



**IMPACT OF AUTOMATED TELLER MACHINE (ATM)  
TRANSACTION ON FINANCIAL PERFORMANCE OF  
COMMERCIAL BANKS IN RWANDA**

**CASE STUDY OF BANK OF KIGALI (2015-2018)**

**A Thesis submitted in partial fulfillment of the Requirements for the  
Degree of Master of Business Administration (Finance Option)**

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**SEPTEMBER 2019**

## **DECLARATION**

I declare that this research is my own work. It is submitted in partial fulfillment of the requirements for the degree of Master of Business Administration at the University of Rwanda. It has not been submitted before for any degree or examination in any other university. No part of this of this research should be reproduced without the authors' consent.

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This research has been submitted with our approval as the research Supervisor

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This thesis entitled **Impact Of Automated Teller Machine (Atm) Transaction On Financial Performance Of Commercial Banks In Rwanda: Case Study Of Bank Of Kigali (2015-2018)** written and submitted by **Mukamunana Sophie** in partial fulfillment of the requirements for the degree of **Master of Business Administration, Finance** is hereby accepted and approved.

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## ABSTRACT

This study entitles the impact of Automated Teller Machine on Financial performance of commercial banks of Rwanda, case of Bank of Kigali. This study was being guided by the objectives which are to establish the effect of Automated Teller Machine transactions on financial performance of commercial Banks, find out the extent of commercial Banks performance influenced by Automated Teller Machine transactions, and establish the relationship between Automated Teller Machine transactions on financial performance of commercial Banks. The data collected from both primary and secondary sources was processed and analyzed so as to find out the hidden meaning that can be based on to draw conclusions. The logistic regression was used to analyze and interpret binary logistic was also used to analyze logistic regression. The process of data analysis was beginning after that data is collected, and then the data was entered into the SPSS software and therefore analyses. To interpret the responses of the respondents, the values of interpretation was used. The level of performance of commercial banks by observed response of respondents which are 84% of total number of respondents who agreed with Yes and 16% of total number of respondents who disagreed with NO. Exponentiation of the B coefficient which is an odds ratio indicates odds ratio is given by odds: 8/42 which gives 0.190 and is less than 0.5, Score test that is used to predict whether or not an independent variable would be significant in the model. This indicates that V1, V2, V3, V4, V5, V6 each of the predictors would be statistically significant. This helped a researcher to reject the null hypothesis  $H_0$  which says that there is no a significant relationship between Automated Teller Machine transaction and performance of Bank of Kigali, and confirm  $H_1$  which says that there is a significant relationship between Automated Teller Machine transactions on financial performance of Bank of Kigali.

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# CHAPTER ONE

## INTRODUCTION

### 1.1 Background of the study

In today's business world, globalization and international experience has become critically important. Banking industries can no longer get away with operating loosely connected groups of businesses that happen to be located around the world, but must strategically integrate their activities. The history of banking is that till the industrial error, banking services were rendered on manual basis characterized by; ledger keepers at back office, cashiers providing front desk service, ledger cards, cash registers among others. This is not only tedious, but also strenuous and slow besides providing inaccurate and unreliable information on a regular basis because of the human error. The limitations of manual banking highlighted above in most cases results to customer complaints, slowness in service provision, long queue and high operational costs etc. These limitations reduce reliability of financial services as regards to accuracy and completeness (Joseph and Stone, 2003).

Globally, Automated Teller Machines have been adopted and are still being adopted by banks. They offer considerable benefits to both banks and their depositors. The machines can enable depositors to withdraw cash at more convenient times and places than during banking hours at branches (Musiime and Biyaki, 2010).

The present research examines the impact of automated teller machine and financial performance of commercial Banks. Automated Teller Machine (ATM) refers to a machine that acts as a bank teller by receiving and issuing money to and from the Automated Teller Machine account holders/ users. The evolution of Automated Teller Machine was not in isolation, rather as a result of the general global wave in the technological revolution (Kathleen, 2005).

This came due to the need to respond to the challenge of the multiple bulk of daily complex information that arises from among others; increase in competition, increased customer demand for both service provision as well as efficiency, expansion due to the increase in demand for services etc. Technology has tremendously stimulated expansion of the banking

networks and range of the offered services during recent years. Efficient management is another most important factor behind the performance of all banks. Management efficiency of the bank includes its administrative ability to react in diverse circumstances. The term management efficiency involves the capability of management in generating business and maximizing profits. A focal term 'administrative proficiency', which essentially indicates the capacity of a bank to increase benefits or minimize costs under given situations. With increased competition in the Pakistani banking sector, the efficiency and effectiveness become the rule as banks constantly strive to improve the productivity of their employees. Presently the banks have extended their working hours. By the use of latest technology banks have improved their operating system. Management efficiency is a useful for the bank performance. Above all it is a qualitative factor which is applicable to institutions individually or can jointly use as an indicator of management efficiency. Expense ratio, earnings per employee, loan size and cost of unit per lent money is used as an alternate of the management efficiency. By the use of technology, they are able to provide quick service in a short time, so now they are attracting customers and compete with each other on the basis of quickly and comfortably. Although every banking operation requires some technology applications, researchers vary on the subject of the relationship between the level of employed automated teller machines, and the value of the banking efficiency increase. All researchers agree on the importance of ATMs for the further developments of the banking industry, but some of them have found lack of proportionality between the increased in the scale of technology utilization and the increase in banks profitability. Automated Teller Machine (ATM), also known as automated banking machine (ABM) or Cash Machine (Joseph, et al 2003).

