		100.0%
	Total			1		1
				100.0%		100.0%

Source: Survey Data, 2014

The findings presented in Table 4.5 revealed that, 73 out of 74 respondents interviewed representing 98.6% of the total respondents were aware of ATM frauds while only one respondent (1.4%) reported were not aware. Among those who were aware, 36 respondents or 49.3% were of tertiary education, and 30 or 41.1% of secondary while 7 representing 9.6% were of primary education. The one who denied being aware was of secondary education. On the other hand, the respondents identified different methods used by their respective banks to raise awareness on ATM frauds. These are fliers (as reported by 15 respondents representing 15.0% of respondents aware among them 10 (66.7%) of tertiary education, 3 (20.0%) of secondary education and 2 or 13.3% of primary education); media (20 respondents (21.0%) among them 12 or 57.1% (tertiary education) and 9 or 42.9% (secondary education)); and awareness campaign (12 or 12.0% whereby 6 or 50% of which were of tertiary education, and those of secondary and primary education 4 (33.3%) and 2 (16.7%) respectively. Other reported methods were seminars/trainings (12 respondents of which 33.3% tertiary education, 58.3% secondary and 8.3% primary education; posters (8 respondents majority of them being of secondary education (62.5%) followed by those of tertiary education (25%) and then those of primary education; and bill boards (5 respondents including 2 or 40% of those of tertiary education, 2 or 40% of secondary education and 1 or 20 % of respondents of primary education level. Despite his not being aware of ATM frauds, the single respondent revealed the method of fliers as the main method used by his bank to raise knowledge to its clients, whether in review of literature the methods and their meanings are explained}.

In relation to the data presented in Table 4.5 it can therefore be inferred that both NMB and CRDB banks' ATM users are aware of ATM frauds as reported by the majority of the interviewed clients. In accordance with these data, it can be deduced that the degree of knowledge can vary depending on one's level education and awareness method used. For instance, those of tertiary education can feel more comfortable with awareness raised through fliers, media (radio, news paper, television, and internet) and knowledge campaign as they can for other methods. On the other hand, it can be assumed that the knowledge raised through fliers is not appropriate for people with low level education. This was realized considering the respondent who was able to identify fliers as a method used by his bank to raise awareness where he himself was not aware of ATM frauds likely to happen.

Together with the level of education of respondents, the study also intended to investigate if there is any the relationship between ATM fraud knowledge and the number of years of respondents in using ATM services as well as the methods used by their respective banks in raising knowledge and awareness. With regard to this, it was discovered that among 73 respondents who said to be aware, 39 or 53.4% were in the cluster of those above 5 years of ATM usage followed by 27 or 37% of respondents in the category of below 5 years of usage and then 7 or 9.6% of above 10 years of usage of ATM service as presented in Table 4.6 below.

Table 4.6: Customers' knowledge on ATM Frauds – customers experience

ATM Fraud Knowledge			Respondents' usage of ATM experience			Total
			Less than 5 yrs	Above 5 yrs	Above 10 yrs	
Yes	What are the methods used by your bank to raise awareness to its clients on ATM frauds?	Flier	5	8	2	15
			33.3%	53.3%	13.3%	100.0%
		Media	5	13	3	21
			23.8%	61.9%	14.3%	100.0%
		Awareness campaign	5	6	1	12
			41.7%	50.0%	8.3%	100.0%
		Seminar/Trainings	5	6	1	12
			41.7%	50.0%	8.3%	100.0%
		Posters	5	3	0	8
			62.5%	37.5%	.0%	100.0%
		Bank bill board	2	3	0	5
			40.0%	60.0%	.0%	100.0%
	Total		27	39	7	73
			37.0%	53.4%	9.6%	100.0%
No		Flier		1		1
				100.0%		100.0%
	Total			1		1
				100.0%		100.0%

Source: Survey Data, 2014

Concerning the methods of raising awareness, it was identified that majority of respondents (21 or 28.8%) got aware through media with a big proportion of about 62% were between 5 and 10 years of ATM usage followed by those whose awareness was resulted from reading fliers (15 or 15.0%), and then those from awareness campaigns and trainings (12.0%) respectively, and finally those from posters and bill boards as it is shown in Table 4.6 above.

It can thus be assumed that awareness through posters can be of great impact for those with fewer periods in using ATM services than it can for those with many years in using the services. Therefore, in accordance with the findings in Table 4.6 above, one can deduce that there is any clear relationship between the period of one's adherence to ATM and the method used for raising awareness.

4.3.2 ATM Fraud knowledge of customers -Bank Staff's View

Since bank staff interacts with the customers in their ATM transaction, it is assumed that they know about ATM frauds. The data was collected by using questionnaires and through interviewing the respondents, depending on their knowledge about ATM Frauds and proper control measure, knowledgeable information provided by the banks and methods that will help ATM users.

Table 4.7: Customers' ATM Fraud knowledge- Bank Staff Views

		Bank Officials' Tittles				Total
		Branch Manager	**Customer Care Manager**	**System Administrator**	**Bank Teller officers**	
Are clients knowledgeable about on ATM frauds and proper control measures?	Strongly Agree	2	1	1	6	**10**
		8.3%	4.2%	4.2%	25.0%	**41.7%**
	Agree	2	2	2	4	**10**
		8.3%	8.3%	8.3%	16.7%	**41.7%**
	Disagree	0	0	1	0	**1**
		.0%	.0%	4.2%	.0%	**4.2%**
	Neither agree nor Disagree	0	1	0	1	**2**
		.0%	4.2%	.0%	4.2%	**8.3%**
	Strongly Disagree	0	0	0	1	**1**
		.0%	.0%	.0%	4.2%	**4.2%**
Total		**4**	**4**	**4**	**12**	**24**
		16.7%	**16.7%**	**16.7%**	**50.0%**	**100.0%**
Does your bank provide enough knowledgeable information to its clients?	Strongly agree	3	3		3	**11**
		12.5%	12.5%	8.3%	12.5%	**45.8%**
	Agree	0	1	1	6	**8**
		.0%	4.2%	4.2%	25.0%	**33.3%**
	Disagree	1	0	1	1	**3**
		4.2%	.0%	4.2%	4.2%	**12.5%**
	Strongly disagree	0	0	0	2	**2**
		.0%	.0%	.0%	8.3%	**8.3%**
Total		**4**	**4**	**4**	**12**	**24**
		16.7%	**16.7%**	**16.7%**	**50.0%**	**100.0%**
Methods of making ATM users knowledgeable about Fraud Control mechanisms?	Fliers	2	0	0	3	5
		8.3%	.0%	.0%	12.5%	20.8%
	Bill boards	0	2	2	2	6
		.0%	8.3%	8.3%	8.3%	25.0%
	Awareness campaign	0	1	2	2	5
		.0%	4.2%	8.3%	8.3%	20.8%
	Media	1	1	0	2	4
		4.2%	4.2%	.0%	8.3%	16.7%
	Phone sms	1	0	0	3	4
		4.2%	.0%	.0%	12.5%	16.7%
Total		4	4	4	12	24
		16.7%	16.7%	16.7%	50.0%	100.0%

Source: Survey Data, 2014

The findings showed that 10 respondents (41.7%) among them 2 branch managers, 1 customer care manager, 1 system administrator and 6 bank teller officers strongly agreed, and 10 other respondents (41.7%) comprising 4 bank teller officers, 2 branch managers, 2 customer care manager and 2 system administrators agreed while the remaining group among which 1 respondent who strongly disagreed and 1 who disagreed and 2 who neither agreed nor disagreed representing 16.6% of total respondents as shown in Table 4.7.

