

**ADOPTION OF AUTOMATED TELLER MACHINE AND ITS
SERVICES QUALITY EFFECT ON CUSTOMER SATISFACTION IN
COMMERCIAL BANK OF ETHIOPIA IN HARAMAYA AREA
BRANCHES**

MBA THESIS

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**Adoption of Automated Teller Machine and Its Services Quality Effect on
Customer Satisfaction in Commercial Bank of Ethiopia in Haramaya Area
Branches**

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**In Partial Fulfillment of the Requirements for the Degree of
Master of Business Administration**

Tsedal Aragie Assefa

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STATEMENT OF THE AUTHOR

By my signature below, I declare and affirm that this thesis is my own work. I have followed all ethical and technical principles of scholarship in data collection, data analysis and compilation of this Thesis. All sources of materials used for this thesis have been properly acknowledged.

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BIOGRAPHICAL SKETCH

The author was born on the 25 of March 1991 in Lalibela town of Amhara National Regional State. She attended her elementary and junior education at Getergie School at Lalibela town, and Secondary School in Labella secondary and preparatory School. After successful completion of the ESLCE, she joined Haramaya University in 2009 and graduated with B.A. in Management on 09 July 2011. After graduation up to now, she has served in Commercial bank of Ethiopia at Haramaya branch in different position (from Junior officer to Customer service manager). She joined Haramaya University in 2016 to pursue her MBA degree studies in Business Administration.

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ABBREVIATIONS AND ACRONYMS

ATM	Automated Teller Machine
CBE	Commercial Bank of Ethiopia
PIN	Personal Identification Number
IT	Information Technology
SQ	Service Quality

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ABSTRACT

In the highly competitive banking industry, the success and failure merely depends on the quality of service provided to customers. The aim of this study was to identify the factors influencing customer's use of Automated Teller Machine (ATM) services; and to determine the effect of ATM services quality on customer's satisfaction in Haramaya area Commercial Bank of Ethiopia (CBE) branches customers. The study was carried out in Eastern Hararghe, particularly Haramaya area CBE branches. The study is utilized cross-sectional data collected from sample of 260 (non ATMs users =94 and ATMs Users=166) customers of CBE in Haramaya area branches using multi-stage stratified sampling procedure. To address the research objectives, the study was used descriptive statistics and econometrics model such as logistic and tobit regressions model. The result also indicated that the mean score of overall customer satisfaction toward the bank ATM is 3.55 (71 percent), which is above average mean score. Customers expectation regard to ATMs services quality dimension, tangible, reliability, responsiveness, assurance and empathy were 3.37, 3.22, 3.45 3.80 and 3.64, mean score respectively which have above average. However, security and easy to use service quality dimensions have the first and second mean score of 4.12 and 4.07 respectively. The logit model results indicate that among eight explanatory variables, Education level of customers, Availability of ATM in customers location and Perception of ATM were important factors, positively and significantly influencing the probability of use of ATM services, while Age of customer's affected the probability of use of ATM services negatively. On the other hand, tobit model results indicates that reliability, responsiveness and easy to use were important factors, determine customer's satisfaction with ATM services while the remain explanatory variables such as Tangible, Assurance, Empathy and Security were insignificant. Therefore, the bank should try to improve its services by create awareness about the important of ATM and how to utilized, increase the availability ATM machine, development and design of less complex and easy to use systems, effective ATM management and maintenance programmes in order to increase the numbers of ATM users and customers satisfaction.

Key Words: Adoption of Automated Teller Machine; Services Quality; Customers Satisfaction

1. INTRODUCTION

1.1. Background of the Study

The upcoming technologies are making various aspects of life easier for the societies of today. They have become fundamental elements in improving the quality of services, enables financial institutions maximize profit and enhance customers' satisfaction (Tewodros and Debela, 2019). Over the past few years, the banking industry has been introducing different kinds of electronic banking services: such as card banking, mobile banking, internet banking, to remain in a competitive market. Those technologies have transformed the bank sector services from cash economy to digital banking system (Barun and Shitika, 2014).

Automated Teller Machine (ATM) is one of the most innovative techniques that has been introduced into the banking system. The first automated banking machine was invented by American inventor and businessman, Luther Simjian in 1960, however, this machine only collected cheques and deposits. In 1967, a Scottish inventor, John Shepherd-Barron, improved an ATM could read paper vouchers printed with radioactive ink. Finally, Donald Wetzel created the modern ATM that used plastic cards similar to the ones we use today in the United States in 1969 (Khan, 2010). This powerful and business facilitating machine also has some short history in banking industry of Ethiopia. It was first introduced by Commercial Bank of Ethiopia (CBE) in 2001 for local users while the first bank which issued the visa card was Dashen Bank in 2005 (Worku, 2010; Kinfu, 2016).

Like any business sectors, currently all banks in Ethiopia are providing different digital banking services in a better quality to meet the need of customers. Despite ATM in Ethiopia has short history, ATM is becoming a means of transaction which is essential for banks to increase their competitiveness in the market (Sileshi, 2019). It's also providing diversified services of transaction and helps banks to improve customer service and reduce operation costs (Joshi, 2019). Introduction of ATM has also led to improvements in the ways in which banks process information and generate data automatically. The technology not only deliver self-service attribute and increased autonomy in executing transactions, but also enables customers get financial services within short period of time. Moreover, its simplified transactions,

improved accessibility and saved time for customer. In general, this technique enables banks to provide quality and satisfactory services to their customers. In the recognition of this reality, Commercial Bank of Ethiopia (CBE) has invested substantial resources and efforts to improve the quality of ATM service in order to maintain customer satisfaction. Customer satisfaction is one of the key factor which leads to customer retention and customer loyalty or brand loyalty (Joshi, 2019).

Though using ATM services is found to be essential both for the benefit of banking industry as well as customer's satisfaction, a significant number of customers are not yet to use the ATM machine. Therefore, it important to identify factors influencing the use of ATM services and ATM services quality on customer's satisfaction to bring strong trustworthiness services and customers oriented, as well as enhance numbers of ATM users. In addition, it is vital to understand and realize the customer's satisfaction and need for computing the level of customer satisfaction related to electronic banking system, particularly, ATM for further improvement of banking services. Thus, this study has examined the effect of electronic banking specifically ATM services quality on customer's satisfaction and identify factors influence use of ATM services in Haramaya area Commercial Bank of Ethiopia branches customers

1.2 Statement of the Problem

Banks in Ethiopia have introduced different technology to provide various services in a better quality to meet the need of the customer as well as keep on competitive. One of the innovative technologies that overcome the problem associated with human bank tellers is ATM banking, which is significantly reducing the banking costs in the long run (Sangeetha,2012). In the other hand, it has significant effects on the productivity of the organization and individual through facilitate transaction and save time (Kumbhar, 2011). However, if the technology is not widely spread and sustainable, it is difficult to grasp the benefit as well as satisfy the customer's desire.

Various studies indicated that ATM provide different service and vary from place to place. For instance, according to Muhammad (2010), ATM has provided different service like cash

withdrawal, funds transfer, cash deposits, payment of utility and credit card bills, cheque book requests and other financial enquiries in Pakistan. However, elsewhere in Ghana (Yazeed *et al.*, 2014), also indicated that most of ATM customers were used for purpose of cash withdrawal and account balance enquiry. The other functions of the ATMs such as funds transfer, cheque-book requests and payment of utility bills among others.