ATMs are 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 where large numbers of people may gather. ATM services includes function such as cash withdrawal, balance enquiry, bill payment, cash and cheque deposit, saving and credit account on a 24 hours' basis. According to Patricio and Cunha, (2003) Automated Teller Machines are devices used by bank customers to process account transactions. Typically, a user inserts into the ATM a special plastic card that is encoded with information on a magnetic strip. The strip contains an identification code that is transmitted to the bank's central computer by modem. To prevent unauthorized transactions, a personal identification number (PIN) must

also be used by the user using a keypad. The computer then permits the ATM to complete the transaction; most machines can dispense cash, accept deposits, transfer funds, and provide information on account balances. The study is of great importance for academics to compare the performances of various commercial banks and efforts should be made to solve the discrepancies in performances of commercial banks. Besides, the study is immense help for the management and staff of commercial banks who will gain insight into how their institutions can effectively manage their financial ratios by appropriate practices to increase their profits. In addition, by automating services that were previously completed manually, ATMs reduce the costs of servicing some depositors of demand. These potential benefits are multiplied when banks share their ATMs, allowing depositor of other banks access their account through a bank's Automated Teller Machine. (Kathleen, 2005)

Financial segment in broad and banking segment in particular is one of the energetic elements for the economic development of the country. So it is important to control and regulate bank processes by an apex Bank to make sure customer's safety, strengthen and promote soundness, stability and efficiency of the banking system. This helps to decrease the hazards of banks becoming bankrupt. Banks are well-known as financial intermediaries their role is to sell its own obligations and to buy from others. All over the world the banking segment is known for the appropriation of multidimensional techniques occasionally with fluctuating degrees of achievement. Banks are vital for the efficient functioning of budgetary markets as they serve as stores of fundamental monetary data and can conceivably alleviate the issues made by data asymmetries. Central bank needs such great disclosures for early identification of issues confronted by banks in the business and decreases the seriousness of business sector disturbances. The research describes the financial performance of the banking segment by utilizing CAMEL model including Capital adequacy, Asset quality, Management efficiency, Earnings & Profitability and Liquidity to assess the financial performance. The significance of this study is valuable for helping business financiers to know the qualities and shortcomings for defining methodologies and polices that will push a successful and sound money framework. Regulators have enlarged bank supervision by utilizing CAMEL model to evaluate and assess the performance and financial soundness of the bank's activities. (Gupta S., 2008)

Rwanda financial sector with the rest of the East African communities and the rest of the world, the concept of banks and banking has undergone a paradigm shift. Before financial reforms, Rwandan Banks were enjoying, in a protected environment with a strong cushion of the government and their banks. This had made them operationally inefficient and commercially almost wreck, as they had cumulated as much as failures (loss) as Non-performing advances. However, with the National Bank of Rwanda taking strong measures based on the recommendations of the MINECOFIN, the landscape of Rwandan banking changed altogether. All the banks were directed to follow the norms of capital adequacy, asset quality, provisioning for NPAs, prudential norms, disclosure requirements, acceleration of pace and reach of latest technology, streamlining the procedures and complying with accounting standards and making financial statements transparent. Towards this end, they re-defined their objectives, strategies, policies, processes, methods and technologies which have a direct bearing on the financial health and performance of these banks. In this way, commercial banks were not only required to take the above steps but always evaluate their financial position from period to period. Because of this factor, the interest of the analysts and researchers got developed to analyze, evaluate, measure and finally manage the financial performance of the Rwandan commercial banks; BNR (Annual Financial on stability, 2008).

## **1.2 Statement of the Problem**

Financial performance problems of commercial banks started long time years ago before financial reforms; many commercial banks were witnessed undergoing insolvency due to higher level of non-performing loan of ATM Credit Card. The financial statement of Bank of Kigali showed that NPL of year 2015 equal to 4.9%,4.5% in 2016, 5.6% in 2017 and NPL of year 2018 equal to 4.9%. The loan loss of year 2015 equal to 3.3% ,3.0% in 2016,4.8% in 2017and loan loss of year 2018 equal to 5.4% (BNR, Financial stability report,2008). It is considered as the rate of nonperforming loans raised compare to previous years which shows the quality of portfolio credit of a bank which influencing the performance of it. The introduction and use of Automated teller machine is introduced into the banking system to enhance the performance of commercial banks. Presently problem is the influence of automated teller machine in fail to meet capitalization requirements affected by mismanagement. Therefore, there is distress in a situation, in which the commercial banks are having operational, managerial and financial difficulties (weaknesses). Therefore, this research is conducted to carry out the impact of ATM transaction on financial performance of commercial banks, a case study of Bank of Kigali from a period of 2015 to 2018.

## **1.3 Objectives of the study**

### ***General objective of the study***

The general objective is to establish the effects of automated teller machines (ATMs) on the financial performance of Commercial Banks in Rwanda.

### ***Specific objectives of the study***

- i. To establish the effect of Automated Teller Machine transactions on decrease of number of tellers in Bank of Kigali.
- ii. To find out the extent of commercial Banks financial performance influenced by Reduce errors and fraud.
- iii. To establish the relationship between Automated Teller Machine transactions on financial performance of commercial Banks.

#### **1.4 Research questions**

- i. What is the effect of Automated Teller Machine transactions on decrease of number of tellers in Bank of Kigali?
- ii. What is the extent of commercial Banks financial performance influenced by Reduce errors and fraud?
- iii. Is there a relationship between Automated Teller Machine transactions on financial performance of commercial Banks?

#### **1.5 Justification of the study**

After conducting this research, the researcher had enough knowledge about how Automated Teller Machines transactions of Bank of Kigali work, Bank of Kigali had know where it has weaknesses and failure and how to improve, the recommendations a researcher have given will help Bank of Kigali to identify clearly the impact of Automated Teller Machine transactions on its performance, and cover some gaps that have been identified during the time of this research, the research was helped private and public investors both current and prospective; to be aware of the performance of Bank of Kigali, and this enabled them to make decisions of investment, and This research was also a reference of other researchers, and the similar study was done in other institutions within the country in order to make addition of the findings.

