AUTOMATED TELLER MACHINE SYSTEM AND SERVICE QUALITY IN COMMERCIAL BANKS IN KIGALI, RWANDA

NYIRAMBYEYI HONORINE

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DECLARATION

I declare that this thesis report is my original work and has not been submitted for any other award of a degree and published at any institution of higher learning.

Signed: …… Date……

Nyirambyeyi Honorine

APPROVAL

This thesis report has been submitted for further examination with my approval as supervisor.

…… ……/……/……

Signed **Date**

Dr. Emenike, O, Kalu

…… ……/……/……

Signed **Date**

Dr. Kirabo Joseph

DEDICATION

I dedicate this thesis report to my father, Mr. Karenzi Jean, my mum Nyiragatozo Godelve, and Brother Kamali Aristide for supporting my academic struggles.

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My thoughtful gratefulness goes to the Almighty God for the gift of life and wisdom that He gave me during the course of my studies.

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LIST OF ABBREVIATION

ATM	Automate Teller Machine
CVI	Content Validity Index
FSR	Financial Sector Report
NBR	National Bank of Rwanda
PIN	Personal Identification Number
PLCC	Pearson Linear Correlation Coefficient
SERVQUAL	Service Quality
SPSS	Statistical Package for Social Sciences

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ABSTRACT

The unreliable quality of services is greatly affecting the performance of commercial banks in Rwanda. Complaints by customers of delays in cheques between banks, time wastage in long queues, errors as a result of manual work and fraudulent cases have been common in 2014 and 2015. The poor service quality saw several commercial banks in Rwanda embracing the technology of Automated Teller Machine (ATMs), however, several of them have reported poor service delivery. The purpose of this study was to determine the relationship between ATM System and service quality of in commercial banks in Kigali, Rwanda. The objectives that guided the study included: i) to examine the effect of actual ease of use of ATM System on the service quality of commercial Banks in Kigali; ii) to determine the effect of transaction cost of ATM System on the service quality of commercial banks in Kigali; and iii) to determine the effect of security of ATM System on the service quality of commercial banks in Kigali. This study employed descriptive cross sectional design. This study's target population included 10,781 bank customers and 11 bank managers. The sample size of 288 was determined using Cochran (1963) formula. The actual participation was 239 representing 83%. Questionnaires and interviews were the two main data collection instruments used. Quantitative data was analyzed using descriptive statistics and inferential statistics, while qualitative data was analyzed using manual coding. The results of the study indicated that actual ease of use of the ATM system significantly and positively affect the service quality of the commercial banks by a variance of 27.8% (R^2=0.278, p=0.000). The study found out that transaction cost significantly and positively affected the service quality of the commercial banks by a variance of 24.4% (R^2=0.244, p=0.000). The study revealed that security services of the ATM system significantly and positively affect service quality by a variance of 33.2% (R^2=0.332, p=0.000). The study concluded that ATM system is a prerequisite for service quality among commercial banks. The study made the following recommendations among others: the management of commercial banks should ensure that they install ATM systems that are easy to use by incorporating both audio and graphical guidelines in the local languages on how to do transaction using the ATM system; the government should ensure that all commercial banks charge the same rates for depositing, and withdrawing money from the ATM system at any time and any amount of money; the management of commercial banks should ensure that they invest in the latest technology since ATM fraud is becoming a global problem and needs frequent upgrade of the system to remain relevant in the market. This study adds to the body of new knowledge using actual ease of use, transaction cost, and service security as predictors of service quality in the banking sector. The study found that both actual ease of use and service security of ATM systems are significant predictors of service quality except transaction cost.

CHAPTER ONE
INTRODUCTION

This chapter comprises of the background to the study, statement of the problem, purpose of the study, objectives, research questions, hypotheses, scope, significance and operational definition of key terms.

1.1 Background to the Study

This section included the historical perspective, theoretical perspective, conceptual perspective and contextual perspective.

1.1.1 Historical Perspective

The first Automatic Teller Machine (ATM) was put into use in 1959 in the Kingsdale Shopping Center in Upper Arlington, Ohio as an automated deposit device (Baroleh & Tumiwa, 2016). In simultaneous and independent efforts, engineers in Japan, Sweden and Britain developed their own cash machines during the early 1960s. The ATMs back then were only able to give out a limited amount of money when transaction is done. The first modern ATMs came into use in 1972 in the United Kingdom (Adeniran & Junaidu, 2014). In Asia, ATMs were introduced to the Indian banking industry in the early 1990s initiated by foreign banks. Most foreign banks and some private sector players suffered from a serious handicap at that time-lack of a strong branch network. ATM technology was used a means to partially overcome this handicap by reaching out to the customers at a lower initial and transaction costs and offering hassle fee services (Phan & Nham, 2015). In the developing Asian countries such as Pakistan, ATMs were first installed in 1999 and were only able to perform limited function such as depositing, withdrawals and inquiries (Županović et al., 2015).

In Africa, the first ATM was introduced by Standard bank group in 1981 when it launched AutoBank. The AutoBank could perform a normal cash withdrawal in 20 seconds and a balance enquiry in 60 seconds. Although initially only available to holders of cheque accounts, those with a savings account were linked to AutoBank in 1982 when a transfer button was added (community blog.com). In Nigeria, ATM system was introduced with the intent of satisfying the already big number of clients. The system was set up by the Societe Generale Bank of Nigeria

(SGBN) in 1989. From then on, several commercial banks followed suit by installing the ATM systems in their facilities to server the ever growing number of customers and to provide fast and quality services. On the other hand, Uganda installed its first ATM in 1997 under the Standard Chartered Bank so as to improve service quality (Akhtar et al., 2018).

In Rwanda, the first ATM machine was installed by Banque Commerciale du Rwanda (BCR) in 2004 and was meant to provide services such as cash withdrawal, balance enquiry, mini statement, deposit cash/cheque, and fund transfer.

According to Odusina (2014), globalization, forced commercial banks to embrace the use of ATM system which seems to be fast, cheap and efficient so as to earn customer satisfaction and remain competitive in the market. Automated Teller Machine system is a pivot for information and communication technology which is promoting quality service delivery among the banking institutions across Africa. These ATM systems are changing the landscape of the banking industry in the serving of customers' desires and inculcating customer loyalty in the long run (Odusina, 2014). Indeed their usage is gaining popularity among several customers due to its easy to use and expediency. Wijesekara and Kandambi (2015) agrees that the ATM system has brought a huge change in the way services are offered in the banking industry, thus most banks have preferred to install it for their business operations. Due to the high level of ATM system relevance to the operations of the banking institutions, several of them have cited improvement in their services through improved speeds, shorter time and cost reduction ((Moutinho, 2012).

Currently all commercial banks in Rwanda provide ATM banking services. However, several of them still do not provide satisfying services due to the rampant long queues that are noted during the end of every month when civil servants are withdrawing their salary. Complaints such as poor network connections and lack of availability of the money in ATMs have been common of the year (Ingabire & Niyonsenga, 2017). This study will investigate the effect of ATM System on the service quality of commercial banks in Kigali, Rwanda.

1.1.2 Theoretical Perspective

The theory that this study was anchored on was the SERVQUAL Model of (Parasuraman et al., 1985), augmented by assimilation theory of (Anderson, 1973) and Transaction cost theory of Coase (1937). Both the communication between the customer and the commercial bank, as well

as the commercial bank's internal communication, are of vital importance for the level of quality of the service. It is good when commercial bank know the expectancy pattern of their customers. Therefore, the SERVQUAL Model identifies five gaps that can arise between the customer's needs and the service that a company offers.

According to Parasuraman et al., (1991), knowledge gap arises when a commercial bank's knowledge of customer expectations is lacking, preventing them from approaching consumers in the right way. Standards gap arises when commercial bank has already formed its own idea about what the customer expects from their service. If this idea is wrong from the start and does not correspond to what customers actually expect, there is a significant risk that the commercial bank will translate it wrongly into a quality policy and corresponding rules. Delivery gap occurs when the commercial bank offers service that is different from what the consumer had expected. This also involves an incorrect implementation. For instance, in the way employees carry out policy. Furthermore, communications gap happens that when a commercial bank communicates and promises things that are not in line with what they can actually deliver. In addition, satisfaction gap results from a significant difference between the service a customer expects and the service they actually experienced. Eventually, this will lead to the biggest gap in the experience of quality (Parasuraman, 1991).

Festinger's theory of dissonance (1957) forms the basis for the theory of assimilation. The theory of dissonance states that the consumer makes a sort of cognitive comparison between the expectations regarding the product and the product's perceived performance. If there is a discrepancy between expectations and the product's perceived performance, the dissonance will not fail to appear. This point of view on post-usage evaluation was introduced in the literature discussing satisfaction under the form of the theory of assimilation (Anderson, 1973).

On the other hand, the Transaction cost theory of Coase (1937) was also used complement the study. The theory tries to explain why companies exist, and why companies expand or source out activities to the external environment. The transaction cost theory supposes that companies try to minimize the costs of exchanging resources with the environment, and that companies try to minimize the bureaucratic costs of exchanges within the company. Companies are therefore

weighing the costs of exchanging resources with the environment, against the bureaucratic costs of performing activities in-house (Ferreira & Li, 2009).

1.1.3 Conceptual Perspective

Automated Teller Machine is an enhanced technology that helps in improving service delivery in the banking institution in terms of money deposits, withdrawals, cash transfer, balance inquiries, and payment of utilities bills (Adeniran & Junaidu, 2014). According to feanyichukwu and Emenike (2016), an ATM is an unmanned electronic telecommunications tool which helps one to access his/her financial details remotely without necessarily going to the banking hall. In this study, ATM system was operationalized as actual ease of use, transaction cost, and service security.

Service quality is the difference between what the customers perceive to expect about a service and what the actual performance of the service (Johnson & Sirikit, 2002). Parasuraman et al. (1988) defined service quality as the general assessment of how a service firm is performing compared to other firms in the same industry. The current study operationalized service quality as tangibles, reliability, assurance, and responsiveness.

1.1.4 Contextual Perspective

The banking sector remains the largest and most systemically important sector of Rwanda's financial system. As at end June 2016, its share in total financial system assets stood at 66.5 percent. Since the publication of the last financial sector report (FSR), the banking system continued to expand in both assets and liabilities, mainly deposits. Capital and liquidity levels of banks remain above the current regulatory requirements. To bolster solvency of the banking system, the BNR issued a directive on additional capital requirements, requiring banks to hold a conservation buffers and additional buffers for systemically important banks (National Bank of Rwanda (BNR), 2016).

The commercial banks in Kigali commonly offer of the following services: leasing, venture capital, loans, point of sale terminals, Western Union Money Transfer, Mobile banking, Online banking, Internet banking, ATM services, E-statement, Access online, Access Alert, and Limited long term mortgage financing. However, the penetration of these services is still low since only 14% of adult population is banked and National financial sector penetration only stands at

28.1%. Furthermore, several services offered by commercial banks are often times hindered by fraudulent activities, time wastage due to slow service delivery, slow internet connection, lack of availability of money, especially in ATM service points (BNR, 2016).

1.2 Statement of the Problem

There is unreliable quality of services which is greatly affecting the performance of commercial banks in Rwanda. Due to poor service quality, performance of commercial banks dropped by 2.3% in 2016 and 5.1% in 2017. Similarly, return on assets dropped by 3.4% in 2017 and return on investment dropped by 2.9% in 2017 (NBR, 2018). Furthermore, the constant complains have been increase by complaints of customers of the delays in cheques between banks, time wastage in long queues, errors as a result of manual work and fraudulent cases have been common in 2014 and 2015 (National Bank of Rwanda, 2016). Furthermore, a study by Ndikubwimana and Bernadete (2016) on service quality and customer satisfaction among commercial banks in Rwanda indicated low level of service quality in terms of responsiveness, empathy, assurance, and reliability. Only the tangibility of the services was found to be of high quality. However, a study by Ingabire & Niyonsenga (2017) revealed that the higher the standard of service quality, the higher the customer satisfaction and consequent customer retention.

The poor service quality saw several commercial banks in Rwanda embracing the technology of ATMs, however, several of them have reported poor service delivery in terms of consistent failures of ATM system, over queueing at service points, retaining of clients' cards by ATM machines, ignorance of ATM functionalities, hacking and unstable network (Ingabire & Niyonsenga, 2017).

This study intended to establish the extent to which ATM System affect the service quality of commercial banks in Kigali, Rwanda.

1.3 Purpose of the Study

To determine the relationship between ATM System and service quality of selected commercial banks in Kigali, Rwanda.

1.4 Objectives of the Study

i. To examine the effect of actual ease of use of ATM System on the service quality of commercial Banks in Kigali.
ii. To determine the effect of transaction cost of ATM System on the service quality of commercial banks in Kigali.
iii. To determine the effect of security of ATM System on the service quality of commercial banks in Kigali.