Like any other industry, banking industry has faced a lot of challenges, which directly and indirectly affects the level of customer satisfaction (Rafiqul *et al.*, 2005). Moreover, despite, ATM has several advantages and CBE has considerable investment, collectively aimed at increasing customers' satisfaction are not fully utilized. This could be due to inadequate knowledge about the functions of the ATMs apart from cash withdrawals and balance enquiry, inability of some banks to render diversified ATM services (Gezahegn, 2015). In addition, malfunctioning ATM, frequently breakdown network connection, online theft and fraud, non-availability of financial service, mandatory acquisition of ATM cards, non-acceptability of payment cards for international transaction could negatively affect consumer satisfaction (Rafiqul *et al.*, 2005; Gezahegn, 2015; Habte, 2019).

Moreover, according to CBE 2018/19 annual report, the total number of customers of CBE was 22 million while total numbers of active cardholders are estimated to be 8 million people. This indicated that, ATM service utilization rate still very low and about 36 percent have activated their cards. Furthermore, the distribution of ATM to adult populations is far below compare to worldwide. Accordingly, the distribution of ATM to 100,000 adult population in Ethiopia is 3.41 while, 6.12 and 5.07 in Sub Sahara African and low-income countries, respectively (Sileshi, 2019).

All CBE branches in Haramaya area have adopted ATM as a means of enhancing service quality which leads increasing customer satisfaction but level of adoption of ATM services is still very low. According to CBE annual report 2018/2019, level of adoption of ATM services is very low in small emerging city compare to capital city. For instance, out of the total CBE customers in Haramaya area (Haramaya Branch, Finkile Branch and Weltejis Branch), only 19.6 percent customers are using ATM card while 64 percent, 26 percent and 36.36 percent in

Addis Ababa, Dire-dawa and national level, respectively. However, most of past studies carried out in Addis Ababa which is relatively better adoption and access to ATM services.

In addition, most of the past studies (Shitu, 2010; Yitbarek, 2015; Sileshi ,2019; Shibru, 2019) have used five dimensions (reliability, assurance, responsiveness, empathy and tangibility) quality service indicators but they have not fully measured customers satisfaction. Thus, this study was not only base on five service quality dimension but also use other service dimension like security and easy to use. In addition, most past studies have not identified demographics, socio-economic and institution characteristics that affect adoption of ATM services in Ethiopia.

Therefore, this study is examined the effect of ATM banking service quality on customer's satisfaction and identify factors affecting use of ATM technology in Haramaya area CBE by taking other research findings as point of departure in respect to the problems pointed out.

1.3. Objective of the Study

The general objective of this study is to assess adoption ATM and its services quality effect on customer satisfaction in Haramaya area, Commercial Bank of Ethiopia branches.

The specific objectives of the study are to:

1. To identify the factors influencing customer's use of ATM services; and
2. To determine the effect of ATM services quality on customer satisfaction in the CBE in the study area.

1.4. Hypotheses of the Study

1. Different demographic, socio-economic and institutional factors have not significantly affect use of ATM services.
2. ATM services quality (reliability, assurance, responsiveness, empathy, tangibility and security and easy to use) have not significantly effect on customer satisfaction in the CBE in the study area.

1.5. Significance of the Study

The results from this study will inform development planners of CBE and other bank in designing effective and sustainable strategies in order to increase the adoption level of ATM technology as well as improve customer's satisfaction. The findings will also help both private and CBE, branch managers, electronic banking department heads, IT managers, and employees to understand how ATM service quality affect customer satisfaction link with all dimensions of their ATM services quality. This may allow for improvement in bank strategies to attract and retain their customers. Identify factors facilitate or impede the adoption of ATM services results would help banks to develop efficient strategies in order to enhance utilization level of ATM technology. Moreover, the findings of this study can be used as base line information for further similar researches related with adoption of ATM services, different services quality and customer satisfactions.

1.6. Scope and Limitation of the Study

The research is emphasized on identify the factors influencing customer's use of ATM services; and determine the effect of ATM services quality on customer's satisfaction in Haramaya area CBE branches customers. The study has not assessed other electronic banking services. Considering the geographical, scope of the study was limited within three CBE branches namely Haramaya branch, Finkile branch and Woltesis branch in Haramaya area due to the monetary and time constraints to reach other branch and private owned banks. The study also not limited to on five dimensions of service quality indicators (reliability, assurance, responsiveness, empathy and tangibility) but also include security and easy to use to measure ATM services quality dimension.

1.7. Organization of the Thesis

This thesis is divided into five sections. The background of the study, statement of the problem, objectives of the investigation, significance of the study, and scope and limits of the study are all included in the first chapter. Chapter 2 discusses a review of the literature on definition of ATM, benefits of ATM, customer satisfaction, dimension of ATMs Service quality, and empirical review on determinates of adoption of ATM services and effect on ATM

services on customer satisfaction. The third chapter covers description of the study area, data gathering methods, sources, and procedures, as well as data analysis methodologies. The findings on the demographic, socio-economic and institutional characteristics that influencing use of ATM services, and the effects ATMs services quality dimensions on customer's satisfaction are presented in Chapter 4. Chapter 5 concluded with a summary, conclusion, and recommendations.

2. LITERATURE REVIEW

2.1. Definition of ATM

The ATM is an innovative service delivery mode that offers diversified financial services like cash withdrawal, funds transfer, cash deposits, payment of utility and credit card bills, cheque book requests, and other financial enquiries (Khan, 2010).

The ATM card helps to be identified the customers by a plastic ATM card with a magnetic stripe or a plastic smartcard with a chip. The security is provided by the customer entering a Personal Identification Number (PIN). As a result of this, the number of bank customers preferring to use self service delivery systems. This preference is attributed to increased autonomy in executing the transactions (Meena, 2015).

Jane (2000) also noted that the customer is identified by inserting a plastic ATM card with a magnetic strip or a plastic smart card with a chip that contains a unique card number and some security information. The ATM's allocated easily access public places with the aim of enabling customers to transact without the help of a teller or banking officer. Sowunmi *et al.* (2014) also defined that ATM is a cash dispenser that enables bank customers to enjoy banking services without coming in contact with bank tellers (cashier) and helps them to perform the duties of the cashier in term of payment and other services.

2.2. Benefits of Automated Teller Machines

2.2.1. Benefits of customers from Automated Teller Machines

Automatic Teller Machines (ATMs) have been adopted and are still being adopted by banks to offer considerable benefits to both banks and their customers. The main benefits of ATM for customers are as follows:

1. ATM as convenient to customers

ATM technologies are easier for the customers to withdraw or deposit money at any particular time and location. Unlike bank branches, they can be accessed irrespective of the time and

days of the week. ATMs are also placed in nearer to people's work places, market places and residences thus further increasing the convenience to transact (Daniel, 1999).

The Automated Teller Machine has changed people's lifestyles and the banking industry. ATM machines enable depositors to withdraw cash at more convenient times and places than during banking hours at branches (Sangeetha,2012; Olatokun and Igbinedio, 2009). Hence, an ATM allows a bank's customers to conduct their banking transactions. This could be performed transactions at any time during 24 hours.

2. ATM for speed transaction

With regard to speed of the ATMs, Marshall and Heslop (1988) noted that one of the benefits customers while using ATMs is saving time, this is because there is no need to come to the bank and wait in a queue or filling some information in paper format every time when they wants to transact. ATMs are automated machines which are faster than human tellers in processing transactions.

According to Komal (2009) explain in his study that ATM services enhance operations and customer satisfaction in terms of flexibility of time, add value in terms of speedy handling of voluminous transactions which traditional services were unable to handle efficiently and appropriately. The machine can enable customers to deposit and withdraw cash at more convenient time and places than during banking hours at branch. Deutsche Bank AG Research (2006) identifies 'speed' as one of the main driving forces behind the success of E-banking. Transactions, transaction processing, data transfer, information requests etc. happen almost instantly in ATM banking. Similarly, Hoffman et al, (1999) also identified speed as a major factor influencing customer satisfaction.