#### **1.6 Limitations of the study**

This study was depending on having access to people, organizations or documents and if whatever reason access is denied or otherwise limited then the collection of data may be hindered. Organizations or people may fail to provide me with information or refuse to give their ideas about this matter. The researcher was have to meet the leaders of organization before engaging into the collection of data and explain them well the objectives of my study to win their consent. Human beings are different in terms of values, cultures, behaviors and perceptions. They may not respond in similar way and in this sense the explicability may not be neat. This may bring a challenge to this study. Being an outsider may limit the communication with respondent and what is to be revealed to me. I may have to learn the governing my population to avoid confrontation.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.0 Introduction**

This chapter covered the available literatures written on this topic and in other related areas in this chapter. This was made possible by the identification, collection and review of these literatures from various sources such as text books, journals, reports and the internet.

#### **2.1 Theoretical Literature Review**

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

##### **2.1.1 The concept of Automated Teller Machine**

Automated Teller Machine is typically made up of the CPU for controlling the user interface and transaction devices, magnetic or Chip card reader for identifying the customer, display which is used by the customer for performing the transaction, function buttons usually close to the display or a Touch screen used to select the various aspects of the transaction and a record printer which provides the customer with a record of a transaction (Cronin and Mary, 1997).

Most Automated Teller Machines are connected to interbank networks, enabling people to withdraw and deposit money from machines not belonging to the bank where they have their

account or in the country where their accounts are held thus enabling cash withdrawals in local currency. (Maxwell, 1990)

### **2.1.2 Evolution of Automated Teller Machine**

Automated Teller Machine is said to have evolved from early cash dispenser and is said to have first been introduced in the early 1970's. The dispensers were operated by a token inform of a punch card. This enables a customer to withdraw as sachets of suitable values of bank notes. These sachets processes and then return the card to the customers. Another source has it that Automated Teller Machine concept was started around 1967 and that it was first installed in Endfield town, on the London Borough of Endfield by Barclays Bank (Thomas, 1996). This is said to have been accredited to John Shepherded Baron, although George Simon registered patent in New York and Don Wetzel and two other Engineers from Docatel Company also registered patent in June/ April 1973 (Brendan, 1996). This in the second generation was improved to the extent that made it possible to count proved money.

### **2.1.3 Operation of Automated Teller Machine**

ATMs typically connect directly to their Automated Teller Machine Controller via either a dial-up modem over a telephone line or directly via a leased line. Leased lines are preferable because they require less time to establish a connection. It is observed that, most modern ATMs, the customer is identified by inserting a plastic Automated Teller Machine card with a magnetic stripe or a plastic smartcard with a chip that contains a unique card number. Security is provided by the customer entering a personal identification number (PIN). For one to access Automated Teller Machine service, he/ she (the card holder) has to insert the card (magnetic strip card) into the machine (ATM), which then reads the strip and makes contact with the central computer to confirm the genuity of the card which is either accepted rejected depending on whether it is valid or not. When accepted, the customer then punches his/ her PIN number which is then verified according to its compatibility with the information stored in the card. After which it then perform the service requested of like (issuing cash, accepting cash/ cheque deposit, balance enquiry, mini-statement) etc, and finally ejects the card (Musiime and Biyaki, 2010).

#### **2.1.4 Effectiveness of Automated Teller Machine**

Without usage of technology the banking sector cannot provide customers with effective services (Patricio, 2003). Effective service delivery is a new or significantly improved service concept that is taken into practice (Drake, 2001). Customer expectations concerning service encounter experiences and service delivery mechanisms as well as the entire concept of what constitutes quality service are therefore key issues that need to be considered prior to the implementation of any structural change (Patricio, 2003). Effective service delivery is a service product or service process that is based on some technology or systematic method. It can be a new customer interaction channel, a distribution system or a technological concept or a combination of them (Kelley, 1990).

Kumbhar, (2011) observed that effectiveness of service provision have a significant relationship with overall customer satisfaction. Effective service delivery is positively related to customer satisfaction in that, when a customer perceives that the delivery mode of the transactions that the bank is supposed to offer is quite good, the more the customers will be satisfied with the bank services.

#### **2.1.5 Impact of Automated Teller Machine on Financial Performance**

The Automated Teller Machine (ATM) was introduced as an instrument to aid banking operations. The introduction of the ATM by financial institutions changed the face of banking, but with some inherent challenges “ATM played a key role in any retail banks’ efforts to use technology as a quality weapon to defeat competition”. Automated Teller Machine provides a major role in offering convenience, speedy and round the clock services. Adeoti (2011) stressed that the use of ATM is safe and convenient. The ATM has made settlement of bills in banking system easy and saver. These benefits have resulted into phenomena growth in number of ATMs.

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

vital information that will help curb the menace. Muhammad postulates that the level of ATM fraud tend to have overshadowed the improvements which it has brought into the service delivery systems. The bank performance has focused on the key indicators of profitability, net interest margin (NIM), return on assets (ROA), (Flamini, 2009 Naceur and Omran, 2011). Saunders (1981) in a seminal paper present a theoretical framework (dealership model) for the determinants of NIM. The authors find the interest margin depends on both the degree of market competition and interest rate risk. A decrease in NIM indicates an improved functioning of the banking system (Kasman, 2010). However, it may not always reflect improved efficiency, as it may reflect a reduction in bank taxation or higher loan default rate (Demirguc-Kunt and Huizinga, 1999).