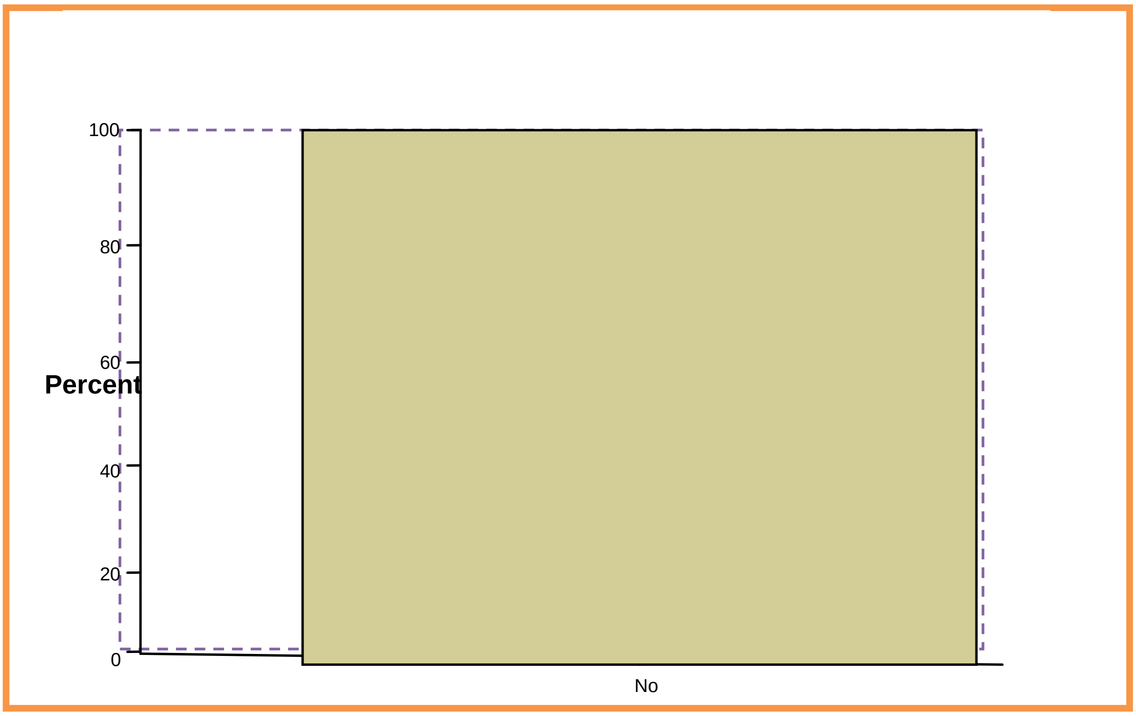
The results also revealed that majority of the respondents (11 or 45.8%) strongly agreed that their banks offer enough knowledgeable information to the clients followed by those who agreed (8 or 33.3%) and then those who disagreed and strongly disagreed presenting 12.6% and 8.3% respectively. The findings also revealed that the banks were using different methods to raise awareness to their clients on ATM frauds. These include bill boards, posters, and fliers, phone short messages, media and awareness campaigns as presented in Table 4.7 above.

The findings in Table 4.7 concur with that in Table 4.5 and 4.6 above and it can thus be said that the majority of ATM users are aware of the ATM frauds emerging in their areas and at the respective banks in particular. For instance, 98.6% of clients or customer respondents against 1.4% of respondents have reported to be aware with ATM fraud incidences comparatively to 83.4% staff respondents who strongly agreed and agreed on the same. On the same veil, it is undoubtedly to say that fliers, bill boards, media and awareness campaigns are the dominant methods for awareness raising among different banks in Tanzania and more particularly in Arusha region.

4.3.3 ATM Fraud Incidences Facing ATM Users

Besides knowing whether respondents are aware of ATM frauds incidences, the study also investigated on whether the respondents have in any way been victims of ATM frauds, and none among the 74 respondents from the group of ATM users reported having faced any related fraud incidence. The data is as indicated in Figure 4.3 below:

Figure 4.2: ATM Frauds Faced by Clients in Using ATM Services



The same question was addressed to bank staff to determine if they have already witnessed any case of ATM fraud reported at their respective banks, and the all of the respondents (24 as 100%) had ascertained to have such type of incidences reported at their bank institutions.

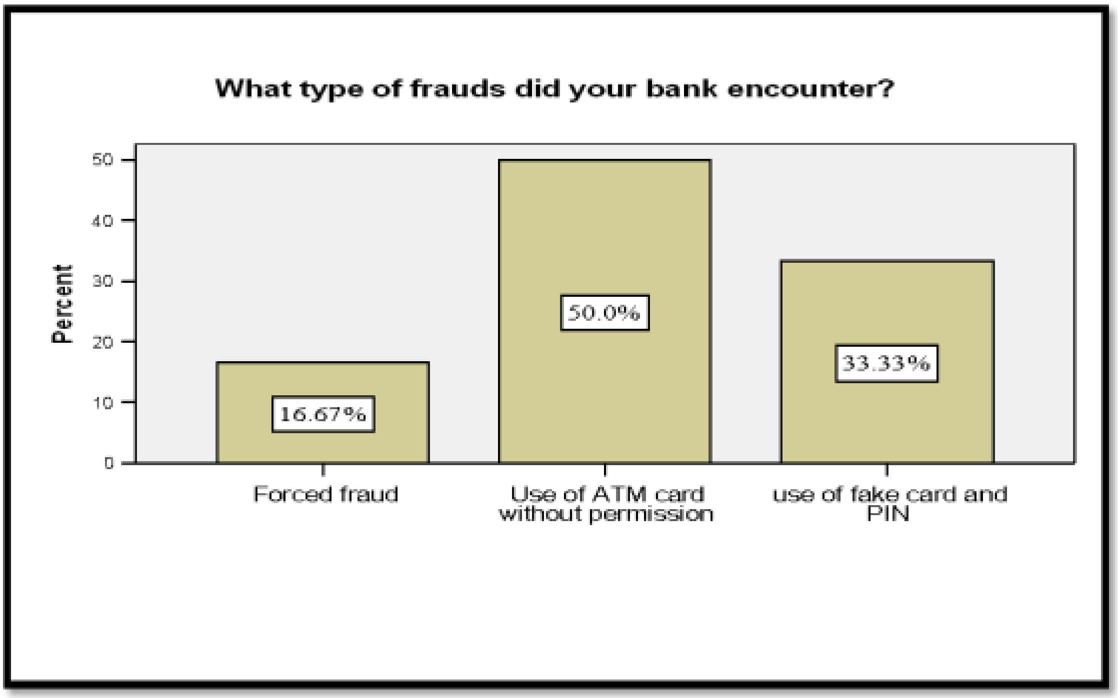
Regardless of the data in Figure 4.2showing that none of the interviewed ATM users had not been a direct victim of ATM fraud case, it is probable to state basing on the bank's staff results that ATM fraud incidences are still taking place in the country and more particularly in the big cities like Dar es salaam, Mwanza and Arusha as all bank staff respondents have ascertained to have identified some of ATM frauds incidences at their respective banks and clients.