3. Safety

Safety is one the benefit of ATM, thanks to the ATM technology, now a day there is no need of carrying large sum of money. Once the customers has the ATM card, he or she can access his or her account whenever need arises. One can keep funds at a bank and receive an interest mean while enjoying a quick and easy access to them (Godwin, 2001). Tague (2010) observed

that a plastic Automatic Teller Machine card linked to bank account makes financial transactions a breeze by eliminating the waste of writing cheques or the dangers of carrying large sums of cash. Singh (2009) described ATM as 'avoid travelling with money.

4. Reliability

Reliability refers to the promptness of delivering e-banking service such as ATM banking in an accurate way and in line with advertised attributes (Jun, and CAI, 2001; Min, 2003). Many studies argue that the success of electronic banking depends on e-banking service and reliability (Flavián *et al.*, 2008). Reliability is established in some studies as a key factor that most customers consider before and even during usage of e-banking service including ATM (Ndubisi, *et al.*, 2007). Prior researches have revealed that reliable/prompt responses, attentiveness, and error-free e-banking platforms have a considerable impact on customer satisfaction (Xiang and Yang, 2004).

5. ATMs save Cost

Mols (1999) has identified that for customers, internet banking, ATM, and other electronic banks can be of a low cost alternative to traditional banking. The term 'cost' refers to all types of costs from financial costs, time costs, energy costs etc. In overall, ATM can provide a banking activity at the lowest cost possible easily accessible and provide speedy services. Therefore, it saves customers time in service delivery as alternative to queuing in bank halls, customers can invest such time saved into other productive activities (Sangeetha,2012).

2 .2.2. Benefits of Banks from Automated Teller Machines

The ATMs provide an opportunity for most financial institutions to expand their revenue though the initial costs involved in securing, installing, updating and servicing ATMs to leverage this opportunity can be quite prohibitive (Gabriel *et al.*, 2015). ATMs can reduce the cost of servicing some customer demands for instance the bank will make savings as a result of a reduction in the number of tellers in the bank and reduction in overtime claims made by bank employees working late. The following are the main benefits of bank from ATM.

1. ATMs enhance corporate image

E-banking including ATM helps to enhance the image of the organization as a customer focused innovative organization (Foley, 2000). This was especially true in early days when only the most innovative organizations were implementing this channel. This image also helps in becoming effective at e-marketing and attracting young/professional customer base (Shah *et al.*, 2009). In relation to E-banking including ATM, Brogdon (1999) explain that one of the main benefits of ATM to banks is enhancement of the bank's reputation.

According to Wisdom (2012), ATM ensures customer satisfaction as it extends financial services to customers outside the banking hall. Similarly, ATM has provided banks with a large customer base as it has resulted in increased customer loyalty and satisfaction.

2. ATM enables Banks to Expand Services

The recent trends to the customer favor self-service to manage their financial. Hence, the most important electronic channels is the ATM, which is one of the more prevalent electronic channels, and most commonly used by customers where there is a easy to use for diverse banking services (Abedalfattah, 2012).

Traditionally, when a bank wanted to expand geographically it had to open new branches, thereby incurring high startup investment. E-channels, such as the ATM, is reduced this unnecessary cost and the customers can get the services from other part of country or world. Therefore, the financial transactions do not require a physical presence near customers living/working place (Ongkasuwan and Tantichattanon, 2002).

3. ATMs Reduce Load on Other Channels

According to Joshi (2019), new age banks operate with minimal number of physical branches and use remote banking for the bulk of their operations. The remote channels are used to provide basic services while more sophisticated services are provided on a face to face basis. Jordan and Katz (1999) stated that the introduction of the ATM has made the distribution of banks services more efficient. ATMs have been able to entrench the one branch philosophy in country by being networked, so people do not necessarily to go to the branch to get services.

Before ATMs, withdrawals, inquiries, internal funds transfers, mini statement inquiry, among others, all required the face to face interaction between the consumer and the bank teller (Gabriel *et al.*, 2015).

Ongkasuwan and Tantichattanon (2002) connoted that E-Channels are largely automatic, and it undertake most of the routine activities such as account checking or bill payment may be carried out using these channels. This usually results in load reduction on other delivery channels, such as branches. In some countries, routine branch transactions such as cash/cheque deposit related activities are also being automated, further reducing the workload of branch staff, and enabling the time to be used for providing better quality customer services.

4. Cost Reduction

Gabriel *et al.* (2015) noted that one of the ATM benefits is reduce the cost of servicing, for instance the bank will reduce the cost due to reduction in the number of tellers in the bank and reduction in overtime claims made by bank employees working late. Productivity by bank staff increased because ATM takes up some of the functions that were previously only performed by the banker such as giving out cash, statements, taking cash/cheque deposits. Therefore, the bank staff can now concentrate more in other areas that need improvement.

Ongkasuwan and Tantichattanon (2002) indicate that the main economic argument of ATM so far has been reduction of overhead costs of other channels such as branches, which require expensive buildings and a staff presence. It also seems that the cost per transaction of ATM often falls more rapidly than that of traditional banks once a critical mass of customers is achieved. Wise and Ali (2009) argued that many banks want to invest in ATMs to reduce branch cost since customers prefer to use them instead of a branch to transact business.

5. Organizational Efficiency by using ATMs

Batiz-Lazo and Barrie (2005) study argued that Information Technology (IT) in banking (as measured by ATM) led to reduced operating costs, coupled with increased output (number of transactions) that resulted in greater efficiency. They concluded that the introduction of ATM was profitable for banks as well as customers.

The relationship between banking efficiency and the use of ATM is a complex one. This is because the overall levels of efficiency and productivity significantly influence the organization overall success (Gabriel *et al.*, 2015). To implement e-banking services like ATM, organizations often have to re-engineer their business processes, integrate systems and promote agile working practices. These steps often result in greater efficiency and agility in organizations (Ongkasuwan and Tantichattanon, 2002). In terms of reduction in cost of operation, Batiz-Lazo and Barrie (2005) study argued that Information Technology in banking (as measured by ATM) led to reduced operating costs, coupled with increased output (number of transactions) that resulted in greater efficiency.

6. ATM Increases Revenues

Electronic banking, like ATM, internet, mobile banking etc. has changed the traditional retail banking business model in many ways, for example by making it possible for banks to allow the production and delivery of financial services to be separated into different businesses. This means that banks can sell and manage services offered by other banks to increase their revenues. This is an especially attractive possibility for smaller banks with a limited product range (Shah *et al.*, 2009). E-banking has also resulted in increased credit card lending, as it is a sort of transactional loan that is most easily deliverable over the Internet. Electronic bill payment is also on rapid rise, which suggests that electronic bill payment and other related capabilities of e-banking have a real impact on retail banking practices, and rapidly expanded revenue streams (Young *et al.*, 2007).

2.3. Customer Satisfaction

Oliver (1980) defined customer satisfaction as the product of the accumulated experience of a customer's purchase and consumption. Porter and Miller (1985) defined customer satisfaction as a post consumption evaluation that meets or exceeds expectations. Kotler (1997) also defines satisfaction as a person's feelings of pleasure or disappointment resulting from comparing a products perceived performance or outcome in relation to his or her expectations. Satisfaction can therefore be taken as a function of perceived performance and expectations.