The bank performance has focused on the key indicators of profitability, net interest margin (NIM), return on assets (ROA), (Flamini, 2009, Naceur and Omran, 2011). The Formulas below shows how to measure the performance of commercial banks by calculations of ratios (NIM and ROA) and how automated teller machine transactions influence financial performance of commercial bank

$$\text{NET PROFIT MARGIN} = \frac{\text{NET PROFIT}}{\text{REVENUE}}$$

**Return on asset:** The return on assets (ROA) (aka return on total assets, return on average assets) is one of the most widely used profitability ratios because it is related to both profit margin and asset turnover, and shows the rate of return for both creditors and investors of the company. A better name for ROA is return on average assets, since it is more descriptive in how it is calculated. So a company can have a high return on assets even if it has a low profit margin because it has a high asset turnover. Banks are a good example of a business with low profit margins but high turnover (Flamini, 2009, Naceur and Omran, 2011).

$$\text{ROA} = \frac{\text{Net Income}}{\text{Total Asset}}$$

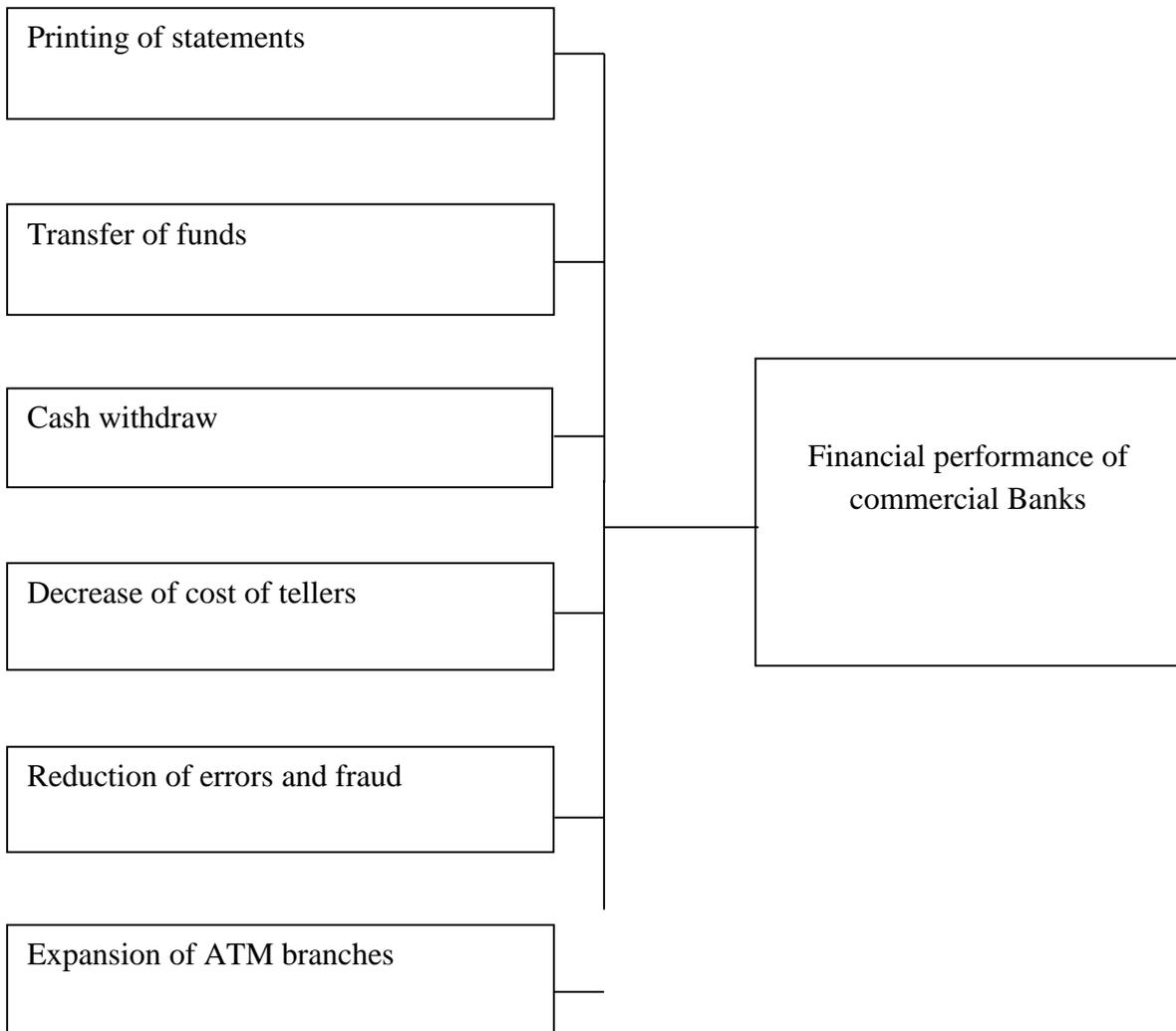
## 2.2 Conceptual frame work

All in all, this study aims to find the significance of each independent variable in regard to the dependent variable to determine the contribution determinants for commercial banks on economic growth, the existing literature on the subjects related to commercial banks and economic growth.

**Figure 1 Conceptual framework**

### Independent Variable

### Dependent Variables



*Source: Research, 2018*

A conceptual review represents the researcher's synthesis of literature on how to explain a phenomenon. It maps out the actions required in the course of the study given his previous knowledge of other researchers' point of view and his observations on the subject of research.

A conceptual review is a tool researchers use to guide their inquiry; it is a set of ideas used to structure the research, a sort of a map (Kothari, 2012). It is the researcher's own position on the problem and gives direction to the study. It may be an adaptation of a model used in a previous study, with modifications to suit the inquiry. Aside from showing the direction of the study, through the conceptual review, the researcher can be able to show the relationships of the different constructs that he wants to investigate.

According to the World Bank report (1991), it is foreigners who established commercial banking in Rwanda. By 1991, those commercial banks in Rwanda were dominated by two commercial banks: BCR (I&M Bank) established in 1963 and BK established in 1967, and in the recent years the BPR has become one of them it had changed to the Banque Populaire du Rwanda SA on the 5th January 2008 but actually other commercial Banks have increased. The main sources of funds of these banks are private domestic deposit and credit market borrowing. Modern Banking has been practiced for over 50 years. Commercial banks in Rwanda have grown both in number, branches, and in a variety of services by offering like loans, credits, and 'debit card services, and the introduction of automatic teller machines (ATMs), electronic banking and other services According to the text of law No 08/99 of 18th /6/99 concerning the regulations of banks and other financial institutions, there existed six commercial banks in Rwanda but actually there are ten commercial banks in Rwanda namely; BCR, BK, ECOBANK, FINA Bank, COGEBANQUE, BPR and BANCOR, including KCB and Equity Bank all operating under the supervision of BNR, BNR Annual report (2013:13), points out that BNR supervises the Rwandan financial sector as a legal and regulatory framework based on international standards allowing it to:- Protect customers' deposits, Enable commercial banks to respond to the financing needs within the economy, and Ensure that national financial system has a good reputation and credibility to keep healthy competition between the banks.