4.3.4 Types of ATM Frauds Identified at Different Banks

After knowing whether ATM users are aware of ATM frauds, the study went further to investigate the types of frauds already identified at various banks in Arusha where three main types of ATM fraud have been pointed out namely robbery (17.7%).

Client being forced to provide card and PIN to robbers)), use of fake cards (33.3%) (People with IT skills to steal other people identities electronically and hence fabricate fake cards), and use of ATM card and PIN by a relative without permission (50.0%) as shown in Figure 4.3.

Figure 4.3: Type of ATM Fraud Incidences



Source: Survey Data, 2014

The data presented in Figure 4.3 remain supportive to that discussed above showing that all bank staff interviewed had affirmed that some of their clients have suffered from ATM frauds as a number of cases of fraud have been reported at their respective banks. Therefore, it can be assumed that robbery, use of fake cards/pins and use of ATM cards by ATM owners' relatives to be the most prevailing types ATM fraud incidences occurring in the Arusha if not Tanzania in general.

4.3.5 Problems Encountered while Using ATM Services

The study among other things investigated on problems facing ATM users that they consider as annoyance in using ATM services. The responses of the customers based on their educational background are ascertained and presented in table no.4.8.

Table 4.8: Problems Encountered while Using ATM Services

		Respondent Level of Education			Total
		Tertiary	Secondary	Primary	
Problem Faced in Using ATM	Waiting Longer in a queue	11 52.4%	7 33.3%	3 14.3%	21 100.0%
	Incorrect Insertion of ATM card	6 46.2%	7 53.8%	0 .0%	13 100.0%
	Daily cash withdrawal limit	6 60.0%	4 40.0%	0 .0%	10 100.0%
	Network Problem	16 55.2%	11 37.9%	2 6.9%	29 100.0%
	ATM failing to print slips	3 37.5%	5 62.5%	0 .0%	8 100.0%
	Cash demanded not being dispensed	3 42.9%	4 57.1%	0 .0%	7 100.0%
	Forgetting password	4 40.0%	4 40.0%	2 20.0%	10 100.0%
Total		49 50.0%	42 42.9%	7 7.1%	98 100.0%

Source: Survey Data, 2014

From the table the following observations can be made:

21 respondents out of 98 expressed that they faced the problem of waiting in longer ques. Out of these respondents 11(52.4%) are with tertiary education, 7(33.33%) are with secondary and 3(14.3%) are from primary education. Comparatively persons from tertiary education are facing this problem mostly compared to others.

13 respondents out of 98 expressed that they faced the problem of incorrect insertion of ATM cards. Out of these respondents 6(46.2%) are with tertiary education, 7(53.8%) are with secondary education and 0(0%) are from primary education. Comparatively persons from secondary education are facing this problem mostly compared to others.

10 respondents out of 98 expressed that they faced the problem of Daily cash withdraw limit. Out of these respondents 6(60.0%) are with tertiary education, 4(40.0%) are with

secondary education and 0(0%) are from primary education. Comparatively persons from tertiary education are facing this problem mostly compared to others.

29 respondents out of 98 expressed that they faced the problem of Network Problem. Out of these respondents 16(55.2%) are with tertiary education, 11(37.9%) are with secondary education and 2(6.9%) are from primary education. Comparatively persons from tertiary education are facing this problem mostly compared to others.

8 respondents out of 98 expressed that they faced the problem of ATM failing to print slips. Out of these respondents 3(37.5%) are with tertiary education, 5(62.5%) are with secondary education and 0(0%) are from primary education. Comparatively persons from secondary education are facing this problem mostly compared to others.

7 respondents out of 98 expressed that they faced the problem of Cash demanded not being dispensed. Out of these respondents 3(42.9%) are with tertiary education, 4(5.1%) are with secondary education and 0(0%) are from primary education. Comparatively persons from secondary education are facing this problem mostly compared to others.

10 respondents out of 98 expressed that they faced the problem of forgetting password. Out of these respondents 4(40.0%) are with tertiary education, 4(40.0%) are with secondary education and 2(20%) are from primary education. Comparatively persons from tertiary and secondary education are facing this problem mostly compared to others.

Concerning the problems encountered the most typical were network problem leading with (29.6%), waiting in long queues (21.4%), inserting card incorrectly (13.3%), and limit on daily cash withdrawal and forgetting password (10.2%) respectively, and cash demanded not dispensed (8.2%). ATM to be unable printing slips when demanded (7.1%) was also among the reported problem as indicated in Table 4.8. The data also reveals that those with higher level of education were the most annoyed by the different problems faced while using ATM services as it is well detailed in Table above whereby it was 50% for those with higher level of education, 42.9 and 7.1% for other level of education respectively

As far as the first objective has been discussed above, it can be said that most of ATM users get annoyed by a number of problems such as network, long queues problems as we discussed above, different types of ATM Frauds has been identified, bank staffs view on ATM Fraud knowledge of the customers as well as customers knowledge on ATM Frauds. It can be admissible that the degree of annoyance with a certain problem faced at ATM can vary from one user to another depending to their education status. For instance, it is more likely for one with high level of education to detest wasting much of his/her time in long queues due to this one being very busy with office matters. One businessman in Arusha City Council has stated the following to reveal his frustration with ATM services:

> "*…sometimes you want to get money from your account, the machine may tell you 'temporally unavailable' or that the inter*-switch *cannot connect to your particular bank if you are collecting money in another bank's ATM. Again, sometimes the machine may not be able to dispense cash. Even when the money has been deducted from your account, the machine may still not pay cash"*

The above statement concurs with Enyinnaya, (2011) in his assertion on some inefficiency associated with the ATM services which states:

> "*The inefficiencies in the use of ATM and e-banking should be tackled. Many a time, the ATM debits customers and does not dispense cash. You now write complaint letters to banks that takes some time to be addressed. The point is that the bank has failed to pay cash on demand which is a breach of contract under banking law"*.

4.4 ATM Frauds Detection and Protection Mechanisms

This section provides the presentation; analysis and discussion of findings on the second objective of this study which was all about to examine the ATM fraud detection and control mechanisms available at the sampled bank institutions. The aim was to determine whether bank institutions are adequately taking measures to stem incidences of ATM frauds. With regards to this, a number of questions were asked in respect of issues dealt with, which are causes of atm fraud incidences taking place at bank institutions, bank control mechanism and its effectiveness in curbing ATM frauds ,this section also looks at the institutions that are responsible to deal with ATM frauds , ATM frauds control mechanism- customers view and bank detection and ATM fraud control mechanism, the result is as follows:

4.4.1 Causes of ATM Fraud Incidences Taking Place at Bank Institutions

Before determining how adequate are the fraud control mechanisms used by the bank institutions, the study envisioned first to find out the environments from which those incidences are taking place. Therefore, it was discovered form the findings that the ATM frauds do occur due to different causes including poor bank control mechanisms, lack of competent staff and user inability to keep their PINs, as well as poor bank technological equipment as it is shown in Table 4.9 below.