Customer satisfaction is a key factor in development of customer's desires for future purchase (Hasan *et al.*, 2013). According to Farris *et al.* (2010), customer satisfaction is a measure of how products and services supplied by a company to meet or surpass customer expectation. Customer satisfaction is also defined as the number of customers, or percentage of total customers, whose reported experience with a firm, its products and services (ratings) exceeds specified satisfaction goals (Work *et al.*, 2016). Customer satisfaction has been defined as the difference between expectation and performance of organization is offering, but there are differences between quality and satisfaction. Satisfaction determined after experience that quality is the same or not. Customer satisfaction as the extent to which a product's perceived performance matches a buyer's expectations. If the product performance falls short of expectations, the buyer is dissatisfied. If performance matches or exceeds expectations, the buyer is satisfied or delighted (Kotler *et al.*, 2005).

Most researchers agree that satisfaction is an attitude or evaluation that is formed by the customer by comparing what they expect to receive to their subjective perceptions of the performance they actually get (Oliver, 1980). Furthermore, several authors have argued that satisfaction is based on the customer's cumulative experience rather than being a transaction-specific phenomenon (Anderson *et al.*, 1994; Bayus, 1992). Especially in the context of the relationship between loyalty and satisfaction, conceptualizing satisfaction with a single transaction is too restrictive (Homburg and Giering, 2001).

2.4. ATM Service Quality Attributes and Dimension

According to Lassar *et al.*, (2000); Parasuraman *et al.*,(1988); Athanassopoulos, (2000); Dilijonas *et al.*, (2009), any organizations and services providers are well understand quality of service attributes that enhance customers satisfaction in dynamic business environment. Several past studies indicated that improved productivity, increased market share, enhanced customers' attraction and loyalty, improved staff morale and sustained profitability were significantly association with firms' performance and quality of service.

Currently, one of the convenient and popular way of provide banking transactions is use of ATM. This technological innovation has transformed the banking business. The advantages

and benefits of using ATM have given new impulsion in dimensions of quality of service and banks are offering new choices to customers. Parasuraman et al., (1988); Cronin and Taylor, (1992); Avkiran, (1994) stated that tangibles, reliability, responsiveness, empathy and assurance are the commonly used services quality dimension. In addition to the above services dimension, other past studies added security and easy to use as other services quality dimension (Aslam et al., 2018; Sharon, and Claude, 2017; Sindwani and Goel, 2012). However, depending on the product and/or service the services quality dimensions have been different. Several empirical studies have identified and verified a number of common elements within the seven dimensions for ATM services quality.

Previous studies (Gezahegn, 2015; Habte, 2019; Maykil, 2019; Joshi, 2019, Tewodros and Debela, 2019; Aslam, et al., 2018; Sharon and Claude, 2017; Joseph and Stone, 2003; Lovelock, 2000; Patricio et al., 2003; Yavas et al., 2004; Dilijonas et al., 2009; Shamsdouha et al., 2005; Islam et al., 2005; Howcroft, 1991; Mountihno and Brownlie, 1989; Al Hawari and Ward, 2006; Joseph and Stone, 2003; Athanassopoulos, 2000; Lovelock, 2000; Stone, 2003) have analyzed several services quality attributers to determine the effect of ATM services quality on customers satisfaction.

Accordingly based on past studies, this study adopts the 32 ATM services quality attributes validated by the above empirical researchers for measuring the effect of services quality dimension on customer satisfaction with ATM banking service of commercial bank of Ethiopian in Haramaya area branches, Ethiopia. These service quality attributers can also be classified in to seven service quality dimension included tangible (6 items), reliability (6 items), responsiveness (6 items), assurance (3 items), empathy (4 items), security (3 items), and easy to use (4 items). ATM services quality attributers and dimensions as follows:

Tangibles are the physical facilities, equipment as well as appearance; that comprised of; number of ATMs per ATM station, convenient location, and corporate brand appearance on ATMs, readable ATM slips, issuing of clean notes and cleanliness of ATMs and ATM stations.

Reliability is the ability to perform the promised service dependably and accurately; that comprised of; range of services at ATMs, accuracy of ATM transactions, speed of ATMs, ATMs not out of order, ATM system usability and ease of access to ATMs.

Responsiveness is willingness to help customers and offer prompt service; that comprised of; cash availability in ATMs, quick replacement of lost ATM cards, waiting times at ATMs, fast return of swallowed ATM cards, employee speed in dealing with ATM problems, and employee effectiveness in solving ATM problems.

Assurance is knowledge and courtesy of employees and their ability to inspire trust and confidence; that comprised of; privacy at ATMs, sufficient advice about ATM usage and security, and security at ATM stations.

Empathy is caring, individualized attention the firm provides its customers. That comprised of; employees friendly dealing with customers, ATM fees are fair, eases of ATM card application process, and employee accessibility to solve ATM issues.

Security is secured on login process, system theft and fraud, keeps personal data as private

Easy to use refers to how easily system is to be accessed by users with tolerated barrier (interface, language and displays). In other word, ease of use is the degree to which the prospective user expects the target services system to be free of effort. This included ATM provides clear instructions on usage, easy to use for transactions, alternative languages is easy to understand, graphics and adverts of bank services.

2.5. Empirical Review

2.5.1. Empirical studies on adoption of ATM services

Choudhury and Bhattacharjee, (2015), studied impact of socio economic factors on adoption of E-Banking amongst salaried employees in Cachar, Hailakandi and Karimganj districts of Assam, India. Study attempted to find out the probable socio economic and demographic

factors contributing towards the adoption of electronic banking among salaried employees. The results from the study showed that location of residence, number of earners in the family, educational level, frequency of banking transaction and marital status had significantly contributed towards the adoption of electronic banking among salaried employees.

Kolodinsky *et al.*, (2004), identified factors influence adoption of electronic banking technologies by US consumers. Using a Federal Reserve Board commissioned data set, the paper finds that relative advantage, complexity/simplicity, compatibility, observability, risk tolerance, and product involvement were significant associated with adoption of electronic banking. Moreover, income, assets, education, gender and marital status, and age also affect adoption.

Lee *et al.*, (2003), identified factors affecting access and adoption of computer banking and ATM. The study based on the data collected by the University of Michigan Institute of Social and Political Research (ICSPR) from 1000 customers. The study was employed Heckman two step model. The results of the model indicated that access of computer banking were significantly influenced by age, income, and education coefficients while perceived benefits, reliability, security, and complexity were significant effects on adoption of computer banking. On the other hand, except observability, all independent variables such as age, income, education, trainability, perceived benefits, reliability, security, and complexity were significantly influence both access and adoption of ATM services.

Chandrasekar and Taye, (2017), identified the determinants of adoption of automatic teller machines among ATM users in commercial bank of Ethiopia. The result the study based on the data collected from 320 customers in Addis Ababa and also used descriptive statistics and regression model. The result reveals that trialability, relative advantage, observability, complexity, and compatibility were strong impact on customer adaptation of ATM. However, this study seems determinants of customer's attitude rather than adoption or use of ATM.

Mansumittrchai and Chiu (2012), identified factors affecting adoption of internet banking in United Arab Emirates. The study used descriptive statistics to analyzed the data collected from 330 customers: The result suggested that seven characteristics were important for internet

banking adoption, namely compatibility, difficulty, security, trust, third party concern, status, and human contact. Moreover, result also showed that adopters and non-adopters differed on their attitudes toward three factors of adoption: compatibility, trust and human contact.

Mattila et al., (2014), examined internet-banking adoption among mature customers in Finland used large survey data collected from mature customers. The result of the study indicated that household income and education were found to have a significant effect on the adoption of the internet as a banking channel, so that over 30 percent of wealthy and well-educated mature males make e-banking their primary mode of making payments. The result also reveals that internet banking was also found to be more unsecured among mature customers than other bank system in general.