### **2.3 Empirical Literature review**

Empirical review is a review of related research using empirical evidence. It is a way of gaining knowledge by means of direct and indirect observation or experience. Empirical evidence (the record of one's direct observations or experiences) can be analyzed quantitatively or qualitatively.

Bishnoi (2013), in this research paper “An empirical study of customer’s perception regarding Automated Teller Machine attempts to find out the perceptions of customers of various banks regarding various issues related to ATM/Debit cards. The study concludes that ATM is a very convenient mode of electronic banking as a result its usage is increasing day by day. The authors have made a sincere attempt to ascertain customer perceptions about use of ATM services, perception about ATM services and the problems while using ATM/Debit cards. However, the author has not been able to other collect factors regarding customer perceptions other than those supplied to the respondents.

Sai Krishna (2009), in his study of “ATM cards in banks” has attempted to find out why customers are increasingly using ATM cards. The objectives of the study were to draw a profile of a urban ATM cardholders, to identify the factors influencing the people to use ATM cards, to assess the benefits of ATM cards to the cardholders, and to assess how, where and when ATM cards are used. This study certainly helps the banks to concentrate on increasing the volume of the number of ATM card holders by providing various user-friendly schemes. The author suggests that banks must concentrate more on promotional activities in order to create bank’s image in the minds of the card holders and try to balance the quality and service to remain as market leader. Though, this study is based on primary data and considers respondents from only one bank.

Ogbuji, (2012) , in their research paper “Analysis of the negative effects of Automated Teller Machine (ATM) as a channel for delivering banking services. ” proposed that the ATM system of delivering banking services not only contribute to increasing rate of fraud but equally lures Nigerians into profligate expenditure. The study reveals that ATM was lauded by several customers as an alternative to standing in long Q’s. But today, this has become a source of worry to customers and banks. This study concludes that ATMs have contributed to the alarming rate of fraud in Nigerian banking industry. ATM fraud could be reduced but cannot

be wiped out completely. The study comes out with the conclusion that out of various services of ATMs, in ability of the machine to deliver seamless service, poor maintenance by management, frustrating network, irregular deductions from customer accounts were problems faced by customers. However, problem of network failure was the most outstanding problem.

Empirical findings of performance of commercial banks are inconclusive. Hsiu-I Ting (2017) finds that financial liberalization reduces bank performance. Similarly, Iftikhar (2016) provides evidence that financial performance has a significant negative impact on bank interest margins in a cross-country study on 1300 banks of 76 countries for the period 2001-2005. However, Heffernan and Fu (2010) suggest performance policies have significant positive effect on NIM compared to ROA. Naceur and Goaid (2008) find partial liberalization negatively affects interest margin whereas complete liberalization strengthens the ability of Tunisian banks to generate profit margins. The mixed evidence suggests the relationship between ATM transaction and performance of commercial banks is an empirical issue. One study, Sufian and Habibullah (2009), finds a positive impact of some bank-specific characteristics on the determinants of performance for the period 1997-2004. This research examines the impact of automated teller machine (ATM) financial performance in Rwanda.

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.0 Introduction**

This chapter covers the methods and techniques to be used in order to collect the data for the accomplishment of this research. This chapter presents various ways in which the study is going to be designed and conducted. These include the area of the study sample size and selection, study population, sample study area, method of data collection, processing and data analysis. These methods of data collection include: questionnaire, interviews with some of the respondents. Again this same chapter indicates some major problems encountered by the researcher in carrying out the research. It explains why the researcher collects data, from where it is collected, how it is collected and analyzed.

#### **3.1 Research Design**

The research design is a plan, the structure and strategy of investigation so conceived to obtain answers to the research questions. The plan is the complete scheme or program of the research. According to Grinnel and Williams (1990), a research design is careful systematic study or investigation in some field of knowledge, undertaken to establish some facts or principles. For this study, the researcher was apply descriptive analysis using the fact that a descriptive research design is to be used to describe the data and characteristic about what is being studied. Descriptive survey also enables to obtain the current information. It is also used in fact finding studies and helps to formulate certain principles and give solutions to the problems concerning local or national issues. Descriptive survey method focuses on investigating the current status, practice and problem related to the financial statement and decision making.

### 3.2 Study Population

According to Ary D., (1972), a “population” consists of all the subjects you want to study. A population comprises all the possible cases (persons, objects, events) that constitute a known whole.

Ary (1972) continues by saying that the population of interest is usually too large or too scattered geographically to study directly. The population under this study was 96 works from finance department and credit department plus managers.

### 3.3 Sample Size

By correctly drawing a sample from a specific population, a researcher can analyze the sample and make inferences about population characteristics. The potential respondents under this research totaling 50 respondents of Bank of Kigali Headquarter that took purposively from finance department and credit department plus Managers. The simple size determination, according to Morgan, (2005), says that when the respondents are under 100 respondents you ask all of them.

**Table 1 Stratum of respondents**

<b>Stratum</b>	<b>Sample size</b>
BK Managers	6
BK employees (Finance and credit department)	44
<b>Total</b>	<b>50</b>

**Source:** primary data 2019

#### 3. 3.1 Sampling Procedure

A portion of the population selected for the purpose of researching the characteristics of the whole population is called a sample. A sample is a representative portion of the population selected to achieve the objectives of the study. All sample units mentioned above was

distributed of questionnaires. Purposive sampling method will be used due to the fact that the researcher decision guided the choice on whom to include in sample (Cardozo, R., 1965).

### **3.3.2 Source of Data**

To make this research successful, the research instrument included both primary and secondary data. The primary data was obtained by the use of self administered questionnaires while the secondary data will be obtained from the documented materials.