Table 4.9: The Causes of ATM Fraud Incidences

What may be the Causes of the ATM Frauds incidences taking place at your bank?		**Frequency**	**Percent**	**Valid Percent**	**Cumulative Percent**
Valid	Poor bank control mechanism	6	3.9	25.0	25.0
	Lack of competent staff	5	3.2	20.8	45.8
	User inability to keep their PINs	6	3.9	25.0	70.8
	Poor bank technological equipments	7	4.5	29.2	100.0
	Total	24	15.6	100.0	
Missing	System	130	84.4		
Total		**154**	**100.0**		

Source: Survey Data, 2014

In reference to the findings presented in Table 4.9, ATM frauds do occur due to different causes including

- Poor bank control mechanisms (25%),
- Lack of competent staff (20.8%),
- User inability to keep their PINs (25.0%),
- Poor bank technological equipment (29.2%)

It can be assumed that the ATM frauds can take place where banks institutions do not dispose good fraud control mechanisms, unqualified staff, and poor technological tools as well as improper disposal of PIN codes by ATM users. In accordance with these findings, it is obvious that both bank institutions and ATM users can be on the base of creating the environments of the frauds to take place. For instance, inability of one to keep his ATM card and Pin properly may give an opportunity to fraudster to commit the fraud easily. Similarly, lack of good control system in a bank institution may result to fraudulent acts to happen. Therefore, this directly concurs with the Fraud triangle theory which considers the opportunity as one of the factors giving room to frauds within an institution.

4.4.1.1 Bank Detection and ATM Fraud Control Mechanisms

On the ability of the bank institutions to detect and control ATM fraud incidences, a number of questions were asked to both ATM users/clients and bank officials. The findings to these questions were as presented here below:

4.4.1.2 Banks' ATM Fraud Control Mechanisms

First, the investigator interviewed the bank staff or employees on different control mechanisms available at their respective banks that are used to curb ATM fraud incidences. The data revealed a number of mechanisms including the adoption of SMART cards, installation of CCTV camera, hiring competent IT specialists and effective database control system.

Table 4.10: ATM Fraud Control Mechanisms

Control mechanisms used by banks	Bank Officials' Tittles				Total
	Branch Manager	Customer Care Manager	System Administrator	Bank Teller	
Installation of CCTV camera	0 .0%	1 25.0%	0 .0%	4 33.3%	5 20.8%
Effective database control system	2 50.0%	0 .0%	1 25.0%	2 16.7%	5 20.8%
Adoption of smart ATM card	2 50.0%	1 25.0%	3 75.0%	1 8.3%	7 29.2%
Hiring competent IT specialists	0 .0%	2 50.0%	0 .0%	5 41.7%	7 29.2%
Total	**4** 100.0%	**4** 100.0%	**4** 100.0%	**12** 100.0%	**24** 100.0%

Source: Survey Data, 2014

From the table the following observations can be made:

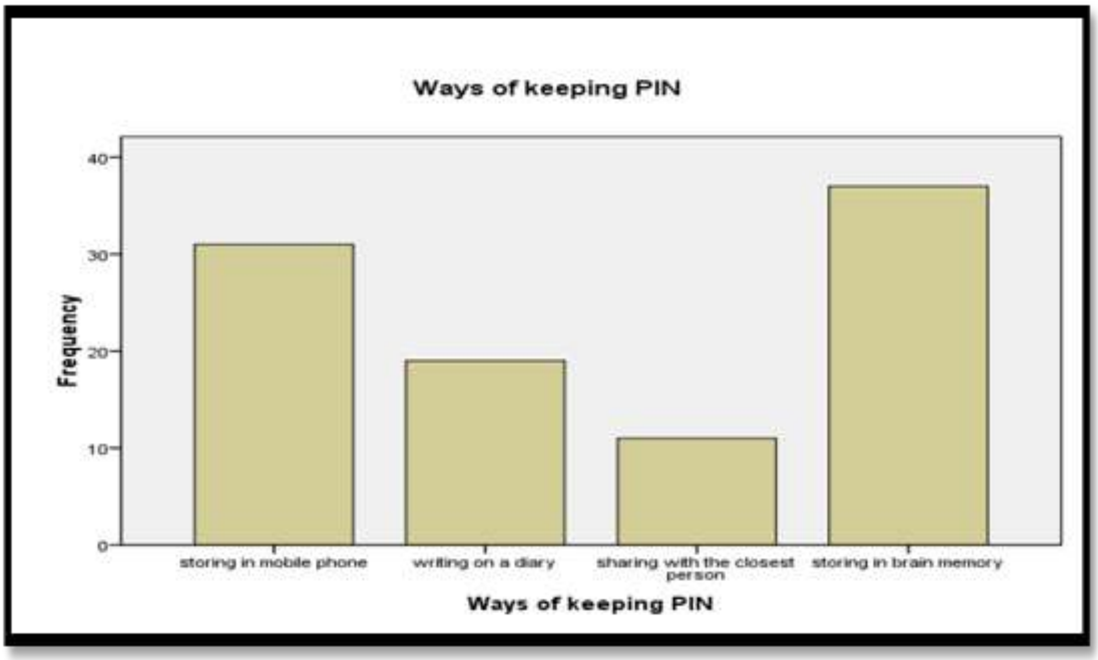
- 5 respondents out of 24 were interviewed on Installation of CCTV camera. Out of these respondents 0(0%) was branch manager, 1(25.0%) was customer care manager, 0(0%) was a system Administrator and 4(33.3%) were bank tellers.
- 5 respondents out of 24 were interviewed on Effective database control system. Out of these respondents 2(50.0%) were branch managers, 0(0%) was customer care manager, 1(25.0%) was a system Administrator and 2(16.7%) were bank tellers.
- 7 respondents out of 24 were interviewed on Adoption of smart ATM card. Out of these respondents 2(50.0%) were branch managers, 1(25.0%) was customer care manager, 3(75.0%) were system Administrators and 1(8.3%) were bank tellers.
- 7 respondents out of 24 were interviewed on Hiring competent IT specialist. Out of these respondents 0(0%) were branch managers, 2(50.0%) were customer care managers, 0(0%) was a system Administrator and 5(41.7%) were bank tellers.

With regard to the findings in Table 4.10 above, the investigator has to highlighted four mechanisms as the most commonly used by the bank institutions operating in Arusha if not elsewhere in Tanzania in the curbing of ATM fraud incidences. The most appreciated one being that of the bank institutions to introduce the use of SMART cards because these cards remain anonymous and difficult for one determine the owner easily. It is possibly easy for one to be motivated to commit a fraud after determining the owner of the card he/she has accessed because the identity of a person can determine his/her bank account savings.

4.4.1.3 ATM Frauds Control Mechanisms- customers views

On the other, the investigator would like to determine whether clients have different mechanisms they use to protect themselves from ATM frauds and it one and foremost method reported by the respondents was to keep the ATM cards and PINs secretly and aware from any other person. In addition, a related question was to determine different means used by ATM users to make their PINs secret or confidential.

Figure 4.4: Ways of keeping PINs



Source: Survey Data, 2014

From the figure 4.4 it was discovered that 37.4% of respondents store their PINs their memory (heads) followed by those storing in their mobile phone who accounted for 31.3%, and those writing in a diary 19.2% and lastly the respondents who reported sharing their PINs with their closest person representing 11.1% of the total respondents.

It can be said from the findings presented in Figure 4.4 that despite keep the PIN confidential has been adopted by most of ATM users as the best method to abstain them from the frauds some people still share them with their relatives or closest persons.