2.5.2. Empirical Studies on effect on ATM services quality on customer satisfaction

Daniel (2012), investigated the impact of ATM services quality on customer satisfaction and future prospects of ATM: in the case of commercial bank of Ethiopia. This study used five services quality dimensions. The ~~result of~~ descriptive and inferential statistics was used to evaluate the impact of ATM service quality on customer satisfaction. The results of the study reveal that the effect of ATM service quality dimensions on customer satisfaction ~~and future prospects of ATM~~ is direct and significant. In addition, the results also show that the effect of customer satisfaction on future prospects of ATM is direct and significant.

Mesay Sata (2012) investigated the relationship between service quality, customer satisfaction and loyalty in Ethiopian Banking Sector. This study uses five dimensions of services quality such as reliability, tangibles, responsiveness, assurance and empathy. The study employed correlation and multiple regression to analyzed the relationship between independent and dependent variables. The correlation results indicate that there is a positive correlation between the service quality dimensions and customer satisfaction. The results of the liner regression model reveal that offering quality service have positive impact on overall customer satisfaction. Moreover, the model indicated that empathy and responsiveness plays the most important role in customer satisfaction level followed by tangibility, assurance, and finally the bank reliability.

Lemma Belay (2017), studied the effect of ATM service quality on customer satisfaction in Ethiopian commercial Banks in Debreworkos. The study based on cross-sectional data collected from 190 customers who used ATM services. The result of multiple regression model indicated that assurance, tangibility, reliability, responsiveness and empathy have positive and significant effect on customer satisfaction. Furthermore, customers were mostly satisfied with the responsiveness dimensions of ATM service quality.

Narteh (2015), also assessed the dimensions of ATM service quality and their relationship with customer satisfaction in Ghana. Result based on 530 ATM customers of 15 banks in Ghana. The study used six dimensions of the ATM services quality namely security and privacy, reliability, convenience, responsiveness, ease of use and fulfillment. The study results indicated that reliability, convenience, responsiveness, ease of use and fulfillment predicted customer satisfaction.

Habte, (2019) examined the effect of ATM service quality on customers satisfaction in banking industry in Oromia International Bank in Addis Ababa. The study used descriptive statistics, correlation, one sample t-test and ANOVA to analyze the data. The research finding shows that that Oromia International Bank ATM customer's level of satisfaction was positive, even though, customers were not happy with some of ATM attributes like promptness in replacement of lost ATM cards, ATM out of order, return of swallowed ATM card, insufficient number of ATM, inaccessibility of ATM and employee to solve ATM related issues and inconvenience of ATM locations. In addition, assurance, tangibility and reliability were the most important factors that influence customer's satisfaction.

Dhingra, (2018), measured the services quality of ATMs in Indian. The study identified five dimensions of service quality, i.e., tangibility, reliability, responsiveness, assurance and empathy was selected for measuring the service quality. Regression results indicated that all five dimensions of service quality were significantly affecting overall customer's satisfaction.

Alexis and Chen, (2019), analyzing the ATM service quality and customer satisfaction relationship in Rwanda. The study based on data collected from 250 ATM users in five commercial banks from Kigali, capital city of Rwanda. The questionnaire consists mainly of 32 attributers constructs observed under seven ATM service quality dimensions (Reliability, Responsiveness, Assurance, Empathy, Tangibles, ease of use and Convenience) and a five-point rating scale was adopted as the scale to measure each attributers. The multiple regression results identified ease of use as the most important dimension on customer satisfaction and it was followed by convenience, empathy and Tangibles.

Aslam *et al.*, (2018), examined the impact of automated teller machine (ATM) service quality on customer satisfaction and its effect on customer loyalty in Karachi, Pakistan. The findings indicate that fulfillment, reliability, ease of use, and security and privacy were the major dimensions of ATM service quality that influence customers' satisfaction significantly. However, convenience and responsiveness were positively but insignificantly correlated with customer satisfaction. Moreover, customer satisfaction significantly influences customer loyalty.

Mwatsika Charles (2016) evaluates the effect of customer satisfaction with ATM Banking in Malawi. The study results based on 353 ATM card users. The result shows that all service quality dimensions (Reliability, Responsiveness, Assurance, Empathy, Tangibles) significantly correlate with customer satisfaction. Moreover, the result further showed that, reliability is the most important dimension followed by responsiveness, empathy, assurance and tangibles dimensions.

2.6. Conceptual Framework

After reviewing different theories and empirical work (Gezahegn, 2015; Habte, 2019; Maykil, 2019; Joshi, 2019, Tewodros and Debela, 2019; Aslam, *et al.*, 2018; Sharon and Claude, 2017; Choudhury and Bhattacharjee, 2015; Kolodinsky *et al.*, 2004; Lee *et al.*, 2003; Lee *et al.*, 2003; Mattila *et al.*, 2014), this section present a conceptual framework, in which show the relationship between demographic, socio economics characteristics and services quality dimensions with adoption of ATM and customers satisfaction.

There are different factors directly or indirectly determine use of ATM services such as age, sex,, educational level, experience as CBE customers, monthly income of customers and perception of ATM service quality Other services quality dimensions factors like reliability, responsiveness, assurance, tangibles, empathy, tangible, security and easy to use., are influence customers satisfaction from ATM services. Furthermore, these ATM services quality dimensions may improve the customers satisfaction, which will help CBE and other bank in designing effective and sustainable strategies. These relationships are presented in Figure 1 below.