1.5 Research Questions

i. What is the effect of actual ease of use of ATM System on the service quality of commercial Banks in Kigali?
ii. What is the effect of transaction cost of ATM System on the service quality of commercial banks in Kigali?
iii. What is the effect of security of ATM System on the service quality of commercial banks in Kigali?

1.6 Hypotheses

i. Ho_1: Actual ease of use of ATM System has no significant effect on the service quality of commercial banks in Kigali.
ii. Ho_2: Transaction cost of ATM System has no significant effect on the service quality of commercial banks in Kigali.
iii. Ho_3: Security of ATM System has no significant effect on the service quality of commercial banks in Kigali.

1.6 Scope

1.6.1 Geographical Scope

The study was carried out in Kigali which is the capital of Rwanda. There are eleven commercial banks located in Kigali; however, this study selected only five banks by virtue of their ATM Network coverage. The banks selected included the following: Bank of Kigali Ltd, KCB Bank Rwanda Ltd, Ecobank Rwanda Ltd, Bank of Africa Rwanda Ltd, and Equity Bank Rwanda Ltd.

1.6.2 Content Scope

This study was confined to ATM system (independent variable) which was measured using actual ease of use, transaction cost, and service security; while service quality (dependent variable) was measured using tangibles, reliability, assurance, and responsiveness.

1.6.3 Time Scope

This study was conducted in a period of 1 year and 3months from July 2017 to October, 2018. The period was preferred because it gave the researcher enough time to come up with a concept note, research write up, field data collection and analysis of final results.

1.7 Significance of the Study

Several studies by Belay and Kindie (2017); Naeem et al. (2016); Yared (2016); Akpan (2016); Dondolo and Nkosivile (2016); Ifeanyichukwu and Emenike (2016) have been done in the area of ATM service quality and customer satisfaction. None of the above studies have been done on ATM System and service quality, specifically using actual ease of use, transaction cost, and service security as determinants of ATM system, hence this study is intended to add to the body of knowledge by answering the content gap sited in the previous studies.

The results of this study will provide information to the bank managers that will enable them to remove ATMs that are often faulty and outdated and install the ones which are modern and in line with the development of Information and Communication Technology (ICT). This will help in improving their service quality.

Similarly, the findings of this study will help bring awareness to the customers and will help them appreciate the importance of internet banking in this 21st century. Given the reliable, assuring, and responsive nature of the ATM services, customers will benefit from such establishments if they make use of them and a lot of valuable time will be saved from long queues.

In addition, the findings of this study will be important to the regulatory authority like National Bank of Rwanda in supervising the commercial banks so that they install ATM systems which have the security capacity to provide quality services to the customers.

Furthermore, future researchers, academicians and scholars will use the findings of this study as a point of reference when conducting a similar study both in Rwanda and other parts of the world.

1.8 Operational Definition of Terms

Automated Teller Machine: refers to a machine that makes customers have a perception of ease of use, cheap transaction cost and ensures service security in a banking transaction.

ATM System: refers to actual ease of use, transaction cost, and service security.

Actual ease of use: refers to the degree to which a customer believes that an ATM system would be easy to use.

Transaction cost: refers to a unit cost of using an ATM service.

Service security: refers to the security assurance that using ATM service is safe and trustable.

Service Quality: refers to tangibles, reliability, assurance, and responsiveness.

Tangibles: refers to how the bank premises and the dressing of the employees seem appealing to the customers.

Reliability: refers to the fact that the back is always ready to solve customer problems promptly and efficiently.

Assurance: refers to the knowledge and good manners or courtesy of employees.

Responsiveness: refers to the ability of the bank to attend to emergency cases, employees being willing to help customers, and having immediate response.

CHAPTER TWO
LITERATURE REVIEW

2.0 Introduction

This chapter reviewed literature from different authors and publications in accordance to the study constructs and the objectives. The chapter is further divided into theoretical review, conceptual review, empirical review, and literature gap.

2.1 Theoretical Review

2.1.1 SERVQUAL Model

The theory that this study was anchored on was the SERVQUAL Model of (Parasuraman et al., 1985) and augmented by assimilation theory of (Anderson, 1973). Both the communication between the customer and the commercial bank, as well as the commercial bank's internal communication, are of vital importance for the level of quality of the service. It is good when commercial bank know the expectancy pattern of their customers. Therefore, the SERVQUAL Model identifies five gaps that can arise between the customer's needs and the service that a company offers.

According to Parasuraman et al., (1991), knowledge gap arises when a commercial bank's knowledge of customer expectations is lacking, preventing them from approaching consumers in the right way. Standards gap arises when commercial bank has already formed its own idea about what the customer expects from their service. If this idea is wrong from the start and does not correspond to what customers actually expect, there is a significant risk that the commercial bank will translate it wrongly into a quality policy and corresponding rules. Delivery gap occurs when the commercial bank offers service that is different from what the consumer had expected. This also involves an incorrect implementation. For instance, in the way employees carry out policy. Furthermore, communications gap happens that when a commercial bank communicates and promises things that are not in line with what they can actually deliver. In addition, satisfaction gap results from a significant difference between the service a customer expects and the service they actually experienced. Eventually, this will lead to the biggest gap in the experience of quality (Parasuraman, 1991).

Central to the SERVQUAL Model is the expectancy pattern of the service quality; the difference between expectations and perception. If there is a difference in quality, it is shown in the difference (the gap) between what was expected and what was actually experienced. The SERVQUAL Model enables banking institutions to learn which factors play a role on how the customer's expectancy pattern is formed. That way, the commercial banks can improve itself and take this expectancy pattern into account beforehand (Chingang & Lukong, 2010).

Kumar et al., (2009) used the SERVQUAL model in a research to find out the factors affecting the delivery of service quality of commercial banks in Malaysia. In their study, they modified the SERVQUAL model and considered six dimensions; tangibility, reliability, responsiveness, assurance empathy and convenience and these consisted of 26 statements. They considered convenience because it is an important determinant of satisfaction for banking customers in Malaysia and contributes very highly in the customers' appreciation of the quality of services offered by the bank (Kumar et al., 2009). The respondents were asked questions based on the 26 statements and they sought to know about their expectations and experience. After they carried out their study they realized that there are four critical factors; tangibility, reliability, convenience and competence. These variables had significant differences between expectations and perceptions with tangibility having the smallest gap and convenience has the largest gap. They ended up with the recommendation that banks need to be more competent in delivering their services and fulfilling the assurance of customers and providing the banking services more conveniently (Kumar et al., 2009)..

However, SERVQUAL has a number of limitations. For instance, it is based on a disconfirmation paradigm rather than an attitudinal paradigm; and SERVQUAL fails to draw on established economic, statistical and psychological theory. Furthermore, SERVQUAL focuses on the process of service delivery, not the outcomes of the service encounter. Similarly, SERVQUAL's five dimensions are not universal; the number of dimensions comprising service quality is contextualized; items do not always load on to the factors which one would a priori expect; and there is a high degree of intercorrelation between the five dimensions (Reliability, assurance, tangible, empathy and responsiveness) (Khan, 2003).

2.1.2 The Theory of Assimilation

Festinger's theory of dissonance (1957) forms the basis for the theory of assimilation. The theory of dissonance states that the consumer makes a sort of cognitive comparison between the expectations regarding the product and the product's perceived performance. If there is a discrepancy between expectations and the product's perceived performance, the dissonance will not fail to appear. This point of view on post-usage evaluation was introduced in the literature discussing satisfaction under the form of the theory of assimilation (Anderson, 1973).

According to Anderson, the consumers try to avoid dissonance by adjusting their perceptions of a certain product, in order to bring it closer to their expectations. In a similar way, the consumers can reduce the tension resulted from the discrepancy between expectations and the product's performance, both by distorting the expectations so that they could be in agreement with the product's perceived performance, and by increasing the level of satisfaction through minimizing the relative importance of experimental disconfirmation (Olson & Dover, 1979).

The theory presumes the consumers are motivated enough to adjust both their expectations and their product performance perceptions. If the consumers adjust their expectations or product performance perceptions, dissatisfaction would not be a result of the post-usage process. Consumers can reduce the tension resulting from a discrepancy between expectations and product/service performance either by distorting expectations so that they coincide with perceived product performance or by raising the level of satisfaction by minimizing the relative importance of the disconfirmation experienced (Olson & Dover, 1979). Some researchers have discovered that the control on the actual product performance can lead to a positive relationship between expectations and satisfaction (Anderson, 1973). Consequently, it is assumed that dissatisfaction could never appear unless the evaluation process began with the customers' negative expectations.

Peyton et al., (2003) argues that Assimilation Theory has a number of shortcomings. First, the approach assumes that there is a relationship between expectations and satisfaction, but it does not specify the way in which the expectation disconfirmation can lead to satisfaction or dissatisfaction. Second, the theory also posits that consumers are motivated enough to adjust either their expectations or their perceptions about the performance of the product. Some researchers have found that controlling for actual product performance can lead to a positive

relationship between expectation and satisfaction. Therefore, it would appear that dissatisfaction could never occur unless the evaluative processes were to begin with negative consumer expectations.

2.1.3 Transaction Cost Theory

This study was also complemented by Transaction cost theory of Coase (1937) and extended by Hodgson (1998). The theory tries to explain why companies exist, and why companies expand or source out activities to the external environment. The transaction cost theory supposes that companies try to minimize the costs of exchanging resources with the environment, and that companies try to minimize the bureaucratic costs of exchanges within the company. Companies are therefore weighing the costs of exchanging resources with the environment, against the bureaucratic costs of performing activities in-house (Ferreira & Li, 2009).

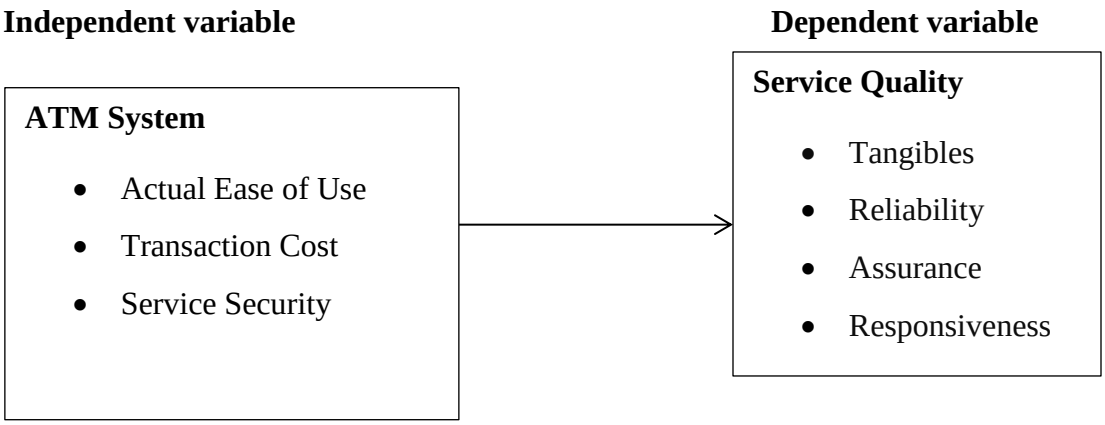
The theory sees institutions and market as different possible forms of organizing and coordinating economic transactions. When external transaction costs are higher than the company's internal bureaucratic costs, the company will grow, because the company is able to perform its activities more cheaply, than if the activities were performed in the market. However, if the bureaucratic costs for coordinating the activity are higher than the external transaction costs, the company will be downsized (Martins, et al., 2010).

According to Ronald Coase (1937), every company will expand as long as the company's activities can be performed cheaper within the company, than by e.g. outsourcing the activities to external providers in the market. Furthermore, Andreea-Oana (2009) argues that a transaction cost occurs when a good or a service is transferred across a technologically separable interface. Therefore, transaction costs arise every time a product or service is being transferred from one stage to another, where new sets of technological capabilities are needed to make the product or service.

Given the above theory, it is related to this study in a way that if commercial banks install ATM systems in their businesses, their operations will be cheaper and cost friendly them as a bank as well as for the customers since it will be reliable, fast, secure and the service will be a subsidized cost.