A cross tabulation was made to establish the relationship between marital status and the mode of PIN storage, and the result showed that 4 (50%) out of 8 people who reported sharing PIN with their closest person were married while single people were the most prevalent in keeping PIN codes in the phones and diaries than any other marital status group. The data are as indicated in Table 4.11 below.

Table 4.11: Mode of ATM PIN Storage by Marital Status

Marital Status of Respondents	ATM PIN storage				Total
	Pin kept in Mind	Pin Kept in Mobile Phone	Pin kept in diary	Pin shared with a closest person	
Single	12	9	6	3	30
	40.0%	30.0%	20.0%	10.0%	100.0%
Married	12	8	3	4	27
	44.4%	29.6%	11.1%	14.8%	100.0%
Widow	4	1	1	0	6
	66.7%	16.7%	16.7%	.0%	100.0%
Co-habit	2	2	1	0	5
	40.0%	40.0%	20.0%	.0%	100.0%
Separated	0	2	3	1	6
	.0%	33.3%	50.0%	16.7%	100.0%
Total	30	22	14	8	74
	40.5%	29.7%	18.9%	10.8%	100.0%

Source: Survey Data 2014

It is obvious to deduce from the findings above that married people likely to share their bank accounts information including PIN codes with their relatives than people in other marital status category. Therefore, it can be inferred that there is a relationship of PIN code keeping and one’s marital status.

Similarly, a cross tabulation was done between gender and PIN storage to see whether the mode of Pin storage can be motivated by one belonging to a certain gender group. It was now found out that women are the most prevailing in memorizing their PINs (17 out of 30 accounting for 56.7% of respondents who showed storing their PINs in their minds)while men were discovered to prevail the most in storing PINs in mobile phone, diary and sharing PINs with their closest persons as the Data are indicating in Table 4.12 below.

Table 4.12: PIN Storage by Respondents' Gender

Gender of the Respondents	ATM PIN storage				Total
	Pin kept in Mind	Pin Kept in Mobile Phone	Pin kept in diary	Pin shared with a closest person	
Male	13 30.2%	17 39.5%	9 20.9%	4 9.3%	43 100.0%
Female	17 54.8%	5 16.1%	6 19.3%	3 9.7%	31 100.0%
Total	30 40.5%	22 29.7%	15 20.2%	7 10.8%	74 100.0%

Source: Survey Data, 2014

In this regard, it can be considered from the findings in Table 4.12 that women are more confidential on their financial matters than men while men are most likely to be open to their relatives on their financial issues than women. The findings were backed up by one female respondent who stated as follows: *"Regardless if he is my husband or my son, I can't disclose my PIN to anyone. In issues related to money no one is to trust..."*

4.4.2 Bank Control Mechanisms and Its Effectiveness in Curbing ATM Frauds

Moreover, the study went further to determine whether all measures taken by bank institutions are effective to eradicate ATM fraud incidences. It was discovered from the data obtained from both groups of respondents, especially 59.5% of ATM users and 66.7% of bank staff representing 61.2% of the total respondents, that the measures are not effective whereas 40.5% and 33.3% of users and staff respectively showed being satisfied with those measures as it is shown in Table 4.13 below.

Table 4.13: Effectiveness of Measures Taken Against Frauds

Does your bank take effective measures to combat against ATM fraud incidences?		ATM Users	ATM Users' Percentage	Bank Staff	Bank staff Percentage	Grand Total	Total Percentage
	Yes	30	40.5	8	33.3	38	38.8
	No	44	59.5	16	66.7	60	61.2
Total		**74**	**100.0**	**24**	**100.0**	**98**	**100.0**

Source: Survey Data, 2014

On the basis of these findings, it can be said that there still a need of much efforts to done on the side bank institutions by establishing appropriate mechanisms that will effectively reduce if not totally eliminate the tentativeness of ATM fraud incidence. For instance, a student from Mount Meru University to show his dissatisfaction from the way bank is handling frauds has stated what follows:

> *"I don't know if it was a fraud or not, at times I found out that some money has been deducted from my account for no good reasons even when I didn't use my ATM card. For instance, some few months ago, I had 300,000 Shillings in my account, but when I went to the ATM to cash the amount that I was sure to be available I discovered that some money has been deducted from the account for no reason. At first instance at the enquiry they told me the deduction was done for service charges, but when I decided to see the manager my cash was eventually restored to full 300000 Sh. You cannot imagine what would be happening to other customers who don't even bother nor have time to check their account against arbitrary deductions"*

Therefore, after the majority of respondents as indicated in Table 4.13 above having said that the measures taken are not effective, the investigator went deep to find out what would the problem with those measures or mechanisms and hence first started to ask on the effectiveness of technological tools used banks in dealing with ATM controlling ATM frauds likely to happen. On the effectiveness of technological tools, the findings showed that 50% of bank staff and 41.9% of ATM users were positive with the technological equipments available at their respective banks while the other half of bank staff and the majority of ATM users (58.1%) showed their contrast to the available technological equipments as indicated in Table 4.14.

Table 4.14: Technological Tools Used to curb ATM Frauds Incidences

Are Banks technologically equipped to curb ATM frauds?	Bank Officials' Tittles					ATM Users				**Grand Total**
	Branch Manager	Customer Care Manager	System Administrator	Bank Teller	Total	Less than 5 yrs	Above 5 yrs	Above 10 yrs	Total	
Yes	3	3	0	6	12	13	16	2	31	43
No	1	1	4	6	12	14	24	5	43	55
Total	**4**	**4**	**4**	**12**	**24**	**27**	**40**	**7**	**74**	**98**

Source: Survey Data, 2014

Based on the data in Table 4.14, the inference is to be taken that most of bank institutions operating in the country are not equipped with modern and sophisticated technological tools that would enable them to secure their clients from ATM frauds which seem to advance due to rapid technological changes. For instance, an average percentage 56.1% of total respondents in Table 4.14 can be said to disregard the effectiveness of technological equipments disposed for their respective bank the fact which remains supportive to the findings in Table 4.14 which show the measures taken by bank institutions to still ineffective.

On the same veil, the study also looked at the competence of bank staff with regard to ATM frauds. The aim here was to determine if the investigated bank institutions have enough skilled and competent staff able deal with ATM frauds likely to happen. The data on this question showed that about 45 out of 74 respondents equal to 60.8% of user respondents and 11 out of 24 or 45.9% of staff respondents (the number that represent an average percentage of 57.1% of all respondents or the majority of respondents) showed that the banks don’t have enough staff skilled to deal with the prevailing frauds. On the other hand, 54.1% and 39.2% of bank staff and clients respectively took a positive stand that their bank institutions have competent and competent staff as it is shown in Table 4.15

Table 4.15: Ability of Bank Staff to Deal with ATM Frauds

Does your Bank institution have enough staff able to deal with ATM Frauds?	Bank Staff Percentage	Staff Percentage	ATM Users	User Percentage	Grand Total	Total Percentage
Yes	13	54.1	29	39.2	42	42.9
No	11	45.9	45	60.8	56	57.1
Total	**24**	**100.0**	**74**	**100.0**	**98**	**100.0**

Source: Survey Data, 2014

The data in Table 4.15 can be said to be stressful to the statement highlighted above that measures taken by bank institutions are not satisfactory to curb the prevailing ATM fraud incidences. An interesting finding is that a total average of 57.1% against 42.9% is not sure whether the skills and competence of bank staff are sufficient to treat the ATM frauds that emerge with this rapid technological development.