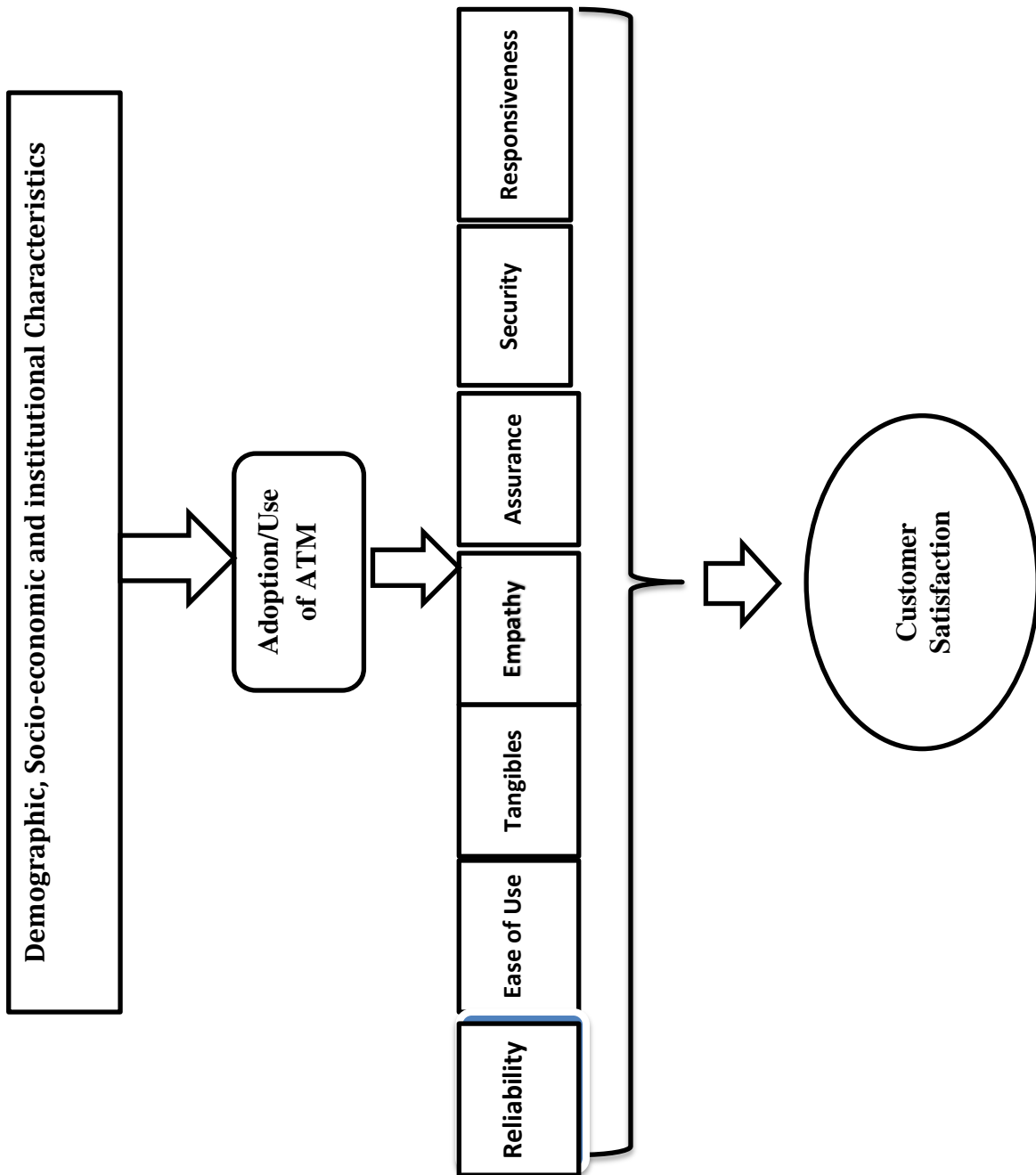


Figure 1: Conceptual framework of the study

3. RESEARCH METHODOLOGY

In this chapter, description of the study areas, types of data, sources of data, methods of data collection, sampling method, methods of data analysis, and variables specification are presented.

3.1. Description of the Study Area

The Commercial Bank of Ethiopia (CBE) is the largest bank in the country. CBE was legally established as a share company in 1963. In 1974, CBE merged with the privately owned Addis Ababa Bank. Since then, it has been playing significant roles in the development of the country. CBE is the pioneer to introduce modern banking to the country. It has more than 1280 branches stretched across the country. The first bank in Ethiopia to introduce ATM service for local users. Currently CBE has more than 22 million account holders and active ATM cardholders reached close to 8 million

Among 15 districts of CBE, Dire Dawa district is located to the Eastern part of Ethiopia. The District covers Dire Dawa city administration, Harari Region, Somali Region up to Dolo Ado 458 KM, Eastern Hararghe up to Jaja City 131 KM and Western Hararghe up to Micheta City 300 KM from the main office of the District Dire Dawa .Under this district there are 106 CBE branches. Currently, 1814 staffs are engaged under the branches of the district. The total numbers of customers in this district are 1,532,319 (CBE Portal, 2021). In Haramaya Area, there are three CBE braches namely Haromaya, Finkile and Waltasis branches with the total of 42,652, 26,749 and 12,450 customers, respectively. On average out of the customers in these branches, 16,101 customers (19.6 percent) are using ATM services. Moreover, regarding the branches grade (based on numbers of customers, numbers and volume of transaction, deposit mobilization and alternative channel), Haromaya branches is grade three, while Finkile and Waltasis branches are grade two and one, respectively.

3.2. Research Design

The study was used both descriptive and explanatory study designs. Descriptive research design help the researcher describing the existing service quality dimensions associated with bank services that lead to customer satisfaction. Explanatory research design also help

researcher to explaining, understands and controls the relationship between dependent and independent variables. The study used a cross-sectional data collected at one point in time to assess adoption ATM and its services quality effect on customer satisfaction.

3.3. Data Types and Sources, and Method of Data Collections

Both primary and secondary data were collected in this study. Primary data was collected by enumerators from the CBE customers (ATM users and non-users) using semi- structured interview schedule in 2021. Secondary data were gathered from Commercial Bank of Ethiopia and other related organization.

3.4. Sample Size Determination and Sampling Procedure

A multi-stage stratified sampling procedure was used to select sample CBE customers. First Haramaya area (woreda) and CBE were selected purposively, because Haramaya area (woreda) is one of high numbers CBE customers as compared to other area. In addition, there are three CBE branches with heterogeneous customers in terms of livelihood strategies (farmers, traders, students and government employers), education background and other characteristics as compared to other area. In the first stage, ~~from~~ all CBE bank branches in Haramaya area were selected. Then, the customers were stratified into two strata (ATM users and non-users groups). Final, samples customers were randomly selected from both ATM users and non-users using probability proportional to size (PPS) based on the size of each branch (numbers of customers) (Table 1).

When the populations that are large, Cochran's (1963:75) method is appropriate method to determine the representative sample size. Hence, the study used Cochran formula to determine the sample size.

$$n = \frac{z^2 pq}{d^2}$$

where n is minimum sample size, Z is 1.96 at 95 percent confidence level; p is proportion of CBE customer who used ATM services about (20 percent); q is the weight variable and is computed as 1-p (80 percent) and d is desired precision or margin of error, expressed as a

fraction of 0.05. Therefore, based on this formula, the sample size is 245 customers but for this study, however, the study collected 271 samples to cater for incomplete surveys or inaccurate data collected. Finally, the total sample size was 260 customers (166 from ATM users and 94 from non-ATM users) after discarded incomplete surveys or inaccurate data.

Table 1. Sample respondent distribution

Sampled Branch	Non-Users		Users		Total	
	Freq.	%	Freq.	%	Freq.	%
Haromaya	54	57.45	92	55.42	146	56.15
Finkile	22	23.40	50	30.12	72	27.69
Waltasis	18	19.15	24	14.46	42	16.15
Total	94	100.00	166	100.00	260	100.00

Source: Computed from the survey data

3.5. Method of Data Analysis

To address the research objectives, the study used descriptive statistics and econometrics model (logistic and tobit regressions model). Quantitative data was analyzed by using descriptive and inferential statistical tools. Descriptive statistics such as means, frequency percentages and standard deviation were used to analyze the collected data, while chi square was applied to test the significance association between explanatory variables and use of ATMs. The study used 32 attributers constructs observed under seven ATM service quality dimensions (Reliability, Responsiveness, Assurance, Empathy, Tangibles, Security and ease to use) and a five-point rating scale was adopted as the scale to measure each attributers. In addition, the binary logit and two-limit Tobit model were used to identify factors influencing customer's use (adoption) of ATM services, and determine the effect of ATM services quality on customer's satisfaction, respectively.

3.6. Econometrics Model

3.6.1. Determinants of adoption of ATM technology

To identify the determinants of adoption of ATM technology among CBE customers, the study used a binary logit model. The dependent variable for this case is not continuous instead

it is binary as such either logit or probit can be used. Both the logit and probit models estimate parameters using maximum likelihood method. Probit assumes normally distributed error term whereas the logit model assumes a logistic distribution of the error term. The logit model is often preferred due to the consistency of parameter estimation associated with the assumption that error term in the equation has a logistic distribution (Ravallion, 2001; Baker, 2000). Therefore, the logit model was used to identify the factors affecting adoption of ATM technology. The reduced form of Logit model is written as:

$$z_i = \ln \left[\frac{p_i}{1 - p_i} \right] = \alpha + \sum \beta_i X_i + \mu_i \quad 2$$

Where X_i represents the i^{th} explanatory variable, P_i the probability that an individual use of in ATM, α and β_i are parameters to be estimated μ_i represent error term.

3.6.2. Effect of service quality dimensions on customers' satisfaction with ATM

One of the objectives of this study is to evaluate the effect of ATM services quality on customers' satisfaction in Haramaya area Commercial Bank of Ethiopia customers. For this purpose, the two-limit tobit model was employed.