#### ***Primary Data***

According to (Bailey 1987), primary data are eyewitness accounts written by people who experienced a particular event or behavior. The collection of primary data entailed provision of questionnaire. Questionnaire is divided into three sections A, B, and C. Section A is included biography, section B included independent variable which is financial statement, and section C is include dependent variable which is decision making. A researcher has gone himself to the Bank of Kigali to distribute and to collect the questionnaires.

#### ***Secondary Data***

The collections of secondary data include reports, magazines, articles as well as textbooks and internet documentation, and BK financial analysis statements.

### **3.3.3 Data Collection Method**

For this research, the researcher has used Census method which is to obtain data from every member of a population. In most studies, a census is not practical, because of the cost and/or time required, Sample survey method which is obtain data from a subset of a population, in order to estimate population attributes, and Experiment method where the researcher was attempts to understand cause-and-effect relationships. The study is "controlled" in the sense that the researcher controls. In the analysis phase, the researcher compares group scores on some dependent variable. Based on the analysis, the researcher draws a conclusion about whether the treatment (independent variable) had a causal effect on the dependent variable.

### **3.4 Operational definition of variables**

#### **3.4.1 Financial Performance of commercial banks**

Financial performance is the process of measuring the results of an organization policies and operations in terms of monetary value. These results are reflected in the firm's profitability, liquidity or leverage. Evaluating the financial performance of a business allows decision makers to judge the results of business strategies and activities in objective monetary terms (Padachi, 2006).

#### **3.4.2 Automated teller Machine transactions**

An automated teller machine (ATM) is an electronic telecommunications device that enables customers of financial institutions to perform financial transactions, such as cash withdrawals, deposits, transfer funds, or obtaining account information, at any time and without the need for direct interaction with bank staff (Banker and Kauffman 1988).

#### **3.4.3 Banking Performance**

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

### **3.5 Data Analysis**

#### **3.5.1 Data presentation**

This was treated as an important intermediary stage of the research between data collection and data analysis. It is not possible to obtain answers to research questions straight away from these data sources. They all need to be processed. Data analysis essentially involves Editing, summarization (coding) and classification of data in order to make them easily understandable (Gupta S, Verma R., 2008).

### **3.5.2 Data Processing and Analysis**

The data from both primary and secondary sources was processed and analyzed so as to find out the hidden meaning that can be based on to draw conclusions. The binary logistic was used to analyze and interpret binary logistic. For data analysis SPSS (Statistical Package for Social Sciences), version 16 was used. As the analysis method, the researcher used descriptive statistics (Frequencies, and Logistic regression). For large samples ( $n > 70$ ), the formula  $range/4$  gives the best estimator for the variance (Gupta S, Verma R 2008). The interpretation of results followed the analysis so as to draw conclusions and recommendations about the findings.

### **3.6 Ethical considerations**

Social research should be ethical in collection of the data in the process of analysis. The data in dissemination of findings they are accepted to respect right dignity of those who are participating in the research project and avoid any harm to the participating in the arising from their involvement in the research and operate with honesty and integrity.

## **CHAPTER FOUR**

### **DATA PRESENTATION, ANALYSIS AND INTERPRETATION**

#### **4.0 Introduction**

This chapter discusses the theories related to the topic under study. The aim of this chapter is to review the available literature; both published and unpublished related to the topic “Impact of Automated Teller Machine (ATM) Transaction on Financial Performance of Commercial Banks in Rwanda”

This was done under the guidance of objectives of the study which were:

- i. To establish the effect of Automated Teller Machine transactions on decrease of number of tellers in Bank of Kigali.
- ii. To find out the extent of commercial Banks financial performance influenced by Reduce errors and fraud.
- iii. To establish the relationship between Automated Teller Machine transactions on financial performance of commercial Banks.

#### **4.1 Demographic characteristics of respondents**

##### **4.1.1 Distribution of respondents**

The distribution of respondent was analyzed to assess the percentage composition of different categories as well as the proportion of males and females in the sample. The assessment was also made to understand the sample age, structure, gender, qualification and nature of the respondents held. This help us to know the relevance of the information given in relation with the research.

**Table 2 Gender**

	Frequency	Percent	Cumulative Percent
Valid Male	35	70	70
Female	15	30	100
<b>Total</b>	<b>50</b>	<b>100</b>	

*Source: Primary data, 2019*

The table above shows that 70% of total number of respondents is male and 30% of total number of respondents is female. This shows that the research have considered gender balance during collection of data.

**Table 3 Age**

	Frequency	Percent	Cumulative Percent
Valid Between 21-28 Years	14	28	28
Between 29-36 Years	23	46	74
Between 37-44 Years	8	16	90
45 Years and Above	5	10	100
<b>Total</b>	<b>50</b>	<b>100</b>	

*Source: Primary data, 2019*

The table above shows that 28% of total number of respondents is between 21-28 years old, 46% of total number of respondents is between 29-36 years old, 16% of total number of respondents is between 37-44 years old, and 10% of total number of respondents is from 45years old and above.

**Table 4 Level of Education**

	<b>Frequency</b>	<b>Percent</b>	<b>Cumulative Percent</b>
Valid Bachelors Degree	37	74	74
Masters Degree	11	22	96
PhD Level	2	4	100
<b>Total</b>	<b>50</b>	<b>100</b>	

*Source: Primary data, 2019*

The table above shows that 37 respondents with 74% of total number of respondents has bachelors' degree, 11 respondents with 22% of total number of respondents has masters degree, and 2 respondents with 4% of total number of respondents has PhD level.

**Table 5 Marital Status**

	<b>Frequency</b>	<b>Percent</b>	<b>Cumulative Percent</b>
Valid Married	30	60	60
Single	18	36	96
Widow	2	4	100
<b>Total</b>	<b>50</b>	<b>100</b>	

*Source: Primary data, 2019*

The table above shows that 60% of total number of respondents is married, 36% of total number of respondents is single, and 4% of total number of respondents is widow. This shows the participation of different category of people in using ATM transaction in commercial banks performance in Rwanda.