2.2 Conceptual Review

Figure 2.1: Conceptual Frame for the Relationship between ATM System and Service Quality of Selected Commercial Banks in Kigali, Rwanda



Source: Adopted from, Adris (2014), and Parasuraman et al., (1988)

In figure 1, ATM System is the independent variable and is measured using actual ease of use, transaction cost, and service security, while service quality is the dependent variable and is measured using tangibles, reliability, assurance, and responsiveness. The relationships between the two variables is that ATM System such as actual ease of use might make the customers to appreciate the reliability, assurance and responsiveness of the services offered by the commercial banks. Similarly, the transaction cost of the ATM service is in most cases lower than withdrawing from the Teller hence it gives the customer the assurance that the ATM service is better. Furthermore, in the event that the ATM is faulty or has a network problem, or lacks money, an empathic explanation to the customers by the bank employees provides a platform of relief and assurance to the customers of the quality of services offered by the bank. Finally, the installation of security cameras and security personnel at the ATM points makes the tangibility of the ATM System more reliable and trusted by the customers.

2.3 Review of Related Literature

2.3.1 ATM System

Automated Teller Machine is an enhanced technology that helps in improving service delivery in the banking institution in terms of money deposits, withdrawals, cash transfer, balance inquiries, and payment of utilities bills (Adeniran & Junaidu, 2014). All financial institutions are using this

method/system, aggressively encouraging all their customers to take advantage of these services on the grounds of ease process but an unannounced financial generation to the bank (Jegede, 2014).

According to Okoro (2014), Automated Teller Machine (ATM) helps customers to access their information from the bank electronically. With the advent of ATM, banks are able to serve customers outside the banking hall. ATM is designed to perform the most important function of banks such as withdrawal of cash, deposits, printing of mini statements, and settlements of bills. It does all through an access to personal identification number (PIN), and a plastic that contains magnetic chip which the customer is identified through.

Onyesolu, Asogua and Chukwuneke (2016), outlined the problems usually associated with the use of ATMs to include maximum amount of daily withdrawals exceeded, issuer or switch inoperative, out of service, unable to dispense cash, user app not available, insufficient fund, double debiting of account, printer unable to print receipt and service in progress available shortly. Bada and Karupiah (2015) also identified lack of network, waiting time, service charge and out of service as some of the problems affecting ATM services.

Boshkoska and Sotiroski, K. (2018) see the installation of customer friendly technology (such as Menu Driven Automated Teller Machines, Telephone and Internet Banking Services) as a means of deliverying traditional banking services, maintaining customer loyalty and increase market share. Albuquerque and Rodrigues (2018), on his part, sees Automated Teller Machines (ATM) as the first well-known machines to provide electronic access to customers. Their introduction enables banks to serve customers outside the banking hall.

Agwu (2018), observe that information systems (IS) like Electronic Banking Systems have to a very large extent, contributed to the success of individuals, groups, organizations, industries and nations; adding that improved decision-making, improved productivity, increased sales, cost reductions, improved profits, market efficiency, consumer welfare, creation of jobs and economic development are made possible through efficient use of Information Systems. Bada and Karupiah (2015), noted that in the past few years, Nigerian banks and generally the financial services industry embraced electronic banking, which has been made possible by the advancements in Information Technology. More importantly, fast and easier banking services

influence customers' attitudes towards human and automated banking and also affect their overall perception on satisfaction.

This study measured ATM System using actual ease of use, transaction cost, and service security.

2.3.2.1 Actual Ease of Use

Actual ease of use is the degree to which a customer believes that an ATM system would be easy to use (Davis et al., 1991). It has also been defined as a user's subjective perception of the effortlessness of a computer system. This follows from the definition of the word "ease", "freedom from difficulty or great effort." Effort is a finite resource that a person may allocate to the various activities for which he or she is responsible (Radner & Rothschild, 1975). All else held constant, an application perceived to be easier to use than another is more likely to be more accepted by users.

Actual ease of use explains the user's perception of the amount of effort required to utilize the system or extent to which a user believes that using a particular technology will be effortless (Odusina, 2014). Actual ease of use has been established from previous research to be an important factor influencing user acceptance and usage behavior of information technologies (Hammouri & Abu-Shanab, 2018). Actual ease of use consists of the following determinants: easy to use, easy to read, using understandable terms, able to link to search for related information and easy to return to previous page. This includes support, complexity and change management.

Venkatesh (2000) reported actual ease of use 'describes the individual's perception of how easy the innovation is to learn and to use'. Given that some fraction of a user's total job content is devoted to physically using the system *per se*, if the user becomes more productive in that fraction of his or her job via greater ease of use, then he or she should become more productive overall. Users believe that a given application may be successful, but they may, at the same time, believe that the technology is too hard to use and that the performance benefits of usage are outweighed by the effort of application (Davis et al., 1992).

According to Selvanathan et al., (2016), the actual ease of use is the consumer's perception that banking on the internet will involve a minimum of effort. Similarly, Consult (2012) noted that

actual ease of use refers to the ability of consumers to experiment with a new innovation and evaluate its benefits easily. He also affirmed that the drivers of growth in electronic banking are determined by the actual ease of use which is a combination of convenience provided to those with easy internet access, the availability of secure, high standard electronic banking functionality, and the necessity of banking services.

2.3.2.2 Transaction Cost

It is clear that the average transaction cost of an ATM is considerably below the cost of using a standard banking office, however, this lower unit cost has not translated into much overall cost savings for banks Opoku (2016). The problem has been that the greater convenience of ATMs has led users to withdraw less cash per transaction from ATMs than they did from a branch office. The greater convenience of ATMs reduced the cash acquisition transaction cost for depositors, leading to a greater frequency of these transactions and a corresponding reduction in the average amount of idle cash balances held by the public (Opoku, 2016).

Although an ATM transaction costs as little as one-half as much as a teller transaction at a branch, ATMs are being used up to twice as often as was a teller. As a result, the cost savings per ATM transaction expected by banks has been largely offset by the unexpected increase in use (Jegede, 2014). Until recently, about the only way most banks have obtained revenues on their ATM investment has been through fees charged when one bank's ATM is used by a customer of another bank (McAndrews, 2011). When a customer uses another bank's ATM—a "foreign ATM"—for cash withdrawal, an interchange fee of about $1.00 is commonly assessed. In contrast, a cash withdrawal from an ATM owned by one's own bank is usually, but not always, free (Salop, 2010). Although the foreign ATM fee may seem relatively small, it generates the majority of revenues associated with ATM use. As ATMs have expanded, the number of foreign (cash withdrawal) transactions has risen from 15 percent of all transactions in the mid-1980s, to around 70 percent in 2015 (Humphrey, 2016).

2.3.2.3 Service Security

The security concerns are increasing rapidly and are somewhat related to the use of any technology in the banking sector. These concerns, unless addressed, have been found to influence customer satisfaction with the technology. Thus, customers who report concerns on

security issues report lower levels of customer satisfaction. This notion was supported by Murugiah and Akgam (2015) when they observed a negative relationship between security and customer satisfaction in their respondents. This meant that their respondents had higher security concerns which resulted in lower levels of customer satisfaction. In the context of ATM banking services, security may be described as customers' perceptions of the safety of the ATM when performing transactions (Chang & Chen, 2009).

ATMs have always been an attractive target for thieves (Guerette & Clarke, 2013). Reinforced by the fact that ATMs are typically available 24/7 and often located off-premises, they are vulnerable to cash thefts (Al-Thani, 2017). However, ATM crime, including ATM fraud, goes beyond stealing cash. Illegally obtaining customer's personal information, such as bank account data, card number and PIN is an additional security issue that is related to ATMs (Braeuer et al., 2015). These digital assets do not provide an immediate profit, but they can be sold on illegal credit card data markets on the Internet. There are three different types of attacks, i.e., card and currency fraud, physical attacks and logical attacks. Various Information Technology (IT) security standards have been developed and vendors have recommended security concepts pertaining to ATMs. The goal is to secure an entire ATM and its environment. Similar to ATM crime, ATM security can be divided into the three different core areas card and currency protection, physical security, and logical security (Idris, 2014).

2.3.2 Service Quality

The concept of service quality has received a great deal of attention from both academicians and practitioners throughout the past three decades. Service quality has been defined variously and there is still no consensus about its definition. Gronroos (1984) defined service quality as the outcome of the comparison that consumers make between their expectations and perceptions. Similarly, service quality was defined as the difference between customer expectations and perception of actual service (Parasuraman et al., 1985). In judging service quality, customer expectation serves as a foundation for evaluating service quality (Al-Thani, 2017).

Customer's satisfaction and service quality are considered as vital affairs in mostly service industry nowadays (Owusu, 2016). Quality of service received as an international judge or

superior attitudes depends on the service provided. The judge on quality service reflects the difference between order and route customer views and expectations (Franklin & Balaji, 2013).

Quality has been generally defined as suitability for use and those product characteristics which meet customer needs and thereby provide customer satisfaction (Vershinina, 2017). These basic definitions are commonly accepted and can also be applied in service management. However, when it comes to more specific service quality attributes and dimensions a wide variety of models and frameworks exist and there is an intense discussion on service quality measurement in different industry contexts. In particular, traditional concepts and measures of service quality and customer satisfaction have been questioned in the business-to-business environment (Glowa, 2014).

Customer expectations are beliefs about a service that serve as standards against which service performance is judged; which customer thinks a service provider should offer, rather than on what might be on offer (Qadeer, 2014). This is influenced by their personal needs, past experience, word-of-mouth and service provider's communications. Literature explains expectation as predictions made by consumer about what is likely to happen from a transaction.

The pivot to the concept of service quality is gap model, which stipulates that service quality is a function of the difference scores or gap between expectations and perceptions (P – E). The gap between expectation and performance can be positive (satisfactory), when performance exceeds expectations or negative (dissatisfaction), when performance falls short of expectations (Parasuraman et al., 1985). Service quality is low, if what is perceived is below expectation, and is high, if what is perceived meets or exceeds expectation. The result of this comparison is perceived service quality (Mohammad & Alhamadani, 2018).

According to Shanghali (2015), customers compare the expected service quality with what they actually receive; that is service quality expectation and perception. Rizwan (2013) postulate service quality as dependent on two variables: perceived services customer actually receives form organization and expected services from the customer's previous experience or overall perception of the service. When expected service is higher than perceived service, service is said to be of low quality and when service expected is less than perceived service, overall service quality is considered to be high. Customer expectations vary depending on what kind of business

the service is connected to. Expectations also vary depending on different positioning strategies of different service providers. Ayodo (2018) posit that the expectations are influenced by previous experiences of the service provider, competing services in the same industry or related services in different industries. If the customer don´t have any previous experience they are more likely to base their expectations on word of mouth, news stories or the marketing efforts of the company.

An array of factors or determinants has been identified in the literature for measuring service quality. For instance, Johnson (2017) measured service quality in terms of customer perception, customer expectation, customer satisfaction, and customer attitude. Despite the numerous models for measuring service quality, Devkota and Dahal (2016) admit that the SERVQUAL model remains as the most complete attempt to conceptualize and measure service quality. A more in depth justification of the functional quality is reported by Parasuraman 1985 and 1988. The SERVQUAL model by Parasuranam suggested five dimensions: tangibles, reliability, responsiveness, assurance and empathy are the basis for service quality measurement which has been used in this study (Parasuramanet et al., 1988).

2.3.2.1 Tangibles

The tangibles encompass the condition of the physical surroundings is seen as tangible evidence of care and attention to detail exhibited by the service provider (Osei-Poku, 2012). Davis et al. (2003) summarize tangibles as the physical evidence of the service. Further, it is also defined as the ease in visibility of resources necessary for providing the service to customers, well-groomed employees and ease in accessing written materials like pamphlets, brochures, folders, and information books will have a favorable consequence on the level of customer satisfaction (Parasuraman et al., 1985). Modern looking or sophisticated equipment and visually appealing or attractive ambience are viewed as the positive impacts of tangibility on customer satisfaction in banking sector (Ananth et al., 2017).

Those things which have a physical existence and can be seen and touched. In context of service quality, tangibles can be referred to as bank, physical facilities and their appearance (ambience, lighting, air-conditioning, seating arrangement); and lastly but not least, the services providing personnel of the organization (Blery et al., 2009). These tangibles are deployed, in random

integration, by any organization to render services to its customers who in turn assess the quality and usability of these tangibles.

Jabnoun & Al-Tamimi (2017) found that banks with better ambience enhance customer satisfaction in a better way. Association between service quality and customer satisfaction in banking sector of Sweden is examined by Cvijović et al., (2017). He found that by combining tangible and intangible attributes of premium quality in products and services provided by banks, they may create a strong and long-term relationship with their customers. This service quality dimension comprises of bank ambience, service equipment, human resources (staff) and the means of communication. In simple words tangibles are about creating foremost impressions. All organizations desire that their consumers get an exceptional and positive foremost impression. Focusing on this particular dimension will help them to gain maximum benefit (Swar & Sahoo, 2017).