4.4.2.1 Institutions Responsible to Deal with ATM Frauds

Furthermore, the study wanted to identify the institutions dealing with ATM frauds cases, and different bodies were enumerated from the field data including court, banks and police. For good perusal see the data in Table 4.16.

Table 4.16: Institutions Responsible to Deal with ATM Frauds

Institution	Frequency	Percentage (%)
Court	2	2
Banks	50	51.
Police	47	47
Total	**98**	**100**

Source: Survey Data, 2014

From the table court was indicated by 1.9% of respondents, banks by 51.2%) and police (46.9%).

Concerning the data from the findings in Table 4.16, one can realize that majority of banks customers (51%) invest their many beliefs to financial institutions than other institutions as the ones able to deal with all their ATM frauds cases. Though, based on this finding, it can be said that clients are likely to lose credibility with their specific bank institution where banks will remain reluctant to take appropriate measures to deal with fraud affairs where necessary.

As far this section was discussing on objective two of the study and it has covered on issues such as Institutions that are responsible to deal with ATM frauds which we have seen that court banks and police can be responsible. It has covered also mechanism that banks can use to detect ATM fraud control mechanism and we have seen that Smart ATM card can help as the respondent feeds on that. Also we dealt with the Causes of ATM fraud Incidences taking place at bank Institutions, bank control mechanism and effectiveness in curbing ATM frauds.

4.5 Impact of ATM Frauds to Financial Institutions and Clients

This section presents the findings on the objective three of the study which was to determine the impacts of ATM frauds to both FIs and clients. As it was presented in the preceding sections above, the study also wanted to get respondents views on the impacts of ATM frauds on banks/financial institutions and ATM users in the study area. As matter of fact a number of questions have been asked based Impacts of ATM Frauds towards Financial Institutions as discussed below;

4.5.1 Impacts of ATM Frauds towards FIs

First, one of the questions in this area concerned to get respondents' point of view regarding the impacts of ATM frauds to both financial institutions and users of ATM services. The data as presented in Table 4.17 discovered that the majority of bank staffs who participated in this study have indicated that the ATM frauds have tremendous impacts on bank institutions and their clients in general.

Table 4.17: Impacts of ATM Frauds

Do you Think ATM frauds can have Impacts on your bank institution and ATM services users?		**Frequency**	**Percent**	**Valid Percent**	**Cumulative Percent**
Valid	Yes	22	14.3	91.7	91.7
	No	2	1.3	8.3	100.0
	Total	**24**	**15.6**	**100.0**	

Source: Survey Data, 2014

As far as the findings in Table 4.17 are concerned, it can be admissible to say that ATM frauds can have tremendous negative impacts not only Banks or financial institutions but also clients.

In addition to the result above, the study also intended to determine the repercussions ATM frauds to FIs and ATM users respectively and more specifically found in Arusha Region. On the findings related to ATM impacts to banks or financial institutions, it was typically found out that the frauds do have a number of repercussions toward bank institutions. As it is shown in Table 4.18, the frauds can generate loss of credibility of clients toward the bank, reduce the bank reputation, lead financial loss to the bank and sometimes reduce credibility of employer to their staff. Similarly, they may also cause client withdrawal from the bank, and increase cost of putting in place viable prevention/control mechanisms as well as condition financial to put huge investment in hiring IT technicians.

Table 4.18: Effects of ATM Frauds to Bank Institutions

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	loss of Credibility from clients	4	2.6	16.7	16.7
	Loss of reputation	4	2.6	16.7	33.3
	Financial loss	4	2.6	16.7	50.0
	Reduce employer credibility to staff	3	1.9	12.5	62.5
	Cost of prevention mechanism	4	2.6	16.7	79.2
	Client withdrawal	2	1.3	8.3	87.5
	Huge investments in IT technicians	3	1.9	12.5	100.0
	Total	**24**	**15.6**	**100.0**	

Source: Survey data, 2014

With regard to the findings above, it is quite obvious that ATM frauds may generate a number of repercussions toward bank institutions. As it is shown in Table 4.18, the frauds can generate loss of credibility of clients toward the bank, reduce the bank reputation, lead financial loss to the bank and sometimes reduce credibility of employer to their staff. Similarly, they may also cause client withdrawal from the bank, and increase cost of putting in place viable prevention/control mechanisms as well as condition financial to put huge investment in hiring IT technicians.

The staff respondents have been also cited number negative effects that ATM users can undergo as a result of ATM frauds. The findings in Table 4.19 reveal that the frauds may affect clients' social relationship and generate financial loss, wastage of time (client spending much time dealing with fraud cases), decrease clients' productivity once the capital stolen as well as cause emotion trauma to clients.

Table 4.19: Effects of ATM frauds to ATM Users

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Social Relationship	4	2.6	16.7	16.7
	Financial loss	4	2.6	16.7	33.3
	Emotion trauma	4	2.6	16.7	50.0
	loss of time	7	4.5	29.2	79.2
	Decrease in productivity	5	3.2	20.8	**100.0**
	Total	**24**	**15.6**	**100.0**	

Source: Survey Data, 2014

It can also be deduced from the findings in Table 4.19 that ATM users as it is for bank institutions can also suffer from the negative impacts of ATM frauds. According to the findings, the frauds can affect clients' social relationship, cause financial loss, and sometimes occasion wastage of time (client spending much time dealing with fraud cases), decrease clients' productivity once the client's financial capital stolen and cause emotion trauma to clients. Others impacts as indicated in Table 4.20 include misunderstanding among relatives, deep hopelessness, financial insecurity and emotion trauma.

The ATM users on their side on the issue related to the pitfalls resulting from ATM frauds have not been very different from their counterpart bank staffs by enumerating a number of factors, like loss of credibility to FIs, financial loss, misunderstanding among relatives, and wastage of time in making follow up to FIs and other bodies once any case of frauds happens. Other identified repercussions were loss in productivity, deep hopelessness, financial insecurity and emotion trauma as it is stipulated in Table 4.20 below.

Table 4.20: Impacts of Frauds to ATM Users

Type of Impact	Frequency	Valid Percent
Social Relationship	9	9.2
Financial Loss	8	8.2
Emotion Trauma	9	9.2
Loss of Life	8	8.2
Loss of Credibility	11	11.2
Loss of Time	12	12.2
Deep hopelessness	14	14.3
Financial Insecurity	12	12.2
Loss in productivity	15	15.3
Total	**98**	**100.0**

Source: Survey Data, 2014

Thus, as far as these findings are concerned, it can be said that the impacts of ATM frauds to both bank institutions and ATM users can vary from social, economic and health repercussions as these can affect social relations, financial security, and human health.

4.6 Strategies to adopt in order to Improve ATM services

This section presents the findings on the objective four of the study which was to determine the strategies to adopt in order to Improve ATM services. As it was presented in the preceding sections above, the study also wanted to get respondents views on the strategies to adopt in order to Improve ATM services. As matter of fact a number of questions have been asked based on the strategies to adopt in order to Improve ATM services

4.6.1 Strategies to adopt towards improving ATM services

This subsection presents the suggested strategies to adopt in order to Improve ATM services as put down by respondents. They included cooperation among banks, increasing capacity building to clients on storing PIN, increased efforts to guide clients on queuing and working closely with law enforcing organs as shown in Table 4.21 below.