The use of Tobit models to study censored and limited dependent variables has become increasingly common in applied social science. Tobit is an extension of the Probit model and, it is one approach for dealing with the problem of censored data (Johnston and Dinardo, 1997).

In this study, the value of the dependent variable is customer's satisfaction and the value ranges between 0.2 and 1 and a two limit Tobit model has been chosen as a more appropriate econometric model.

The model derives from an underlying classical normal linear regression and can be represented as:

$$y^*_i = X_i \beta_i + \varepsilon_i \quad 3$$

$$\varepsilon_i \sim N(\mathbf{0}, \sigma^2)$$

$$y_{ji} = \begin{cases} L & \text{if } Y^* \leq L \\ y_i^* = X_i\beta_i + \varepsilon_i & \text{if } L < y^* < U \\ U & \text{if } Y^* \geq U \end{cases} \quad 4$$

Where,

Y_i = the observed dependent (censored) variable, in our case customers satisfaction

Y_i^* = the latent variable (unobserved for values smaller than 0 and greater than 1).

X_i = is a vector of independent variables which factors affecting level of customers satisfaction.

3.6.3. Variables Specification and Hypotheses

Table 2: Variable Specification

Dependent Variables		
Variables	Types of data	Description
Use of ATM	Dummy	1 if customer use ATM and 0, otherwise)
Effect of ATM services on customer satisfaction	Continuous but censored	Average overall customers satisfaction range between 0 and 1,
Independent Variables for factors affecting use of ATM		
Age of Customer	Categorical	if age <20 years=1 ; 21-30 years = 2; 31-40 years =3; and >40 years =4
Sex of Customer	Dummy	if male=1 otherwise 0
Educational level of customer	Categorical	If Illiterate=1; Primary school=2; Secondary school=3; Diploma=4; and Degree and above=5
Experience of customers of CBE	Categorical	If <1 year=1;1-3 years=2; 4-6 years=3; and > 6 years=4
Average monthly income customer	Categorical	If < 2000 birr=1; 2001-4000 birr=2; 4001-6000 birr=3; and >6000=3
Perception of ATM service quality	Categorical	If Not important=1; Neutral=2; and Important=3
Location of ATM	Dummy	If ATM machine available =1, otherwise, 0
Independent Variables for Effect of ATM services on customer satisfaction		
Reliability	Continuous	Average reliability attributers ranging from 1to 5
Assurance	Continuous	Average Assurance attributers ranging from 1to 5
Responsiveness	Continuous	Average responsiveness attributers ranging from 1to 5
Empathy	Continuous	Average empathy attributers ranging from 1to 5
Tangibility	Continuous	Average tangibility attributers ranging from 1to 5
Security	Continuous	Average security attributers ranging from 1to 5
Easy to use	Continuous	Average easy to use attributers ranging from 1to 5

Table 3 Variables hypotheses for adoption of ATM

Variables	Null hypothesis (H₀): $\beta=0$	Alternative hypothesis (H₁): $\beta\neq 0$
Sex	Have not affected use of ATM	Have significantly affect use of ATM
Age	Have not affected use of ATM	Have significantly affect use of ATM
Education level	Have not affected use of ATM	Have significantly affect use of ATM
Marital status	Have not affected use of ATM	Have significantly affect use of ATM
Income	Have not affected used of ATM	Have significantly affect use of ATM
Experience	Have not affected use of ATM	Have significantly affect use of ATM
Availability of ATM	Have not affected use of ATM	Have significantly affect use of ATM
Perception of ATM	Have not affected use of ATM	Have significantly affect use of ATM

Table 4: Variables hypotheses for effect of services quality

Variables	Null hypothesis (H₀): $\beta=0$	Alternative hypothesis (H₁): $\beta\neq 0$
Tangible	Have not affected Customer satisfaction	Have significantly affected Customer satisfaction
Reliability	Have not affected Customer satisfaction	Have significantly affected Customer satisfaction
Responsiveness	Have not affected Customer satisfaction	Have significantly affected Customer satisfaction
Assurance	Have not affected Customer satisfaction	Have significantly affected Customer satisfaction
Empathy	Have not affected Customer satisfaction	Have significantly affected Customer satisfaction
Security	Have not affected Customer satisfaction	Have significantly affected Customer satisfaction
Easy to use	Have not affected Customer satisfaction	Have significantly affected Customer satisfaction

3.7. Ethical Considerations

The ethics framework is essential focused on observing, voluntary informed consent of the participants. Participants' informed consent was obtained through better introduction of the researcher to respondents/superiors who clearly specified what the research involved, including clearly laid down procedures and explained the ways in which their confidentiality is assured. The respondent's names were withheld to ensure anonymity and confidentiality in terms of any future prospects. Finally, respect for intellectual property was adhered to and no use of unpublished data, methods, or results without permission. Proper acknowledgement or credit for all contributions to research was prioritized to avoid plagiarism.

4. RESULTS AND DISCUSSION

4.1. Descriptive Analysis

This chapter presents the results of the study in two main sections. The first section deals with the descriptive statistics of the survey results while, the second section provides the econometrics model result investigation on factors influencing customer's use of ATM services and effect of ATM services quality on customer's satisfaction.

4.1.1 Descriptive statistics of explanatory variables

The results in Table 3 present descriptive statistics on ATM users and non-users with respect to some demographic, socioeconomic and institution characteristics. The results revealed that age, education level, marital status, monthly income, CBE experience, perception, availability of ATM had a systematic association with use of ATM at less than 5 percent probability level.

The descriptive statistics result indicated that out of the total respondents, 166 (63.85 percent) and 94 (36.15 percent) were ATM users and non-users, respectively. The results indicate that 64.62 percent are male and 35.38 percent are female. Meanwhile, out of the total ATM users, 66.27 percent (110 out of 166) and 33.73 percent (56 out of 166) are male and female customers, respectively, while from non-user respondents, 61.70 percent (58 out of 94) and 38.30 percent (36 out of 94) are male and female, respectively. The chi-square result indicated that there was insignificant association between use of ATM and sex of respondents.

Age is one of the explanatory variables related to ATM users and non-users. The survey results revealed that out of the total respondents 6.54 percent of them were below 20 years old, 51.15 percent of them were between 21-30 years old, 28.08 percent were fall between 31-40 years old and the rest 14.23 percent were greater than 40 years old. However, most of ATM users (67.47) and non-users (44.68) were the age between 21-30 and 31-40 years old, respectively while few of ATM users (6.02) and non-users (4.26) were the age fall above 40 and below 20 years old, respectively. The chi-square result also shows that there is statistically significant association between age and use of ATM services at one percent probability level ($p < 0.01$).