2.3.2.2 Reliability

Reliability is defined as the ability to perform the required service to customers dependably and accurately as promised to deliver (Zeithaml et al., 1990). Dealing whatever the problems in services encountered by customers, performing the required services right from the first time, services being rendered at the promised time and maintaining error-free record are the paradigm of reliability in terms of service quality which will strongly influence the level of customer satisfaction (Adeoye & Lawanson, 2018).

According to Blery et al. (2009), reliability means the ability of a service provider to provide the committed services truthfully and consistently. Customers want trustable services on which they can rely. The association between dimensions of service quality and customer satisfaction was investigated by Akpoyomare et al. (2014). They found a significant relationship between reliability of services on the satisfaction level of customers. The literature reveals an increased degree of positive relationship between service quality, customer satisfaction and performance (both financial and non-financial) where face-to-face dealing between customer and employee is the only focus. Technology expansion has had a great impact on the choice of service delivery standard and services marketing strategies. This has yielded many prospective competitive advantages including augmenting of productivity and enhanced revenue creation from new services (Muyeed, 2018).

2.3.2.3 Assurance

Assurance is defined as the knowledge and good manners or courtesy of employees (Van-Iwaarden et al., 2003). It is further argued by Parasuraman et al. (1988) that the ability of employees with the help of the knowledge possessed to inspire trust and confidence will strongly strike the level of customer satisfaction. Mishra and Vaithianathan (2015) also posits that assurance means providing assistance in a polite and friendly manner, ease in accessibility of company details, comfort or convenience inside the company.

Assurance is developed by the level of knowledge and courtesy displayed by the employees in rendering the services and their ability to instill trust and confidence in customers (Blery et al., 2009). In addition to tangibles, reliability and responsiveness; assurance has been identified as a significant dimension of service quality by Parasuraman et al. (1988). They propose that all of these dimensions significantly enhance customer satisfaction. It is believed that if the employees of banks display trustworthy behavior, the satisfaction level of customers can be enhanced significantly.

2.3.2.4 Responsiveness

Responsiveness refers to when bank ATM system give timely service to customers when needed (Zeithaml et al., 1990). It could also mean the preparedness of the bank employees to offer customers any assistance at any time without complaining of inconvenience. Indeed studies have established that prompt customer service affects their level of satisfaction (Parasuraman et al., 1988). This is because customers get satisfied when bank employees give personal consideration to the challenges encountered by customers concerning security in ATM transaction (Kumar et al., 2009).

According to Polatoglu and Ekin (2017), responsiveness is the willingness to help customers and to provide prompt service to meet the customers' needs and it relates to the instant feedback and easy access, and also is likely to have an important and positive effect on customer satisfaction (Kheng et al., 2010).

2.3.3 Empirical Review

Ingabire and Niyonsenga (2017) evaluated the impacts of ATM service quality dimensions on customer satisfaction among the banks in Kigali, Rwanda. The study reviewed existing

literatures on service quality and customer satisfaction. It was found that a significant relationship exists between service quality dimensions and customer satisfaction. The study concluded that service quality promotes customer satisfaction. The results indicated that assurance and empathy were the highest predictors of the variations in service quality while tangibility was the weakest predictor.

Belay and Kindie (2017) conducted a study among the commercial banks on the effect of ATM service quality on customer satisfaction in Ethiopian commercial Banks, using proportional stratified and simple random sampling technique and cross-sectional data collected from 190 customers of Ethiopian commercial banks, in Debre Markos town. The data collected were analyzed using Statistical tools such as mean, standard deviation, correlation, and multiple regression model. The results indicated that except assurance, tangibility, reliability, responsiveness and empathy have positive and significant effect on customer satisfaction and the customers were mostly satisfied with the responsiveness dimensions of ATM service quality. Furthermore, the tangibility, reliability, responsiveness and empathy significantly explained 79.2% of the variations on customer's satisfaction level. It was suggested to the management of the bank to pay attention for training and developing staffs' skill in using ATM System in addition to installing the ATM in appropriate and accessible places.

Naeem et al. (2016) carried out an investigation to identify the measurements of A.T.M service quality that effect customer satisfaction in the banking institutions. Data was collected using questionnaire with five point likert scale and sample size 100 by using convenience sampling technique. SPSS 20 was used as statistical test for the analysis of correlation and regression. Regression analysis found positive and significant relationship between price, reliability, responsiveness, convenience, security, service quality on customer satisfaction. The study recommended that the management of MCB bank should work on price, reliability, service quality of A.T.M.

A study by Yared (2016) investigated the effect of ATM (automated teller machine) service quality on customer satisfaction of ATM users of CBE customers. Five ATM service quality dimensions namely reliability, convenience, user-friendliness, security, and responsiveness have been established based on the literature review. For this investigation primary data was collected from a convenience sample of 203 customers of CBE located in Hawassa City using ATM

service through structured questionnaire. The Collected data was analyzed using mean, standard deviation, correlation, and regression analysis. Regression results indicate that reliability, convenience, user-friendliness, security, and responsiveness are dimensions of ATM service quality that positively and significantly contributes toward customer satisfaction.

Akpan (2016) investigated the influence of ATM service quality on customer satisfaction in the banking sector of Nigeria. The study adopted survey research in which questionnaires were accidentally administered on customers of four banks randomly selected for the study (First Bank of Nigeria Plc., United Bank for Africa Plc., Guarantee Trust Bank Plc. and Skye Bank Plc. at the ATMs terminals of the Banks during transactions. Multiple Regression Analysis, Descriptive Statistics of the Mean, Standard Deviation, Tables and Charts were the main tools of data analysis. Findings reveal that the higher the ATM service quality, the higher the level of satisfaction it provides. The study then concluded that ATM service quality determines customer satisfaction.

Ndikubwimana and Berndt (2016) investigated the satisfaction of banking customers in Rwanda with regard to financial services received. This was done through investigating their perceptions of service quality and satisfaction. Little published research among these groups of consumers has been undertaken, making the findings important for the sector in Rwanda. Use was made of a quantitative study using a SERVPERF questionnaire adapted for the Rwandan context to collect data from 156 respondents. Statements on the dimensions of service quality and customer satisfaction were measured using a 7 point Likert scale. The results of study show that the bank's physical environments and facilities are conducive to delivering good service, and the customers are satisfied with the Tangible aspects associated with the service and that they are prepared to reflect this satisfaction in their behaviour. It is recommended that the bank take note of these findings, specifically as they reflect some differences among different groups of customers and incorporate them into future marketing strategies.

Dondolo and Nkosivile (2016) examined the influence of ease of use, security concerns and attitudes on South African consumers' satisfaction with ATM banking services. Participants of the study were solicited through electronic mailing list of ATM users in South Africa. These participants were provided with a website link that directed them to an online survey hosted by Qualtrics. A total of 224 participants from the various provinces of South Africa responded. This

study confirms that customer satisfaction is linked to security concerns, attitudes and ease of use. Overall, the results indicated that the respondents were satisfied with ATM banking services.

Ifeanyichukwu and Emenike (2016) conducted a study the impact ATM on the banking service delivery in Nigeria using descriptive and regression analyses. The results of descriptive statistics showed that private sector saving deposits and private sector demand deposit series are normally distributed but the private sector time deposits and the value of ATM transaction were not normally distributed. The results of the ADF unit root tests showed that the levels of the variables contain unit roots whereas their first differences did not contain unit roots. The regression results indicated that ATM transactions positively and significantly impacted private sector demand deposits in Nigeria but not private sector savings deposits and private sector time deposits. It recommended that the monetary authorities and commercial bank enlighten the depositors on the usage of ATM machine through mass media such as, television, bill board and radio as well as paste directive posters at every ATM centres across the country.

Odusina (2014) conducted a study on ATM Usage and customers' satisfaction in Nigeria. It was discovered that despite the increasing number of ATM installations in Nigeria. Customers' needs were not satisfactorily met as customers were always seen on queue in large numbers at various ATM designated centers as well as poor service delivery of some of these machine. The research engaged in comparative analysis of three banks in Ogun State, Metropolis of Nigeria viz-a-viz First Bank, Guaranty Trust Bank and Skye Bank. However, questionnaires were distributed to the respondents. A total of 200 respondents answered the questionnaire cutting across the three banks, the chi-square statistical tool was used to analyze the data and the results showed a positive and significant relationship between ATM usage and customers' satisfaction.

Okoro (2014) examine the impact of automated teller machine (ATM), point of sales (PoS), Mobile and Internet service values on the intermediation efficiency of the Nigerian economy using multiple regression technique on time series data of 2006 – 2011. The study reports the following findings: that there is significant relationship between ATM, PoS, Internet service values and the intermediation efficiency of the Nigerian economy. However, the study also reveals that there is no significant relationship between Mobile service value and intermediation efficiency of the Nigerian economy within the period under study. He concludes that the ATM, PoS and Internet services are the major instruments used by the customers of the deposit money

banks in Nigeria, and recommends that the banks should put more effort in advertising these products in Nigeria.

Idris (2014) investigated the perceived customer satisfaction towards introduction of automated teller machine (ATM) in Nigerian banks. The researcher distributed 150 questionnaires across different banks customers in Zamfara State, 136 questionnaires were returned filled out of which 106 contained valid responses. Descriptive statistics were used to analyze three research questions of the study. This covered actual ease of use, perceived accessibility and perceived security in order to measure customer satisfaction in relation to ATM service quality. The result indicated that the customers with agreed responses on perceived ease of use and perceived accessibility has higher mean and standard deviation, while the perceived security responses has higher mean and standard deviation of disagreed responses.

Ogbuji et al. (2012) studied the 'Analysis of the Negative Effects of the ATM as a channel for delivering banking services in Nigeria'. The authors sampled 600 respondents from Anambra and Lagos states in Nigeria. The reason according to the authors was because the two states constitute different people from different parts of Nigeria. Chi-square was used to test the hypothesis, and result showed that ATM should not be installed indiscriminately everywhere and that ATM has increased the rate of crime in Nigeria.

Muhammed (2010) empirically studied ATM Service Quality and Customer Satisfaction in Pakistani Banks using data from 500 customers of multinational and national banks. He used regression analysis to test his six hypotheses. The most captivating hypothesis in his study was the sixth hypothesis, he found that 'ATM Service Quality has positive and significant relationship with customer satisfaction.

Singh (2009), studied the 'Impact of ATM on Customers' Satisfaction' comparatively studying three banks in India conducted his research using 360 respondents from the three banks, he used the F-ratio statistics to test the difference in the customers satisfaction of the three banks. He concluded that Material satisfaction level is the highest in State Bank of India, followed by ICICI and then to HDFC bank.

2.4 Research Gaps

Several studies by Belay and Kindie (2017); Naeem et al. (2016); Yared (2016); Akpan (2016); Dondolo and Nkosivile (2016); Ifeanyichukwu and Emenike (2016) have been done in the area of ATM service quality and customer satisfaction. None of the above studies have been done on ATM System and service quality, specifically using actual ease of use, transaction cost, and service security as determinants of ATM system, hence this study was intended to close the above gap. Additionally, no study has been done in Rwanda using the dimensions of ATM system which this study is using, that is to say; actual ease of use, transaction cost, and service security.

CHAPTER THREE
METHODOLOGY

3.1 Introduction

This chapter includes the research design, study population, sample size, sampling procedure, data collection method, data collection instruments, validity and reliability, data collection procedure, data analysis, ethical consideration and limitations.

3.2 Research Design

This study used descriptive cross sectional design. A descriptive study involves a description of phenomena associated with a subject population regarding: who, what, when, where and how of a topic of study. Descriptive studies attempt to obtain complete and accurate description of situations, persons or events (Saunders, Lewis, & Thornhill, 2009). It allows description of phenomena as well as collection of a large amount of data from a sizeable population in a highly economic way. Descriptive statistics is the discipline of quantitatively describing the main features of a collection of data and aim to summarize a sample, rather than use the data to learn about the population that the sample of data is thought to represent (Mugenda & Mugenda, 2008).

Cross sectional studies are appropriate where the overall objective is to establish a significant relationship among variables at some point in time (Mugenda & Mugenda, 2008). A descriptive cross-sectional research design facilitates checking for significant associations between variables to make generalizations concerning the target population (Kothari, 2005). This research design offered an opportunity to establish the relationships between ATM System and service quality of commercial banks in Kigali. This type of design was successfully used by Bagire (2012), Tronvoll (2012) and Njeru (2013).

Furthermore, the study relied more on quantitative approach but was also complemented and enhanced by the qualitative approach. Quantitative approach was largely used for collecting data using survey technique (Creswell, 2011). On the other hand, qualitative approach was mainly used for data collection using interviews (Creswell, 2011).

3.3 Study Population

This study's target population included 10,781 customers from five commercial banks in Kigali (Commercial Banks' Annual Reports, 2017). The key interview informants included managerial staff from the five commercial banks.