Table 4.21: Strategies to adopt towards Improving ATM services

Solution	Frequency	Percentage (%)
Cooperation among banks to stem frauds.	26	26.5
Increased capacity building to clients on storing PIN.	28	28.5
Increased effort to guide clients on queuing.	22	22.4
Working closely with law enforcing organs.	22	22.4
Total	**98**	**100**

Source: Survey Data, 2014

Findings show these responses: Cooperation among banks (26.5%), increasing capacity building to clients on storing PIN (28.5%), increased efforts to guide clients on queuing (22.4%) and working closely with law enforcing organs (22.4%) as indicated in Table 4.21 above.

Responses on increasing capacity building to clients on storing PIN and working closely with law enforcing organs occupied the larger share (about two-third) of the proposed solutions. Respondents therefore believe that increased capacity building and working closely with law enforcing organs will reduce ATM frauds to greater extent.

Ihejiahi (2009) and Obiano (2009) also saw the need for banks to work closely with law enforcing organs and importance of increasing capacity building to clients respectively. Here in Tanzania specifically NMB and CRDB have already taken some measures such as sending Short Message Service to clients after transaction through ATM to detect fraudulent acts. So the FI must make sure these two proposed solutions are put in place to solve ATM frauds.

CHAPTER FIVE

SUMMARY OF THE FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.1 Chapter Overview

This chapter presents conclusions in regard to the findings obtained and discusses by the study in previous chapters. Conclusions have been provided in objectives sequence. The chapter also provides recommendations of the study based on the study.

5.2 Summary of the study

This study was on ATM fraud and its impacts to Financial Institutions with NMB and CRDB banks as case of focus and study conducted in Arusha. The study was focusing on four specific objectives which were to analyze method through which customers' knowledge on ATM Frauds was acquired, analyze detection and protection methods used by financial institutions to control ATM frauds, determine the impacts of ATM frauds to the financial institutions and costumers and find out strategies to adopt in order to improve ATM services. The information was collected from 98 respondents in which 74 respondents were bank clients and 24 were bank staffs.

5.3 Findings and conclusion of the study

This section provides the summary of the findings of this study discussed in Chapter four as well as conclusion as follows:

5.3.1 Respondents' Demographic Profile

The study involved a total number of 98 respondents composed with 74 ATM users representing 75.5% of the total number of respondents, and 24 respondents selected from bank staff/employees. On respondents' demographic profile, the study considered a number of factors including gender (male: 59 or 60.2%; Female: 39 or 39.8%), and it was discovered that males are likely to use ATM services than females. In addition, the level of education and duration of ATM usage were taken as control factors for ATM clients and job position for bank staff. On issues related to education, it was evident that the higher the level of education, the greater the probability one has to hold a bank account or use ATM services. The marital status of respondents was also considered, and it was revealed ATM services are used by people of all marital status

5.3.2 Customers’ Knowledge about ATM Frauds

This section entailed to discuss about the first objective of this study concerning customers’ knowledge about ATM frauds. On the findings related to this objective, it was discovered from both customers (98.6%) and bank staff (83.4%) that majority of respondents are aware of ATM frauds. The most typical methods used to raise awareness as pointed out by the respondents include fliers, media, text message/phone message, and training, billboards and awareness campaign. It can be said from the findings that degree of awareness can vary depending on one’s level education and awareness method used as tertiary education people can feel more comfortable with awareness raised through fliers, media and awareness campaign where people of low level education remain uncomfortable with fliers.

In addition, none interviewed customers has reported to be victim of any ATM fraud case the finding that was contradictory to that of interviewed staff who ascertained to have received different reports of ATM frauds incidences at their respective bank institutions. Therefore, three types of ATM frauds have been pointed out as most reported (robbery, use of fake cards, and use of ATM card and PIN by a relative without permission). The clients also have reported to suffer various problems that they consider to be annoyance apart from ATM frauds incidences (*cfr Table 4.8).*

5.3.3 ATM Frauds Detection and Protection Mechanisms

The study was also examined ATM fraud detection and control mechanisms available at the Bank Institutions. First, the study investigated on the causes of ATM frauds, and it was discovered from the findings that most of frauds taking place are due to a number of factors including poor bank control mechanisms, lack of competent staff, and poor PINs storage as well as inefficient bank technological equipments (*cfr.Table 4.9)* the fact which denotes creation of opportunistic environment leading to ATM fraud incidences.

Furthermore, the study revealed that most bank institutions and more particularly NMB and CRDB have in place different ATM fraud control and protection methods including adoption of SMART cards, recruitment of competent IT specialists, installation of CCTV cameras at various ATM service and establishment of effective database control system as presented in Table 4.10.Customers on their side have said to protect themselves against the frauds through keeping their ATM cards and PINs jealously and away from the reach of any intruders the method which was differently from one person to another depending on his/her gender and marital status.

Moreover, after identified a number of control method used by bank institutions, the study among other things wanted to know effectiveness of those methods in curbing ATM fraud incidences where the majority of the respondents approximating 61.2% of the total respondents have seen all measures taken as ineffective. The findings which were also backed up by an average percentage 56.1% of total respondents who reported their respective bank institutions to be poorly equipped technological and 57.1% of the total respondents who accused the banks to miss skilled and competent staff able to deal with ATM frauds which varies day after day by the rapid technological development.

Finally, it was also noticed that majority of customers do believe that bank institutions are in good position of tackling their ATM fraud cases than can any other bodies in the region the fact which shows that customers are likely to lose credibility with their banks in case these will be reluctant to take appropriate measures to deal with their fraud affairs where necessary.

5.3.4 Impact of ATM Frauds to Financial Institutions and Clients

With regard to the impacts of ATM frauds to both FIs and clients, the findings have shown that both customers and bank institutions can tremendously suffer from the impacts ATM frauds once happen as indicated by 91.7% of the total respondents. On the side of bank or financial institutions, the study has highlighted a number of repercussions that FIs can suffer as the result of ATM frauds. The most typical effects are customers losing credibility toward the bank of their adherence, decline of bank reputation, financial loss to the bank institution and sometimes decline of credibility of employer to their staff. Other identified repercussions include withdrawal of clients from the bank and add cost to the bank institution to put in place viable prevention/control mechanisms as well as put huge investment in hiring IT technicians.

With regard to the findings above, it is quite obvious that ATM frauds may generate a number of repercussions toward bank institutions. As it is shown in Table 4.18, the frauds can generate loss of credibility of clients toward the bank, reduce the bank reputation, lead financial loss to the bank and sometimes reduce credibility of employer to their staff. Similarly, they may also cause client withdrawal from the bank, and increase cost of putting in place viable prevention/control mechanisms as well as condition financial to put huge investment in hiring IT technicians. The impacts of ATM frauds that can be faced by customers as revealed by the findings include break social relationship and trust among relatives, financial loss, wastage of time, decrease of clients' productivity once the capital stolen, and emotion trauma.

5.3.5 Strategies to adopt in order to Improve ATM services

With regard to the strategies to adopt in order to Improve ATM services , the findings have shown that different strategies can be adopted such as cooperation among banks, increasing capacity building to clients on storing PIN, increased efforts to guide clients on queuing and working closely with law enforcing organs.
With regards the findings above show that, the strategies such as cooperation among banks (26.5%), increasing capacity building to clients on storing PIN (28.5%), increased efforts to guide clients on queuing (22.4%) and working closely with law enforcing organs (22.4%) can be adopted in order to Improve ATM services and from the above findings, Responses on increasing capacity building to clients on storing PIN and working closely with law enforcing organs occupied the larger share (about two-third) of the proposed solutions. Respondents therefore believe that increased capacity building and working closely with law enforcing organs will reduce ATM frauds to greater extent.