## 4.2 Logistic regression analysis and findings

### 4.2.1 Classification table

**Table 6 Logistic regression on automated teller machine transaction and performance of Bank of Kigali**

**Table 6.1 Classification Table<sup>a,b</sup>**

Observed			Predicted		
			performance of commercial banks		Percentage Correct
			YES	NO	
Step 0 performance of commercial banks	YES	42	0	100.0	
	NO	8	0	.0	
Overall Percentage					84.0

a. Constant is included in the model.

b. The cut value is .500

The table above indicates the level of performance of commercial banks by observed response of respondents which are 84% of total number of respondents who agreed that ATM has a positive impact on BK performance while 16% total number of respondents disagree that ATM introduction had no impact on BK performance.

**Table 6.2 Variables in the Equation**

	B	S.E.	Wald	df	Sig.	Exp(B)
Step 0 Constant	-1.658	.386	18.478	1	.000	.190

*Source: Primary data, 2019*

The table above shows exponentiation of the B coefficient which is an odds ratio. This odds ratio is given by odds: 8/42 which gives 0.190 and is less than 0.5 and **df** is the degrees of freedom for the Wald chi-square test. There is only one degree of freedom because there is only one predictor in the model, namely the constant. **Wald and Sig.** is the Wald chi-square test that tests the null hypothesis **H0** that the constant equals 0. This hypothesis is rejected and Hypothesis **H1** is confirmed because the p-value (listed in the column called “Sig.”) is smaller than the critical p-value of .05 (or .01). **B** is the coefficient for the constant (also called the “intercept”) in the null model and **S.E.** is the standard error around the coefficient for the constant. This made a researcher to confirm the hypothesis by saying that there is a significant relationship between Automated Teller Machine transactions on performance of Bank of Kigali.

**Table 6.3 Variables not in the Equation**

	Score	df	Sig.
Step 0 Variables V1: Printing of statements	27.106	1	.000
V2: Transfer of funds	29.167	1	.000
V3: Cash withdraw	38.095	1	.000
V4: Decrease of cost of ATMs	22.222	1	.000
V5: Reduction of errors and fraud	16.931	1	.000
V6: Expansion of ATM branches	33.766	1	.000
Overall Statistics	41.071	6	.000

*Source: Primary data, 2019*

The table above indicates that there is a Score test that is used to predict whether or not an independent variable was significant in the model. This indicates that V1, V2, V3, V4, V5, V6 each of the predictors was statistically significant. This helped a researcher to reject the null hypothesis **H0** which says that there is no a significant relationship between Automated Teller Machine transaction and performance of Bank of Kigali, and confirm **H1** which says

that there is a significant relationship between Automated Teller Machine transactions on performance of Bank of Kigali.

***Secondary data analysis***

Within this part, the researcher makes a comprehensive explanation of bank of Kigali financial performance analysis by calculating Ratio in years of the study and show the performance changes of Bank of Kigali in general and ATM transactions included.

**Table 7 Financial performance of Bank of Kigali 2015-2018**

<b>Years</b>	<b>NIM=NET PROFIT *100</b> <b>REVENUE</b>	<b>ROA=Net Income *100</b> <b>Total Asset</b>
<b>2015</b>	10.1%	34%
<b>2016</b>	10.5%	35%
<b>2017</b>	10.4%	39%
<b>2018</b>	10.4%	34%

*Source: Secondary data, 2019*

The table above shows that financial performance of Bank of Kigali period of 2015-2018 as follow net profit margin equal to 10.1% in 2015, 10.5% in 2016, and 10.4% in 2018, ROA equal to 34% in 2015, 35% in2016, 39% in 2017 and 34% in 2018, Those variations are the impacts of different products introducing in Bank of Kigali where the contribution of ATM transactions is included.

**Table 8 The ATM performance of Bank of Kigali in year 2015 and 2018**

<b>Years</b>	<b>Number of ATMs</b>	<b>Income on ATMs transactions</b>	<b>Expenses on ATM (Maintenance)</b>	<b>Profit on ATMs transactions</b>
<b>2015</b>	84	32.1%	6%	26.1%
<b>2016</b>	91	27.0%	7%	20.0%
<b>2017</b>	91	25.3%	5%	22.3%
<b>2018</b>	95	26.3%	7%	19.4%

*Source: BK financial statement, 2015-2018*

The table above illustrates the performance of Bank of Kigali in year 2015 and 2018 according to the number of ATMs. As it seen in year 2015 BK had 84 ATM machines with income of 32.1%, expenses of 6% and profit on ATM transactions of 26.1%, 206, in 2016 BK had 91 ATM machines with profit of 27.0%, expenses of 7% and profit on ATM transactions of 20.0%, in 2017 BK had 91ATMs machine with income of 25.3%, expenses of 5% and profit of ATM transactions of 22.3% and In year 2018 BK had 95ATMs machine with income of 26.3%, expenses of 7% and profit of ATM transactions of 19.4%. This variation increment indicates that ATM machines transactions contribute strongly on performance of Bank of Kigali.

#### **4.1.2 How Profitable is an ATM Machine BK?**

From new products to strategies to increase sales leads, business owners should always be on the lookout for ways to make more money. Some businesses owners look to ATMs (automated teller machine) to increase passive income. Brick-and-mortar businesses, such as restaurants, gas stations or nail salons, may benefit from having an ATM. It can attract more customers and make money for your business. The performance of BK caused by ATM machine made BK to close some braches such as KIS branch, KCT brach, Murindi branch, Gatsata branch, Gisozi branch, Mahoko branch, Rusizi town branch and Rubavu boarder.