3.4 Sample Size

The Cochran (1963) formula was used to determine the appropriate sample size for the study:

$$n = \frac{Z^2(P)(1-P)}{E^2}$$

Where:

n = the desired sample size if target population is greater than 10,000.

Z = the degree of confidence (95% confidence level) (1.96).

P= the proportion in a target population estimated to have characteristics being measured (75%=0.75)

E= allowed error term (0.05)

$$n = \frac{1.96^2(0.75)(1-0.75)}{0.05^2}$$

$$n = \frac{1.96^2(0.75)(0.25)}{0.05^2}$$

$$n = \frac{0.7203}{0.0025}$$

$$\boldsymbol{n = 288}$$

Therefore the quantitative sample size of this study was 288 respondents

Table 3.1: Quantitative Target Population and Sample Size

Names of Banks	Study Population	Sample Size
Bank of Kigali Ltd	2,157	58
KCB Bank Rwanda Ltd	2,021	54
Ecobank Rwanda Ltd	2,209	59
Bank of Africa Rwanda Ltd	2,049	55
Equity Bank Rwanda Ltd	2,345	62
Total	**10, 781**	**288**

Source: Commercial Banks' Annual Reports (2017)

3.4.1 Response Rate

The researcher had 288 respondents in total, however only 239 respondents participated successfully; hence a participation rate of 83%. If the response rate is ≥ 70%, it signifies that the turn up of participants was good hence the data can be used in the final analysis of the study and is generalizable (Amin, 2004).

Table 3.2: Qualitative Sample Size

Commercial Banks	**Sample Size**
Category of Respondents	**Managerial staff**
Bank of Kigali Ltd	1
KCB Bank Rwanda Ltd	1
Ecobank Rwanda Ltd	1
Bank of Africa Rwanda Ltd	1
Equity Bank Rwanda Ltd	1
Total	**5**

3.5 Sampling Procedure

This study used convenience sampling to select the customers of the selected commercial banks who were available at the banking hall at the time the study was being conducted. De Vos (1998) described a convenience sample as the use of readily accessible persons in a study. Any case,

which happens to cross the researcher's path, and meets the inclusive criteria set for the study, gets included in a convenience sample. On the other hand, purposive sampling was used to select the bank managerial staff because of their level of knowledge pertaining to the topic under investigation.

3.6 Data Source

This study used primary data source which was collected using questionnaires and interviews.

3.7 Data Collection Method

3.7.1 Survey Method

Data was collected using survey method. The study chose to use survey method for the reason that it is easy to manage, cost friendly and saves time. The technique was employed to gather data on ATM System and Service Quality from the bank customers.

3.7.2 Interview Method

Furthermore, interview method was used because it gives opportunity for clarifying questions. The researcher used face to face interview to collect data about ATM System and Service Quality from bank managerial staff.

3.8 Research Instruments

This study used two types of research instruments, namely; questionnaires and interview guides.

3.8.1 Questionnaire

The researcher used closed ended questionnaires that were addressed to the bank customers. The questionnaire used a five Likert scale of 1-5, where 1=strongly disagree, and 5=strongly disagree. Questionnaire was preferred in this study because it can be used to collect data from a large population within a short period of time at a lesser cost compared to other research instruments. Furthermore, it is easier to quantify and analyze data from questionnaires.

3.8.2 Interview Guide

This study used key informant interviews to collect qualitative data from the managerial staff. The interview involved asking specific questions from a specific research area while expecting specific responses (Churchill & Brown, 2004). The researcher selected one informant key

interview from each commercial bank to participate in the interview, preferably general manager or departmental manager. The major themes of discussions were a) ATM Systems, specifically actual ease of use, transaction cost, and security concerns of the services; and b) service quality, specifically reliability, assurance, and responsiveness. The interview was recorded using pen and paper. The researcher preferred to use interviews because it gives opportunity for clarifying questions, and good for exploring issues.

3.9 Validity and Reliability

3.9.1 Validity

Validity is defined as a measure of truth or falsity of the data obtained through using the research instrument (Graziano & Raulin, 2010). In this study, the questionnaire designed for the study was subjected to a validation process for face and content validity. Face and content validity have been defined by Gill and Johnson (2002) as following: a) face validity is the idea that a test should appear superficially to test what it is supposed to test; and b) content validity is the notion that a test should sample the range of behaviour represented by the theoretical concept being tested. In the validation process of this study, copies of the questionnaire were given to two senior lecturers in the field of business and administration (preferably banking and finance) from Kampala International University. These experts went through the research questions and the questionnaire carefully to establish the correctness and suitability of the instrument. Their suggestions and recommendations were comprehensively adhered to.

Having validated the questionnaire, a pilot testing was conducted using 30 bank customers and 5 bank employees from Access Bank of Rwanda. This was done in order to see: how the subject would react to the questionnaire; whether the items were clear enough and easily understood; whether there was the need to include more items in certain areas; or whether there were some items to which they would not like to respond; as well as to determine the workability of the proposed method of data analysis for the study.

The results from the pilot test helped the researcher to understand the ambiguity of some items and so revised them to the level of the questionnaire.

This study also used content validity to establish the validity of the instruments. The need for content validity is pertinent to enable the study to ascertain if the entire content of the constructs

is represented in the test task. The validity of the instrument will be gauged using the Content Validity Index (CVI).

$$CVI = \frac{total\ number\ of\ items\ declared\ valid\ by\ experts}{total\ number\ of\ items}$$

The researcher ensured this through judgment of the items by experts (namely: two researcher supervisors). According to Amin (2005), most often researchers compute the Content Validity Index (CVI) for each item in the instrument as rated by two or more experts in order to determine how valid the study instrument is. Amin (2005) adds that if the CVI is ≥ 0.70, the instrument is valid, otherwise it is not.

CVI=$\frac{29}{35}$=**0.83**

The above CVI signifies that the instrument was reliable

3.9.2 Reliability

Reliability is the degree of consistency with which the instrument measures an attribute (Collis & Hussey, 2003). It further refers to the extent to which independent administration of the same instrument yields the same results under comparable conditions. The less variation the instrument produces in repeated measurements of an attribute the higher the reliability. The study employed test-retest method to establish the reliability of the questionnaire. This was achieved by the researcher pre-testing twice the instrument on 30 customers from Access Bank of Rwanda in a pilot study but they were not included in the final study. The correlation of the results in the first and second pilot study were determined using Pearson Linear Correlation Coefficient (PLCC) and were found to be 0.84 and 0.86 respectively; consistency in the results with correlation values of ≥ 0.70 was an indication that the instruments were reliable. According to Sekaran (2003), a correlation coefficient of ≥0.70 is often recommended in most studies.

Furthermore, the researcher used Cronbach's alpha matrix to test the reliability of the instrument. The rule of thumb for Cronbach's alpha Coefficient Value by Zikmund et al., (2010) was applied as indicated in the table below:

Table 3.3: Interpretation of Cronbach's Alpha Results

Cronbach's alpha	Internal consistency
$\alpha \geq 0.9$	Excellent
$0.9 > \alpha \geq 0.8$	Good
$0.8 > \alpha \geq 0.7$	Acceptable
$0.7 > \alpha \geq 0.6$	Questionable
$0.6 > \alpha \geq 0.5$	Poor
$0.5 > \alpha$	Unacceptable

Table 3.4: Reliability Testing

Variables Tested	Number of Items	Cronbach's Results
ATM System	15	0.863
Service Quality	20	0.768
Overall	**35**	**0.890**

The results presented in table 3.4 above shows that there is high level of internal consistency between ATM system and service quality hence indicating high level of reliability of the instruments.

3.10 Data Collection Procedure

A transmittal document was got from the College of Economics and Management of Kampala International University (KIU) for the student to ask for authorization to carry out her academic research at the commercial banks in Kigali. The student circulated the questionnaires herself so as to explain any irregularities properly to the respondents. The researcher also rightly oriented the participants of their value, role and purpose in the study. The participants signed the informed consent form so as to eliminate any cases of forceful participation against one's will. The respondents were educated on how to answer the questionnaire; areas which did not understand in the questionnaire were further clarified by the researcher verbally in the local language. The researcher also advised them not to leave any part of the questionnaire unanswered as it would cause invalidness and affect the final results of the study. The researcher

repossessed the filled questionnaires as soon as the respondents finished answering them since it was done in the banking hall. After retrieving them back, the researcher cautiously crisscrossed to identify any irregularity in the responses. Afterwards, the researcher prepared for data analysis.

3.11 Techniques for Data Analysis

Quantitative data was analyzed using Statistical Package for Social Scientists (IBM SPSS, version 22.0) software. After processing the collected data, the researcher analyzed it. The analysis was conducted in the following manner: frequency and percentage tables were used to determine the demographic characteristics of the respondents.

On the other hand, mean and standard deviation were used to as descriptive statistics to determine the central tendency and measure of dispersion of ATM System and service quality respectively.

The hypothesis was tested using $p \leq 0.01$, if the p-value is less than 0.01, the null hypothesis was rejected, otherwise, it was accepted.

The effect of actual ease of use, transaction cost, and service security on service quality was determined using linear regression analysis technique, especially with the help of R-Square results.

The equation to determine the effect of actual ease of use, transaction cost and service security on service quality was as follows:

$Y = a + bx$……... (1)

$SQ = a_0 + b_1(AEU)$…… (2)

$SQ = a_0 + b_2(TC)$…… (3)

$SQ = a_0 + b_3(SS)$…….. (3)

Where; Y=dependent variable; a=intercept; b=slope; ε=error termx; x= independent variable; AEU=actual ease of use; SQ=service quality; TC=transaction cost; SS=service security.

At a multivariate level, the beta coefficients was used to determine the strength of each of the three variables (i.e. actual ease of use, transaction cost, and service security) and which variable was more important in explaining the problem of service quality. The prediction was to be significant at ($p \leq 0.01$).

$$SQ = a_0 + b_1 xPEU + b_2 xTC + b_3 SS + \varepsilon \ldots\ldots\ldots\ldots\ldots\ldots (4)$$

Qualitative data was manually done by identification and transcription of recorded data into the qualitative findings. There after analysis was conducted to identify categories and themes that emerged from the data. The themes on each of the variables were coded, and conceptually organized, analyzed, evaluated and aligned to the researcher's objectives from which interpretations were drawn, whereas the analysis of data was done concurrently with data collection and the findings was used for further sampling, data collection, processing and analysis (Mugenda & Mugenda, 2003).

3.12 Ethical Consideration

In order to solve ethical issues that were speculated to arise from any stage in this research process, the researcher made sure that privacy of participants was observed. This was achieved by giving the participants enough time to answer the questionnaires. Furthermore, the researcher made sure that participation in the study was voluntary. The researcher advised any participant who feels he or she was busy or unable to participate, to partially or completely withdraw from the study on their own free-will. Similarly, the researcher informed the respondents of her intention to make them part of her study. This was achieved by giving the respondents to fill in the informed consent form. In addition, none of the names of the participants were mentioned or published or exposed in any part of the research process. Last but not least, the researcher acknowledged the authors whose works were cited in this study to eliminate cases of plagiarism.

CHAPTER FOUR

PRESENTATION OF FINDINGS, ANALYSIS AND INTERPRETATION

4.1 Introduction

This chapter provides information regarding the data collected and how it is interpreted. The first section of this chapter provides analysis of the profile of the respondents, followed by the constructs of the study and finally the objectives of the study.

4.2 Demographic Characteristics of the Respondents

This section of the chapter is intended to establish the demographic characteristics of the respondents in terms of gender, age, education level, and work experience. The findings were presented in Table 4.1.

Table 4.1: Profile of the Respondents

Profile of the Respondents	Frequency	Percent (%)
Gender		
Male	190	79.5
Female	49	20.5
Total	**239**	**100.0**
Age		
18-29	78	32.8
30-39	97	40.7
40-49	37	15.1
50 and above	27	11.4
Total	**239**	**100.0**
Education Level		
No Certificate	57	23.7
Secondary Education	115	48.3
Diploma	28	11.7
Tertiary	39	16.4
Total	**239**	**100.0**
Work Experience		
Less than 1 year	18	7.6
1-5 years	51	21.5
6-10 years	158	65.9
More than 10 years	12	5.0
Total	**239**	**100.0**

Source: Primary data, 2018

The results presented in table 4.1 revealed that majority, 79.5% of the respondents were male while 20.5% were female.

Still, the study established that majority, (40.7%) of the respondents belonged to the age group of 30-39 years, 32.8% of them belonged to the age group of 18-29 years, while the rest who were within the age group of 40-49 years and 50 years and above were represented by 15.1% and 11.4% respectively.

Additionally, table 4.1 revealed that majority, (48.3%) of the respondents were educated up to the level of secondary school, followed by 23.7% who had no Certificate at all, while those with Diploma and Tertiary qualifications were represented by 11.7% and 16.4% respectively.