5.4 Conclusions

It can be concluded from the findings that in Tanzania ATM fraud is still a problem that affect both bankers and clients socially, economically as well as their survival in particular. Therefore, this requires additional efforts of all financial institutions more importantly those operating in big cities. Similarly, FIs need to set strategies that will enable them to minimize different annoyances that lead to clients to lose credibility with them. All in all, clients and ATM users together should make sure that good and effective control mechanisms and measures are put in place in order to reduce chances of occurrence of ATM frauds incidences that would affect them socially and economically.

5.5 Recommendations

As far as the findings of this study are concerned, the following recommendations are essential to be worked on in order to improve and enhance control of ATM frauds incidences in Tanzania and Arusha in particular:

The bank institutions should make sure that the ATM security is enhanced through adoption of sophisticated technological means for fraud detect and make huge investment in deploying competent IT specialists. For instance, there still is a necessity to make use of fraud detection and prevention software that analyzes patterns of normal and unusual behavior as well as individual transactions in order to likely burn out fraud.

The cooperation among stakeholders including law enforcing organs need to be enhanced in order to establish laws and regulations that should favor both ATM service providers and users in dealing with frauds incidences

Customers should similarly create the ability to check their monthly bank statements closely and report any discrepancies to their responsible bank as earlier as possible. In addition, they should also ensure that they store their PINs secretly in order to reduce the likeliness of inappropriate use of PINs with relatives and other unexpected persons.

Bank institutions should also make sure that ATM services are improved in order to preserve their reputation and credibility toward their service users. For instance, the network problem as a challenge in ATM usage, the banks should reload and repair their ATMs within a reasonable time as many ATMs are not operating in 24 hours fashion following system problem hence the challenge of waiting for long queues will be reduced.

Finally, bank institutions should make additional efforts to raise ATM users' awareness on best use of ATM services and appropriate protection and control measures against ATM frauds.

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APPENDICES

Appendix 1: Questionnaire

Dear respondent,

Thank you for agreeing to take part in this study. You are kindly requested to fill in the blank spaces shown to the best of your knowledge. All information provided will be used only for academic purpose and not otherwise. They are purely meant for academic purpose for the award of Masters Degree at Mzumbe University

Phone number……………

A. Demographic characteristics

1. Gender of ATM user 1.male…….. 2. Female………… ( )
2. Number of years attended at school ……………….
3. Age of ATM user ……………
5. Marital status of ATM user: 1. Single ( ) 2.Married ( ) 3.Cohabit ( ) 4.widow ( ) 5. Separated ( )
6. Average income of ATM user ……………………

B. Customers' Knowledge on ATM Frauds

1. Do you have hold any ATM card? Yes ( ) No ( )
2. If your answer in question one above is "YES" to which bank does it belong?
3. Since when have you been using ATM services?
4. Why did you opt to use ATM services?
5. Have you ever encounter any ATM related problem since you have been using ATM services?
6. If yes, what problem was it?
7. Do you have knowledge about ATM frauds?
8. Have you ever faced any ATM related fraud incidences?
9. If yes, how did it take place?
10. Had any of your relative been a victim of ATM fraud?

C. Detection and Protection Methods to Control ATM Frauds

1. Do you think the bank you are adhering to has well established detection and ATM control mechanisms?
2. If you have answered YES in question one above, please state some three or four mechanisms you are well aware of.
3. What do you do to protect yourself from ATM frauds?
4. Do you share your PIN information with any person? If yes, who was that person? If No, why?
5. Do you think to be well-informed on ATM frauds and proper measures to protect yourself from those frauds?
6. How have been getting informed on those mechanisms?
7. Does your bank provide enough information about ATM frauds?
8. How does the bank propagate the ATM fraud awareness to its users?
9. If yes do you think the information provided has been helpful to you as a user?
10. If your answer in question one above is NO, please state what can be the problem.
11. Do you think Financial Institutions are taking necessary measures to counter the frauds?
12. Do you think your bank have competent staff able to deal with the emerging ATM frauds?
13. Do you think your bank has effective technological equipments to detect and control ATM fraud incidences likely to occur?

D. Impacts of ATM Frauds to the Financial Institutions and ATM Users

1. Do you think the ATM frauds may have any impacts to you as a user of ATM services?
2. If yes, in what aspects can those frauds affect you as an ATM user?
3. Can ATM frauds have any impacts to the financial institution?
4. If yes, how can those frauds affect the financial institution?

E. Strategies to Curb Frauds and improve ATM services

1. What are the institutions or organizations that should be responsible in fighting against ATM fraud?
2. In your opinion, what should be done to fight ATM related frauds?

Appendix 2: Checklist

Interview guide for key informants

A. **Demographic Information**

Name (optional)…………………………………………… Gender ………………Age……..

Position of the respondent……………………. Organization……………………..

How long have you been within the organization?

B. **Customers' Knowledge on ATM Frauds**

1. Since when have you been providing ATM services?
2. Why did you opt to offer ATM services at your FI?
3. Have you ever encounter or heard of any ATM fraud related problem?
4. If yes, what problem was it?
5. Does your bank provide any information related to ATM frauds to its clients?
6. What are the methods used by your bank to make sure the clients are aware of ATM frauds?
7. Have you ever faced any ATM fraud incidences in your Bank institution?
8. If yes, how did it take place?
9. Had any of your clients been a victim of ATM fraud?
10. If yes, how did you hear about this incidence? And how did treat the victim client?

C. **Detection and Protection Methods to Control ATM Frauds**

1. Do you think your bank has well established detection and ATM control mechanisms?
2. If you have answered YES in question one above, please list three or four control mechanisms used by your bank.
3. What do you do to protect yourself and your client from ATM frauds?
4. Who should be blamed to have caused those frauds? State why the one have indicated should be blamed?

5. Do you think to your clients are well-informed on ATM frauds and proper measures to protect themselves from those frauds?
6. How have them been getting informed on those mechanisms?
7. Does your bank provide enough information about ATM frauds?
8. How does the bank propagate the ATM fraud awareness to its users?
9. If yes do you think the information provided has been helpful to your clients?
10. If your answer in question one above is NO, please state what can be the problem?
11. Do you think your Financial Institution is taking necessary measures to counter the frauds?
12. Do you think your bank have competent staff able to deal with the emerging ATM frauds?
13. Do you think your bank has effective technological equipments to detect and control ATM fraud incidences likely to occur?

D. Impacts of ATM Frauds to the Financial Institutions and ATM Users

1. Do you think the ATM frauds may have any impacts to your ATM services users?
2. If yes, in what aspects can those frauds affect your ATM clients?
3. Can ATM frauds have any impacts to your financial institution?
4. If yes, in what aspect can your financial institution be affected?

E. Strategies to Curb Frauds and improve ATM services

1. What are the institutions or organizations that should be responsible in fighting against ATM fraud?

   ……………………………………………………………………………………
   …………………………………………………………………………
2. In your opinion, what should be done to fight ATM related frauds?

………………………………………………………………………………………

3. How closely does the ATM industry work with law enforcement and fraud prevention groups?