### **4.1.3 How BK makes money with an ATM machine**

When people use an ATM, they typically pay a small fee between 200frw and 300frw, and that's how businesses make most of their money through ATM. "When a business allows an ATM to be placed at their location, they have the opportunity to earn a commission," said Paul Carriere, attorney at Favret Carriere Cronvich. "The simplest way to conceptualize earning a commission is when a person uses an ATM, there is a 'surcharge,' a fee for using the ATM." However, business owners typically don't receive the whole fee. If you rent the ATM machine, the business that maintains the machine (fills it with cash, repairs it, etc.) receives some of the money. "There are a number of variations on the split, but the business earns money based on the surcharge transactions," Carriere added. While businesses can make money through the fees, some business owners look for other ways to use ATMs to make money and are running ads on them. "Companies are placing screens on top of ATMs and selling ads to run on those machines," Carriere said. "This can increase revenue for ATM operators and locations."

## CHAPTER FIVE

### SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

#### 5.0 Introduction

This chapter presents the summary of main finding of the study, conclusion drawn and valuable recommendations made. The study used both qualitative and quantitative methods of analysis which are based on the objectives of the study: to establish the effect of Automated Teller Machine transactions on decrease of number of tellers in Bank of Kigali, to find out the extent of commercial Banks financial performance influenced by Reduce errors and fraud, to establish the relationship between Automated Teller Machine transactions on financial performance of commercial Banks.

#### 5.1 Summary of the findings

Different researches have been conducted on Impact of Automated Teller Machine (ATM) Transaction on Financial Performance of Commercial Banks in Rwanda. Before data analysis, a pilot test was conducted for validity and reliability of the questionnaire. Cronbach alpha coefficient has been used to test the validity of Questionnaire before analysis and a coefficient was greater than 0.5 which was confirmed the adequacy of the study.

#### 5.4 Summary of respondents on Automated Teller Machine transactions on financial performance of commercial Banks

The findings indicate the level of performance of commercial banks by observed response of respondents which are 84% of total number of respondents who agreed with Yes and 6% of total number of respondents who disagreed with NO. Exponentiation of the B coefficient which is an odds ratio indicates odds ratio is given by odds: 8/42 which gives 0.190 and is less than 0.5, and **df** is the degrees of freedom for the Wald chi-square test. There is only one degree of freedom because there is only one predictor in the model, namely the constant. **Wald and Sig.** is the Wald chi-square test that tests the null hypothesis  $H_0$  that the constant equals 0. This hypothesis is rejected and Hypothesis  $H_1$  is confirmed because the p-value (listed in the column called “Sig.”) is smaller than the critical p-value of .05 (or .01). **B** is the coefficient for the constant (also called the “intercept”) in the null model and **S.E.** is the standard error around the coefficient for the constant. Score test that is used to predict whether or not an

independent variable would be significant in the model. This indicates that V1, V2, V3, V4, V5, V6 each of the predictors would be statistically significant. This helped a researcher to reject the null hypothesis  $H_0$  which says that there is no a significant relationship between Automated Teller Machine transaction and performance of Bank of Kigali, and confirm  $H_1$  which says that there is a significant relationship between Automated Teller Machine transactions on performance of Bank of Kigali.

## **5.5 Conclusion**

The researcher concludes by saying that Automated Teller Machine is important and very effective, and its discussion is not whether it is desirable or not, but to determine how the emerging technologies can be better annexed and channeled to promote Bank of Kigali growth, more productivity, more trade, improve banking records keeping, greater modernization and better living standard among Rwandese. The activities of banking industry have been able to rise up, thus, the advent of Automated Teller Machine has enable bank management and investors aware of some of the techniques being used by their foreign counterpart in achieving competitive advantage. In view of the findings and problems associated with the use and introduction of Automated Teller Machine in bank of Kigali which significantly influence financial performance, promote trading system, national income, and general welfare of the people. The absence of direct interaction with Bank of Kigali staff has increased customers' apprehensions about the perceived risk ATM delivery channels. To reduce the customers concerns about perceived risk because of security and privacy concerns, the bank should improve the quality of interaction with the customers to alleviate these apprehensions with a view to improve ATM service quality.

## **5.6 Recommendations**

These recommendations were suggested after analysis of the research findings that the management of Bank of Kigali emphasis on impact of ATM transaction on financial performance. Having gone through this study the researcher recommends the following as a way of incurring that financial performance plays a vital rule in investment:

Government should protect financial institution by creating laws, which must be followed accordingly to enable them to improve in performance and activities, Bank of Kigali managers

and government should properly adopt strategy that will encourage businessmen and general public in using automated teller machine which will improve its effectiveness and efficient, In a way of promoting the banking sector and micro finance banks, government should hold firm the laws on ATM fraudsters and scammers so as to boost economic of the nation, and the bank of Kigali should employ customized software that records relevant information on ATM cards so that it can establish whether unauthorized transaction has taken place or not.

### **5.7 Areas of Further Research**

Lastly, Researcher cannot claim that this research is exhaustive. Several issues, associated with the limitations inherent in this study, require further research considerations. The similar study could be done in other organizations within the country in order to augment the findings.

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## **APPENDICES**

## Questionnaires

My name is **MUKAMUNANA Sophie**, carrying out a research study on **Impact of Automated Teller Machine (ATM) Transaction on Financial Performance of Commercial Banks in Rwanda Case of Bank of Kigali**. I request my kind respondents to answer the entire questionnaire by exhausting their opinions; therefore every answer is correct. Thank you very much for your assistance.

Please tick the appropriate box or explain where necessary.

### SECTION A

#### Background information

**1) Gender**

Male

Female

**2) Age**

21 – 28

29 – 36

37 – 44

45 – above

**3) Level of education**

Bachelors Degree

Masters Degree

PhD level

**4) Marital status**

Married

Single

Widow

**Logistic regressions on automated teller machine transaction on financial performance of commercial banks**

**The following ATM transactions are the factors which can affect financial performance of Bank of Kigali?**

	<b>Yes</b>	<b>No</b>
Printing of statements		
Transfer of funds		
Cash withdraw		
Decrease of tellers		
Reduction of errors and fraud		
Expansion of ATM branches		