Moreover, table 4.1 also revealed that majority, (65.9%) of the respondents had worked in the banking sector for 6-10 years, while 21.5% had worked in the banking sector for only 1-5 years. However, respondents who had worked in the banking sector for less than 1 year and more than 10 years were represented by 7.6% and 5% respectively.

4.3 Automated Teller Machine System

This section presents the mean and standard deviation values of the variables that were used for measuring automated teller machine system, namely: actual ease of use, transaction cost and service security. The following Likert scale was used to interpret the mean values.

Scale	Mean Range	Response	Interpretation
5	4.21-5.00	Strongly agree	Very Satisfactory
4	3.41-4.20	Agree	Satisfactory
3	2.61-3.40	Not sure	Fairly satisfactory
2	1.81-2.60	Disagree	Unsatisfactory
1	1.00-1.80	Strongly disagree	Very unsatisfactory

Table 4.2: Automated Teller Machine System

n=239

Automated teller machine system	Mean	Std. Deviation	Interpretation
Actual ease of use			
ATM System of this bank are cheap.	4.09	.925	Very satisfactory
I would find an ATM System easy to use.	3.97	.947	Satisfactory
I would find it easy to get an ATM System to do what I want.	3.87	1.032	Satisfactory
I would find an ATM System easy to interact with.	3.81	1.013	Satisfactory
My interaction with an ATM System would be clear and understandable.	3.23	1.119	Fairly satisfactory
Average mean	**3.79**	**1.007**	**Satisfactory**
Transaction cost			
There are no limitations in the number of transactions through the ATM in a day.	4.07	.977	Very satisfactory
Customers are often informed of changes in ATM service fees.	3.95	1.057	Satisfactory
ATM service fees are the same for all types of transactions.	3.91	1.062	Satisfactory
This bank does not have multiple ATM service fees.	3.87	1.012	Satisfactory
This bank does not face the challenge of sensible data disclosure.	3.64	.769	Satisfactory
Average mean	**4.01**	**1.017**	**Satisfactory**
Service security			
This bank has security personnel to protect the ATM from any physical attack.	3.68	.826	Satisfactory
This bank has well trained ICT employees that ensure logical protection of customer data.	3.67	.816	Satisfactory
This bank has security cameras around the ATM premises.	3.47	.840	Satisfactory
This bank has a security system that locks the ATM card immediately it is reported lost.	3.44	.965	Satisfactory
The physical characteristics of the Bank attract and appeal to me.	3.14	1.304	Fairly satisfactory
Average mean	**3.68**	**0.821**	**Satisfactory**
Overall average mean	**3.72**	**0.978**	**Satisfactory**

Source: Primary data, 2018

The findings in table 4.2 indicated that actual ease of use was evaluated by the respondents as satisfactory (average mean=3.79, Std=1.007). This was because most of the respondents strongly agreed that ATM System of their banks were cheap (mean=4.09, Std=0.925). Furthermore, respondents agreed that they find their ATM System easy to use (mean=3.97, Std=0.947) and can easily do what they want (mean=3.87, Std=1.032) with easiness of interaction (mean=3.81, Std=1.013).

Furthermore, qualitative data also indicated that ATM system is easy to use. When asked of how easy it is to use the ATM systems of their banks, the KIIs provided the following responses:

> "*we have made sure that our customers find our ATM systems easier to use by providing graphical instructions on how to insert the card and even automated some activities which may be difficult for the customers to operate"* (Bank manager, Bank A, 10th August, 2018).
>
> *"the ATM system we use is a very simple machine made from German. They have made it more simple, and understandable to use. we have received very few complaints regarding ATM system and therefore we are confident that it has served its purpose"* (Bank manager, Bank C, 13th August, 2018).
>
> *"yes the system is a new technique of serving our customers and it has been very instrumental in ensuring that customers get the best satisfaction. The letters on the buttons on the key board are very clear to read, the monitor screen uses prompts with very clear images, and the cards have inscriptions on them on how they are supposed to be slotted"* (Bank manager, Bank D, 11th August, 2018).
>
> *"A user visits the ATM and inserts his/her ATM card into the machine; ATM machine read the magnetic strip from the card and then identify the user with his/her bank account; ATM asks the user to enter the PIN code; If the user enters a wrong or incorrect PIN code then the transaction is cancelled and then the user has to enter the card again; And if the user enters the correct PIN code then the machine shows different options to choose such as withdrawal, deposit, balance inquiry etc; Then the user select one option from them mostly for withdrawal cash and fill or enter the amount which the user want to be withdrawal; Then the machine connects to the bank database to check the account of*

the user for the balance inquiry if the user has the sufficient balance to withdrawal or not; If not then the machine display the message for insufficient balance; If so then the machine withdraws the cash which the user asked for; Machine gives a slip for the transaction; and the user collects the money and card and then leaves the ATM. That is how easy it is to use our ATM system" (Bank manager, Bank B, 9th August, 2018).

The above response implies that majority of the customers of the selected commercial banks find use the ATM system more cheap compared to other traditional methods of transactions. Furthermore, the ATM systems have been designed to accommodate even the most primitive hence the ease of use is evident since many customers find it interactive and can do the kind of request it is required to do with less effort.

Additionally, the findings in table 4.2 showed that transaction cost was judged by the respondents as satisfactory (average mean=4.01, Std=1.017). This was because most of the respondents strongly agreed that there are no limitations in the number of transactions through the ATM in a day (mean=4.07, Std=0.977). Similarly, they agreed that they are often informed of changes in ATM service fees (mean=3.95, Std=1.057) and that ATM service fees are the same for all types of transactions (mean=3.91, Std=1.062). Consistently respondents agreed that their banks do not have multiple ATM service fees (mean=3.87, Std=1.012). In the same vein respondents agreed that their banks do not face the challenge of sensible data disclosure (mean=3.64, Std=0.769).

Furthermore, qualitative data from KIIs has demonstrated that the transaction costs are the affordable, and uniform across different transactions. In other words, the charges for depositing, and withdrawing using the ATM system is the same and averagely uniform across several banks.

The above response is an indication that most of the surveyed commercial banks have ATM systems which provide affordable charges for each transaction carried out. The management of the commercial banks have demonstrated a high level of transparency by often informing their customers of any changes in the charges in the transactions when using ATM system. Furthermore, the banks have ensured that all transactions on ATM systems have flat rates, whether depositing, withdrawing or requesting for account statement. This move is important to customers since they will not incur unnecessary costs that affect their hard earned money.

Moreover, the findings in table 4.2 showed that security service of the ATM system was evaluated by the respondents as reasonable (average mean=3.68, Std=0.821). This was because most of the respondents consented that their banks have security personnel to protect the ATM from any physical attack (mean==3.68, Std=0.826). Furthermore, respondents agreed that their banks have well trained ICT employees that ensure logical protection of customer data (mean=3.67, Std=0.816). Additionally, respondents agreed that their banks have security cameras around the ATM premises (mean=3.47, Std=0.840). However, respondents were not in full agreement that their banks have a security system that locks the ATM card immediately it is reported lost (mean=3.14, Std=1.304).

Qualitative data from KIIs informants about measures undertaken to ensure ATM system security have synonymously indicated both physical and logical measures to counter any attacks from criminals. The KIIs' responses in that regard were summarized as below:

> *"we have employed a security personnel to guard around the ATM facility and to provide information to our customers in case they are finding challenges in the way the ATM operates"* (Bank manager, Bank C, 13th August, 2018).

> *"my organization has invested heavily in security cameras around the ATM facility and monitor any unusual operation of the ATM system. It has helped us to counter threats from those who come and want to get money by force from unsuspecting customers"* (Bank manager, Bank D, 11th August, 2018).

> *"All our ATM systems have transparent glasses which provide visibility for the activities of the person in the ATM booth but without showing transaction details. It makes us know if the person in the booth is doing anything that he/she is not supposed to do. In addition, we only allow one person at a time in the ATM booth so as to avoid any armed robbery in the ATM booth"* (Bank manager, Bank C, 13th August, 2018).

> *"we ensure that we train our IT team every year on security measures so as to avoid obsolete knowledge that can easily be taken advantage of. we have also partnered with ATM suppliers who come and upgrade our systems every after 6months to avert any avoidable attacks"* (Bank manager, Bank B, 9th August, 2018).

> *"we have secured sophisticated software such as firewalls, tracking systems, encryption technologies, fraud detection systems and access control systems to try and deter any attacks on our ATM system. Over the years, it has been effective and we have registered minimal losses in that regard"* (Bank manager, Bank A, 10th August, 2018).

The above response demonstrates that most of the surveyed commercial banks have well established ATM security systems, both physical and logical which helps in the protection of customer savings and personal information. This is because, ATMs have over the years been a target of unscrupulous individuals who want to take advantage of the security gap in the ATM system, hence living customers as the biggest losers. However, gone are those days, the security of the ATM systems have been upgraded to address such irregularities and most banks have incorporated such security advancements in their ATM system, hence to a greater extent, customer savings and information are safe.

Likewise, the results in table 4.2 revealed that ATM system was in general evaluated by the respondents as satisfactory (general average mean=3.83, Std=0.948). This was because of the fact that most of the surveyed commercial banks have ATM systems which are easy to use, have affordable transaction fees and the security is reliable.

4.4 Service Quality of Selected Commercial Banks in Kigali, Rwanda

This section provides the mean and standard deviations results of the service quality variables of this study. They included tangibles, reliability, assurance, and responsiveness. Table 4.3 provides the findings of the study.

Table 4.3: Service Quality of Selected Commercial Banks in Kigali, Rwanda

n=239

Service security	Mean	Std. Deviation	Interpretation
Tangibles			
The ATM facilities are strategically located.	4.00	1.054	Very satisfactory
Point of purchase advertising utilized by the Bank induces me.	3.69	1.052	Satisfactory
The technology and equipment used by the Bank are up to date.	3.19	1.161	Fairly satisfactory
The physical features of the interests and appeal to me.	3.14	1.304	Fairly satisfactory
Average mean	**3.51**	**1.143**	**Satisfactory**
Reliability			
The Bank is always ready to solve customer problems.	3.92	1.078	Satisfactory
Whenever there is problem the Bank promptly and efficiently attends to it.	3.81	1.125	Satisfactory
It is not difficult to use the ATM.	3.68	1.163	Satisfactory
The services provided by ATM are reliable	2.83	1.411	Fairly satisfactory
Average mean	**3.56**	**1.193**	**Satisfactory**
Assurance			
The employees are friendly in dealing with customers	3.85	1.061	Satisfactory
The security provided by the Bank is adequate	3.65	.854	Satisfactory
The services provided by the Bank are satisfactory	3.46	.843	Satisfactory
I derive confidence from the employees of the Bank	3.42	.973	Satisfactory
Average mean	**3.60**	**0.933**	**Satisfactory**
Responsiveness			
In this bank, feedbacks on transactions are immediate	4.11	.866	Very satisfactory
The employees are always willing to help customers	3.90	.906	Satisfactory
Cases of ATM breakdown are quickly attended to	3.88	1.075	Satisfactory
The Bank always attends to emergency cases	3.33	1.050	Fairly satisfactory
Average mean	**3.81**	**0.974**	**Satisfactory**
Overall average mean	**3.62**	**1.007**	**Satisfactory**

Source: primary data, 2018

The findings in table 4.3 indicated that tangibles as a determinant of service quality of the commercial banks was considered by the respondents as satisfactory (average mean=3.54, Std=1.148). This was because most of the respondents agreed that the ATM facilities were strategically located (mean=4.00, Std=1.054). Respondents also agreed that the point of purchase advertising utilized by the banks induce them (mean=3.69, Std=1.052). However, the respondents were not in full agreement that the technology and equipment used by the banks

were up to date (mean=3.19, Std=1.161) neither were they in full agreement that the physical characteristics of the banks were attractive and appealing to them (mean=3.14, Std=1.304).

The above responses imply that the surveyed commercial banks have planted most of their ATM service points in areas that can easily be accessed by the public and yet has the much needed security installments. In addition, employees are seen to be helpful in the event that customers file complaints by providing as satisfactory solutions. However, most of the surveyed commercial banks still do not have the upgraded technology that would ensure the safety of customer information. This could probably be attributed to the lack of financial resources to install and manage complex systems used by the first world countries, or the well trained human resource who have the expertise to provide maintenance services to the new ATM systems.

Furthermore, the findings in table 4.3 established that reliability as a determinant of service quality of the surveyed commercial banks was assessed by the respondents as satisfactory (average mean=3.56, Std=1.193). This was because most of the respondents agreed that their banks were always ready to solve customer problems (mean=3.92, Std=1.078). Respondents also agreed that whenever there is problem the bank promptly and efficiently attends to it (mean=3.81, Std=1.125). Additionally, respondents agreed that it is not difficult to use the ATM system of their banks (mean=3.68, Std=1.163). However, they were not in full agreement that services provided by ATM systems were reliable (mean=2.83, Std=1.411).

The above responses imply that most of the surveyed commercial banks have reliable ATM services which enable the customers to do their transactions at any time of the day or night without being inconvenienced. In the same vein, the customers have good feedback system which is responsive to the needs of the customers in case they encounter any challenges with operation of the ATM systems. However, these ATM systems were also limited in operation by unstable network, lack of adequate funds and unstable electricity.

Similarly, the findings in table 4.3 indicated that assurance as a determinant of service quality of the surveyed commercial banks was judged by the respondents as satisfactory (average mean=3.60, Std=0.933). This was because most of the respondents agreed that the employees of the commercial banks were friendly in dealing with customers (mean=3.60, Std=0.933). Furthermore, respondents agreed that the security provided by the banks are adequate

(mean=3.65, Std=0.854). Likewise respondents agreed that the services provided by the banks were satisfactory (mean=3.46, Std=0.843) and that they derived their confidence from the employees of the banks (mean=3.42, Std=0.973).

The above responses indicated that the level of assurance displayed by most commercial banks is important because it has created a level of trust in the customers since the employees know how to respond to customers professionally without hurting their feelings. Furthermore, due to the good security measures employed by most commercial banks, it gives the customers the assurance that they are dealing with the right bank.

The above responses indicate that commercial banks are doing their best to give their customers the services that attract satisfaction. This is because employees are being good, interactive and approachable and the ATM systems are giving employees comfort in their transactions. However, customers still feel that even with the ATM system strategically located, it is not convenient since they are in public places where privacy is very limited.

Furthermore, the findings table 4.3 showed that responsiveness as a determining factor of quality services of the commercial banks was considered by the respondents as satisfactory (average mean=3.81, Std=0.974). This was because most of the respondents strongly agreed that in their banks feedbacks on transactions are immediate (mean=4.11, Std=0.866) and that the employees are always willing to help customers (mean=3.90, Std=0.906). Furthermore, respondents agreed that cases of ATM breakdown are quickly attended to (mean=3.88, Std=1.075). However, they were not in full agreement that the banks always attend to emergency cases (mean=3.33, Std=1.050).

The above responses imply that the commercial banks do their best to make sure that their customers are satisfied with the services they are offering. In other words, they have demonstrated that at all cost customers should never regret doing business with them. In fact they should recommend others to do business with them since their services in terms of responsiveness is admirable. The employees also behave professionally and in a helpful way to customers who might want technical assistance in their transactions with the ATM systems.

In addition, the findings indicated that service quality of the commercial banks was generally evaluated by the respondents as satisfactory (overall average mean=3.65, Std=1.053). This was

because all the determining factors displayed satisfactory tangibility, reliability, assurance and responsiveness in their ATM system services.

Furthermore, qualitative data from the KIIs as regard how ATM systems ensure quality services have been summarized as follows:

> *"the ATM system we installed has been saving time for customer transactions, convenience and comfortable since one can withdraw their cash at any time they want. The ATMs also reduced a lot of lining up and waiting for long hours to be served"* (Bank manager, Bank A, 10th August, 2018).

> *"compared to other financial packages, transaction using the ATM is very cheap and affordable. customers find it cost friendly to do business on ATM compared to other traditional provisions within the banking hall"* (Bank manager, Bank B, 9th August, 2018)

> *"the ATMs have changed the way of doing business in the banking industry given their high level of speed, efficiency and reliability. ATM systems are very accurate in their operations, in fact they only make mistakes due to human errors. Due to this kind of service quality, customer satisfaction have been highly registered in this bank"* (Bank manager, Bank C, 13th August, 2018).

> *"The ATM system is easy to use thus attracting many customers to use it. customers also find ATMs very responsive and interactive hence enabling first learning on how to use it for even the most ignorant of persons"* (Bank manager, Bank D, 11th August, 2018).

> *"The security measures used in the ATM system has given customers the confidence to keep preferring to use ATMs to other traditional standards. customers are able to access their cash at any time without being inconvenienced. In fact most of the customers prefer to use ATMs because of its regular availability, efficiency and cost effectiveness"* (Bank manager, Bank C, 13th August, 2018).

4.5 The Effect of Actual Ease of Use of ATM System on the Service Quality of Commercial Banks in Kigali

Objective one: to examine the effect of actual ease of use of ATM System on the service quality of commercial Banks in Rwanda. The findings are presented in Table 4.4.

Table 4.4: The Effect of Actual Ease of Use of ATM System on the Service Quality of Commercial Banks in Rwanda

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.527[a]	.278	.276	.38886	.278	121.190	1	315	.000

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	18.325	1	18.325	121.190	.000[b]
	Residual	47.631	315	.151		
	Total	65.957	316			

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.301	.126		18.232	.000
	Actual of Use	.363	.033	.527	11.009	.000

a. Dependent Variable: Service Quality

The results presented in table 4.4 revealed that actual ease of use of the ATM system significantly and positively affected the service quality of the commercial banks by a variance of 27.8% (R^2=0.278, p=0.000). This rejects the null hypothesis that there is no significant effect of actual ease of use of the ATM system on the service quality of the commercial banks and upholds the alternative hypothesis. This implies that when ATM systems are affordable, easy to use, interactive and understandable, then customers will want to use it because of the improved service quality of the bank. In addition, the study found that the regression model was the best fit for predicting the effect of actual ease of use of ATM system on service quality (F=121.190,

p=0.000). Similarly, the study revealed that every unit change in actual ease of use of ATM system will significantly affect the variance in service quality by 52.7% (Beta=0.527, p=0.000).

4.6 The Effect of Transaction Cost of ATM System on the Service Quality of Commercial Banks in Kigali

The second objective of this study was to determine the effect of transaction cost of ATM System on the service quality of commercial banks in Kigali. Table 4.5 gives the summary of the findings.

Table 4.5: The Effect of Transaction Cost of ATM System on the Service Quality of Commercial Banks in Kigali

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.494[a]	.244	.241	.39794	.244	101.505	1	315	.000

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	16.074	1	16.074	101.505	.000[b]
	Residual	49.883	315	.158		
	Total	65.957	316			

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	2.401	.128		18.769	.000
	Transaction Cost	.319	.032	.494	10.075	.000

a. Dependent Variable: Service Quality

The results presented in table 4.5 revealed that transaction cost was significantly and positively affected the service quality of the commercial banks by a variance of 24.4% (R^2=0.244, p=0.000). This rejects the null hypothesis that there is no significant effect of transaction cost on service delivery and upholds the alternative hypothesis. This implies that if the transaction costs

are user friendly and affordable, it will improve the service quality of the bank. Furthermore, the study found that the regression model was the best fit for predicting the effect of transaction cost of ATM system on service quality (F=101.505, p=0.000). Similarly, the study revealed that every unit change in transaction cost of ATM system will significantly affect the variance in service quality by 49.4% (Beta=0.494, p=0.000).

4.7 The Effect of Security of ATM System on the Service Quality of Commercial Banks in Kigali

The third objective of this study was to determine the effect of security services of ATM System on the service quality of commercial banks in Kigali. Table 4.6 gives the summary of the findings.

Table 4.6: The Effect of Security Services of ATM System on the Service Quality of Commercial Banks in Kigali

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.577[a]	.332	.330	.37388	.332	156.837	1	315	.000

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	21.924	1	21.924	156.837	.000[b]
	Residual	44.033	315	.140		
	Total	65.957	316			

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.086	.128		16.264	.000
	Service Security	.443	.035	.577	12.523	.000

a. Dependent Variable: Service Quality

The results presented in table 4.6 revealed that the security services of the ATM system significantly and positively affect service quality by a variance of 33.2% (R^2=0.332, p=0.000). This rejects the null hypothesis that there is no significant effect of service security on service quality and upholds the alternative hypothesis. This implies that when the banks have good security services that give the customers assurance that their savings and personal information is safe, then service quality would have been realized. In addition, the study found that the regression model was the best fit for predicting the effect of service security of ATM system on service quality (F=156.837, p=0.000). Similarly, the study revealed that every unit change in service security of ATM system will significantly affect the variance in service quality by 57.7% (Beta=0.577, p=0.000).

Table 4.7: The Relationship between ATM System and Service Quality of Selected Commercial Banks in Kigali, Rwanda

Variables tested	Pearson correlation	Level of significance	Decision on Ho
ATM system vs Service quality	0.616**	0.000	Rejected

**. Correlation is significant at the 0.01 level (2-tailed).

The findings in table 4.7 revealed that ATM system have a significant and positive relationship with service quality (r=0.616**, p=0.000). This implies that a positive improvement in the ATM system services will subsequently cause an improvement in the service quality of the commercial banks.

Table 4.8: The Effect of ATM System on Service Quality of Selected Commercial Banks in Kigali, Rwanda

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.616[a]	.380	.378	.36033	.380	192.987	1	315	.000

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	25.057	1	25.057	192.987	.000[b]
	Residual	40.899	315	.130		
	Total	65.957	316			

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	1.783	.137		12.980	.000
	ATM System	.500	.036	.616	13.892	.000

a. Dependent Variable: Service Quality

The results presented in table 4.8 revealed that ATM system significantly and positively affect the service quality of the commercial banks (R^2=0.380, p=0.000). This implies that improvement of ATM systems in form of actual ease of use, transaction cost and service security brings about service quality. Likewise, the study found that the regression model was the best fit for predicting the effect of ATM system on service quality (F=192.987, p=0.000). Similarly, the study revealed that every unit change in ATM system will significantly affect the variance in service quality by 61.6% (Beta=0.616, p=0.000).

Table 4.9: Multiple Regression for ATM System and Service Quality of Selected Commercial Banks in Kigali, Rwanda

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.641[a]	.411	.406	.35222	.411	72.881	3	313	.000

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	27.125	3	9.042	72.881	.000[b]
	Residual	38.832	313	.124		
	Total	65.957	316			

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	1.684	.136		12.345	.000
	Ease of Use	.224	.038	.325	5.888	.000
	Transaction Cost	.005	.044	.117	.107	.015
	Service Security	.325	.048	.423	6.793	.000

a. Dependent Variable: Service Quality

The results presented in table 4.9 revealed that ATM system significantly and positively affect the service quality of the commercial banks (R^2=0.411, p=0.000). This implies that improvement of ATM systems in form of actual ease of use, transaction cost and service security brings about service quality. Similarly, the study found that the regression model was the best fit for predicting the effect of ATM system on service quality (F=72.881, p=0.000). Furthermore, service security was found to be the highest predictor of service quality (Beta=0.423, p=0.000), followed by ease of use (Beat=0.325, p=0.000), and lastly transaction cost (Beta=0.117, p=0.015).

CHAPTER FIVE
DISCUSSION OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introductory Section

This chapter presents the discussion of the study guided by the study objectives. The discussion of this study findings were done by reviewing related literature, and comparing and contrasting with other previous studies. The study was later concluded and appropriate recommendations accruing from the findings were made.

5.2 The Discussions of the Major Results

5.2.1 The Effect of Actual Ease of Use of ATM System on the Service Quality of Commercial Banks in Kigali

The first objective of this study was to examine the effect of actual ease of use of ATM System on the service quality of commercial Banks in Kigali. The study found out that actual ease of use of the ATM system significantly and positively affect the service quality of the commercial banks by a variance of 27.8% (R^2=0.278, p=0.000). This is because customers find it easier, interactive and understandable to use the ATM system. This could be attributed to the fact that the ATM systems have been remodeled in a way that they are communicative to the users and their usage has been made much simpler even for a lay person. Furthermore, it could be because competition in the banking sector is very high and therefore most banks have tried their best to keep abreast and improve the quality of their services.

This means that when customers find it easy to use the system, their perceived usefulness of that system increases. That is to say, if the system does not require much physical and mental effort, the customers will perceive it as capable of improving the speed of accessing services. Likewise if customers find it difficult to use the system, then perceived usefulness tends to decrease.

This implies that actual ease of use by the customers stimulates their desire towards using the ATM system significantly. In other words, users intend to use the system more frequently as the system becomes easy to use. This finding is consistent with Odusina (2014), who proposed that actual ease of use not only predicts attitude towards the information system, but is also an antecedent of perceived usefulness that is to say the less effort a system is to use, the more using it can increase service quality (Jahangir & Begum 2010).

This finding is also consistent with previous scholars like Davis et al., (1989), who revealed that firms which have strong and favorable perception of the usefulness of the systems, use more of them than those with weak or unfavorable perception of the useful systems. Furthermore, technologies perceived to be easy to use all things being equal, are deemed as useful, as suggested by the direct relationship existing between perceived ease of use and perceived usefulness, (Ndubisi et al., 2016). This finding is also similar with Kim et al., (2016); Lee (2017); and Moon & Kim (2018), which showed perceived ease of use had direct effect on perceived usefulness and attitude toward use.

5.2.2 The Effect of Transaction Cost of ATM System on the Service Quality of Commercial Banks in Kigali

The second objective of this study was to determine the effect of transaction cost of ATM System on the service quality of commercial banks in Kigali. The study found out that transaction cost significantly and positively affected the service quality of the commercial banks by a variance of 24.4% (R^2=0.244, p=0.000). The results of this study imply that the commercial banks have good transaction rates that are user friendly. In other words, the transaction costs are very cheap, and in case of any changes, the customers are often well informed beforehand. The banks have ensured that they do not charge multiple prices to their customers for different transactions, therefore making the charges uniform across all transactions, hence improving service quality and subsequent customer satisfaction.

It is indeed true that the average transaction cost of an ATM system is significantly lower than using other standard option of seeking similar services from the bank office. It is a technique the commercial banks have employed to bring services closer to people in a convenient and comfortable manner. It has over the years reduced overcrowding in the banking halls and saved time for doing business. Furthermore, the greater convenience of ATMs reduced the cash acquisition transaction cost for depositors, leading to a greater frequency of these transactions and a corresponding reduction in the average amount of idle cash balances held by the public.

The findings of this study correspond with that of McAndrews (2011); Jegede (2014); and Humphrey (2016) who found out that because of the use of ATM system, the service quality in terms of transaction costs had become very affordable to the customers and this increased the utilization of ATM system. However, it should also be noted that apart from the customers, the

banks do not benefit much from such an investment. The investment in ATM system is only intended to improve service quality by enabling customers to do business transactions with the banks at their own time of convenience.

5.2.3 The Effect of Security of ATM System on the Service Quality of Commercial Banks in Kigali

The third objective of this study was to determine the effect of security service of ATM System on the service quality of commercial banks in Kigali. The study revealed that security services of the ATM system significantly and positively affect service quality by a variance of 33.2% (R^2=0.332, p=0.000). The results imply that the commercial banks at Kigali have installed several security measures that ensure that customer information and data is safe from the hands of unscrupulous people. Most commercial banks which were surveyed had installed cameras, security personnel, and security system locks to physically ensure that no body with ill-intentions defrauds the ATM.

Furthermore, as the number of ATM units increase, the machines have been prone to hacker attacks, fraud, robberies and security breaches. In the past, the ATM machines' main purpose was to deliver cash in the form of bank notes and to debit a corresponding bank account. However, ATM machines are becoming more complicated, and they serve numerous functions, thus becoming a high priority target to robbers and hackers. Modern ATM machines are implemented with high-security protection measures. They work under complex systems and networks to perform transactions. The data processed by ATMs are usually encrypted, but hackers have over the years employed discreet hacking devices to hack accounts and withdraw the account's balance. As an alternative, unskilled robbers threaten bank patrons with a weapon to loot their withdrawn money or account.

This finding of this study agrees with that of Guerette and Clarke (2013); Idris (2014); Braeuer, Gmeiner and Sametinger (2015) who found out that ATM systems have been attracting thieves due to its vulnerabilities and subsequently affecting service quality. Additionally, Braeuer, et al., (2015) found out that three different types of attacks, often affect the service quality of the ATM systems, that is, card and currency fraud, physical attacks and logical attacks. This is because, in most cases the attackers can be disgruntled employees who have been working for the bank so

they know all the information there is to defraud the bank. Other logical attacks could be due to incompetence from the banks' IT teams who do not have the expertise to perform the necessary security measures. In fact all of the ATM systems used by the commercial banks in Kigali are imported from the first world countries and therefore this leaves them very vulnerable at the mercies of the manufacturers.

5.3 Conclusions

Objective one: The Effect of Actual Ease of Use of ATM System on the Service Quality of Commercial Banks in Kigali

The study found that actual of use of the ATM system is important in promoting the service quality of the commercial banks. This is because when customers find it easier, interactive and understandable to use the ATM system, they will want to use it more often in their transactions. This implies that commercial banks can ensure that service quality of their services by installing ATM systems that are not complex to use by even the most illiterate customer.

Objective two: The Effect of Transaction Cost of ATM System on the Service Quality of Commercial Banks in Kigali

The study found that transaction cost significantly affect the service quality of commercial banks in Kigali. This is because most of the banks do not charge multiple prices for different transactions in the ATM; at the same time, the banks provide unlimited transactions per day at affordable rates for any amount of money, hence making the customers not to feel exploited. This therefore implies that the use of ATM system for transaction has enabled customers to save time and money in their transactions.

Objective three: The Effect of Security of ATM System on the Service Quality of Commercial Banks in Kigali

The study revealed that the security services of the ATM system significantly affect the service quality of commercial banks. This is attributed to the fact that the security element of the ATM is what gives the customers assurance that their money and personal information is safe and will not be misused for any other businesses. In other words, good security measures are important in

promoting the service quality of the commercial banks since it provides customers with the confidence to keep working and doing business with the bank.

5.4 Recommendations

Objective one: The Effect of Actual Ease of Use of ATM System on the Service Quality of Commercial Banks in Kigali

To the management of commercial banks: They should ensure that they install ATM systems that are easy to use by incorporating both audio and graphical guidelines in the local languages on how to do transaction using the ATM system. This will ensure that customers do not get problems because of the use of English language which some people may not understand.

Furthermore, the management of the commercial banks should ensure that there is a professional personnel on standby just in case a customer gets difficulty in using the ATM system. The personnel can help the customer by guiding him or her on how to go about with the transaction using the ATM system.

Additionally, the management of the commercial banks should provide training and orient customers who have accounts with their banks on how to use the ATM technology. This will help in reducing cases of ATM cards being withheld for wrong transactions and other challenges the clients might find when using the system.

Objective two: The Effect of Transaction Cost of ATM System on the Service Quality of Commercial Banks in Kigali

To the government: They should ensure that all commercial banks charge the same rates for depositing, and withdrawing money from the ATM system at any time and any amount of money. This will ensure that commercial banks do not engage in unhealthy competition by providing rates that are below standard rates hence affecting quality of service.

Objective three: The Effect of Security of ATM System on the Service Quality of Commercial Banks in Kigali

To the management of commercial banks: they should ensure that they invest in the latest technology since ATM fraud is becoming a global problem and needs frequent upgrade of the

system to remain relevant in the market. This will ensure that customer information and their money is safe.

Furthermore, management should ensure that they pay their workers well, treat them well and give them good remunerations. This will ensure that no bank official will be disgruntled to the extent of committing felony to the commercial bank through defrauding or stealing customer personal data, or whistle blowing.

To the manufactures: They should invent ATM technology that has provision for facial recognition for accessing accounts and doing monetary transactions. This will ensure that cases of stolen ATM cards or pins will be solved and only the owner of the account will be able to do transaction in the ATM.

Policy makers: They should come up with stringent policies and laws that ensure that if arrested and found guilty of committing financial loss using ATM system, the culprits should face the long arm of the law judiciously without compromise or corruption. This will ensure that other like-minded people will cease from committing such criminal acts whose actions are detrimental to the business of the commercial banks and the privacy of the customers.

5.5 Contribution to New Knowledge

Several studies by Belay and Kindie (2017); Naeem et al. (2016); Yared (2016); Akpan (2016); Dondolo and Nkosivile (2016); Ifeanyichukwu and Emenike (2016) have been done in the area of ATM service quality and customer satisfaction. However, this study adds to the body of new knowledge using actual ease of use, transaction cost, and service security as predictors of service quality in the banking sector. The study found that both actual ease of use and service security of ATM systems are significant predictors of service quality except transaction cost. This therefore implies that commercial banks have the mandate to install ATM systems that are user friendly and security sensitive so as to promote service quality and subsequently breed customer satisfaction.

Conclusion can therefore be made that factors that motivate individual users in different societies to accept technology should be conducted prior to introducing the technology. These studies could enable organizations to determine the factors that are likely to lead to high outcomes rather

than simply copying what has worked elsewhere; due to the differences in settings and perceptions.

5.6 Limitation of the Study

The researcher claimed an acceptable (0.01 significance level) margin of error considering the following threats to validity:

1) Instrument validity: the research instruments were not be standardized, however, a validity and reliability test were done to answer this.
2) Questionnaire retrieval: the stated number of respondents was not reached as some questionnaires were not returned due to circumstances beyond the researcher's control. However, the researcher retrieved at least 83% of the questionnaires which is beyond the minimum return rate of 70% acceptable in social sciences (Amin, 2005).
3) It was difficult to establish the level of honesty of the respondents, however, the use of key informant interviews helped in the polishing of the results to regulate any biases.

5.7 Areas for Future Studies

The study was conducted only in five commercial banks in Kigali. However, there is need for a future study in a similar area to be done in all the commercial banks in Kigali so as to provide generalizable results.

Furthermore, there is need for a future study in the same using document review from the police and the commercial banks to get data on cases of financial losses caused by ATM system security breach.

Furthermore, future study should be conducted using a different model of service quality other than the SERVQUAL model to assess the suitability of both models in explaining service quality in the commercial bank setting and recommend the most preferable.

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APPENDIX I: CUSTOMER QUESTIONNAIRES

Section A: General Information

Instruction: please tick [√] the option that best describes you

1. **Gender**

a) Male ☐ b) Female ☐

2. **Age**

a) 18-29 years ☐ b) 30-39 years ☐

c) 40-49 years ☐ d) Above 50 years ☐

d) Educational Level

a) No Certificate ☐ c) Diploma ☐

b) Secondary education ☐ d) Tertiary ☐

4. Work Experience

a) Less than 1 year ☐ b) 1-5 years ☐

c) 6-10 years ☐ d) More than 10 years ☐

Section B: ATM System

Instruction: Please indicate to what extent you agree or disagree with each of the following statement about ATM System by ticking (√) the appropriate number in each column. Where 1=strongly disagree; 2=disagree; 3=Not sure; 4=agree; and 5=strongly agree.

#	ATM System	1	2	3	4	5
A	**Actual ease of use**					
1	Learning to operate an ATM System would be easy for me.					
2	I would find it easy to get an ATM System to do what I want.					
3	My interaction with an ATM System would be clear and understandable.					
4	I would find an ATM System easy to interact with.					
5	I would find an ATM System easy to use.					
B	**Transaction Cost**					
1	ATM System of this bank are cheap.					
2	This bank does not have multiple ATM service fees.					
3	Customers are often informed of changes in ATM service fees.					
4	ATM service fees are the same for all types of transactions.					
5	There are no limitations in the number of transactions through the ATM in a day.					
C	**Service Security**					
1	This bank does not face the challenge of sensible data disclosure.					
2	This bank has security personnel to protect the ATM from any physical attack.					
3	This bank has a security system that locks the ATM card immediately it is reported lost.					
4	This bank has security cameras around the ATM premises.					
5	This bank has well trained ICT employees that ensure logical protection of customer data.					

Section C: Service Quality

Instruction: Please indicate to what extent you agree or disagree with each of the following statement about employee performance in this company by ticking (√) the appropriate number in each column. Where 0=Not at all; 1=strongly disagree; 2=disagree; 3=agree; and 4=strongly agree

#	Service Quality	1	2	3	4	5
A	**Tangibles**					
1	The physical characteristics of the Bank attract and appeal to me.					
2	The technology and equipment used by the Bank are up to date.					
3	Point of purchase advertising utilized by the Bank induces me.					
4	The ATM facilities are strategically located.					
B	**Reliability**					
1	The services provided by ATM are reliable					
2	It is not difficult to use the ATM.					
3	The Bank is always ready to solve customer problems.					
4	Whenever there is problem the Bank promptly and efficiently attends to it.					
C	**Assurance**					
1	The employees are friendly in dealing with customers					
2	The security provided by the Bank is adequate					
3	I derive confidence from the employees of the Bank					
4	The services provided by the Bank are satisfactory					
D	**Responsiveness**					
1	The Bank always attends to emergency cases					
2	The employees are always willing to help customers					
3	Cases of ATM breakdown are quickly attended to					
4	In this bank, feedbacks on transactions are immediate					

THE END

THANK YOU FOR YOUR TIME AND COOPERATION

APPENDIX II: KEY INFORMANT INTERVIEWS

1. How easy is it to use the ATM System of this bank?
2. What transaction costs are common for ATM System of this bank?
3. What are the security measures employed in this bank to ensure that ATM System are secure?
4. What is the quality of service of ATM System of your bank?

THE END