Table 5. Demographic Characteristics of Respondents

Characteristics of Respondents	Non-Users (N=94)		Users (N=166)		χ^2 -value	Total (N=260)	
	Freq.	%	Freq.	%		Freq.	%
Sex							
Female	36	38.30	56	33.73	0.547	92	35.38
Male	58	61.70	110	66.27		168	64.62
Age							
<20 years	4	4.26	13	7.83	61.255***	17	6.54
21-30 years	21	22.34	112	67.47		133	51.15
31-40 years	42	44.68	31	18.67		73	28.08
>40 years	27	28.72	10	6.02		37	14.23
Education level							
Illiterate	47	50.00	7	4.22	109.259***	54	20.77
Primary school	22	23.40	13	7.83		35	13.46
Secondary school	9	9.57	23	13.86		32	12.31
Diploma	6	6.38	32	19.28		38	14.62
Degree and above	10	10.64	91	54.82		92	35.84
Marital status							
Married	78	82.98	112	67.47	7.337**	190	73.08
Unmarried	16	17.02	54	32.53		70	26.92
Monthly Income (Birr)							
Below 2000	13	13.83	34	20.48	11.047**	47	18.08
2001-4000	21	22.34	35	21.08		56	21.54
4001-6000	31	32.98	27	16.27		58	22.31
>6000	29	30.85	70	42.17		99	38.08
CBE experience							
<1 year	11	11.70	18	10.84	9.888**	29	11.15
1-3 years	40	42.55	41	24.70		81	31.15
4-6 years	13	13.83	30	18.07		43	16.54
> 6 years	30	31.91	77	46.39		107	41.15
Perception							
Not important	44	46.81	0	0.00	127.612***	44	16.92
Neutral	33	35.11	29	17.47		62	23.85
Important,	17	18.09	137	82.53		154	59.23
Availability of ATM							
No	34	36.17	3	1.81	58.061***	37	14.23
Yes	60	63.83	163	98.19		223	85.77

*** and ** are significant at 1 and 5 percent probability level.

Source: Computed from the survey data

The result of descriptive statistics reveals that 54 (20.77 percent) respondents didn't attend any formal education or illiterate, some 35 (13.46 percent) respondents attended primary education. On the other hand, 32 (12.31 percent) and 38 (14.62 percent) respondent were attended secondary school and holding diploma level, respectively while the rest 92 (35.84 percent) of respondents have degree and above as shown in table 3. The use of ATM services relative to their educational level showed that among 50 percent of non-users did not attend any formal education whereas the remaining 50 percent were attending formal education. In contrast, majority of ATM users (54.82 percent) had degree and above while only 4.22 ATM users did not attend formal education. This result indicated that most of ATM users were relatively educated as compare to non-users. The chi-square result also indicated that, there was significant association between educational level and use of ATM services at one present probability level ($P < 0.01$).

Regarding the marital status of the respondents, out of the 260 sample, as depicted on table 2, 73.08 percent respondents were married, and the rest 26.92 percent were unmarried. Meanwhile, 82.98 percent and 67.47 percent of non-users and users respectively were married. This indicated that most of non-users were married as compare to ATM users. Statistically, the results of chi square revealed that marital status has significant association with the use of ATM services at five present probability level ($p < 0.05$).

The result of descriptive statistics reveals that 99 (38.08 percent) respondents monthly income were more than birr 6000 while 47 (18.08 percent) respondents earn less than birr 2000. Among ATM users, 20.48, 21.08, 16.27 and 42.17 percent of respondents monthly earnings were below Birr 2000, 2001-4000, 4001-6000 and above 6000, respectively. On the other hand, 13.83, 22.34, 32.98 and 30.85 percent of non-users monthly income fall below Birr 2000, between birr 2001-4000, 4001-6000 and birr 6000, respectively. The chi-square result also shows that the association between monthly income and use of ATM has significant at less than five percent probability level. This implies the customers who have relatively higher monthly income, the probability of using ATM services is high and vice versa.

Numbers of years as CBE customers (experience) is another explanatory variable. The result of descriptive analysis indicated that 29 (11.15 percent) respondents have below 1 year experience as customers of CBE; 81 (31.15 percent) respondents have 1-3 year experience as customers of CBE; 43 (16.54 percent) respondents have 4–6 year experience as customers of CBE and majority 107 (41.15 percent) respondents have above 6 years work experience as customers of CBE. Meanwhile, majority of ATM users (46.39 percent) and non-users (42.55) have above 6 years and between 1-3 year experience as customers of CBE, respectively. Moreover, the chi-square result shows that the association between CBE customer experiences and use of ATM service is significant at five percent probability level. This implies customers who have high experience as customers of CBE have better in use of ATM services than those who have less experience.

Regarding to perception of ATM services, the results also revealed that 59.23, 23.85 and 16.92 percent respondent perception about ATM service is important, neutral and not important, respectively. Meanwhile, 82.53 percent of ATM-users perceived ATM service is important where as 46.81 percent of non-ATM users perceived, ATM service is not important. The result indicated that respondent with good perception on ATM service may have high probability to use ATM services as compare to those who have less perception. The chi-square result reveals that strong and significant association between having good perception and use of ATM services at one percent probability level ($p < 0.01$).

The results also revealed that, about 63.83 percent (60 out of 94) of non-ATM users and 98.19 percent (163 out of 164) of ATM users respondent confirm that ATM machine is available in their location. This figure showed, higher proportion of ATM users have location advantage and ATM machine available in their location as compare to non-ATM users. The chi-square test also indicated that there is significant ($P < 0.01$) association between adoption and availability of ATM.

4.1.2. Frequency use of ATM and types services

The frequency distribution of ATM service use status of the ATM users respondents are presented in Table 4. The result indicated that, 34.34 percent (57 out of 166) of the ATM user

respondents had been using ATM service ‘regularly’, 60.84 (101 out of 166) of the ATM user respondents had been using ATM service ‘sometimes’, 4.82 percent (8 out of 166) of the ATM user respondents had been using ATM service ‘rarely’. This shows that about two-third ATM users do not use ATM services ‘regularly’.

Table 6. Frequency use of ATM service

Use of ATM	Freq.	Percent
Regularly	57	34.34
Sometimes	101	60.84
Rarely	8	4.82
Total	166	100.00

Source: Computed from the survey data

The study also analysis the frequency of ATM services for different purpose (Table 5). The result of descriptive statistics show that the majority of ATM users, 59.04 percent, reported that they ‘sometimes’ use ATM for cash withdrawal whereas a minority of 0.6 percent, never used use ATM for cash withdrawal.

Regarding fund transfer service, majority of ATM user respondents (57.83 percent) ‘never’ used ATM service for fund transfer whereas 4.82, 6.02 and 31.33 percent of ATM users said that they use ATM for fund transfer regularly, sometimes and rarely, respectively. This implies most of ATM cardholders do not use ATM for fund transfer, this may be due to lack of awareness. Likewise, concerning mini statement service, 87.35 percent, ‘never’ used ATM for mini statement, whereas the rest 12.65(1.81+4.82+6.02) percent of ATM user, use ATM for mini statement ‘regularly’, ‘sometimes’ and ‘rarely’, respectively. On the other hand, 50.60 percent of the ATM user respondents reported that they sometimes use ATM service for balance inquiry while 9.64 percent used ATM ‘regularly’, 18.67 percent used ‘rarely’ and 21.08 percent never used ATM for balance enquiries.

In general, the result of ATM service and frequency use reveals that most of the ATM users didn’t use ATM for fund transfer (57.83 percent) and mini statement (87.35 percent) while more than half of ATM users had been used ATM for cash withdrawal and balance enquires

sometimes and rarely. This indicated that even if ATM machine have proved various services, most of ATM customers have not used those services particularly fund transfer and mini statement services. This may be due to lack of awareness and less knowledge on the diverse functions among ATM users.

Table 7. Types of ATM services and frequency of use

Types of ATM services	Regularly		Sometimes		Rarely		Never	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Cash withdrawal	56	33.73	98	59.04	11	6.63	1	0.60
Fund Transfer	8	4.82	10	6.02	52	31.33	96	57.83
Balance enquiries	16	9.64	84	50.60	31	18.67	35	21.08
Mini statement	3	1.81	8	4.82	10	6.02	145	87.35

Source: Computed from the survey data

4.1.3. Challenges associated with ATM services

The challenges associated with ATM were ranked based on ATM users response. The main challenges associated with ATM have been identified and presented in Table 6. The main challenges of ATM service and ranks are as follows.

The result indicated that inadequacy of number of ATMs and Poor ATM network were the first two challenges associated with the use of ATM, respective. Inadequacy of number of ATMs has been ranked by the ATM users in the first position with 76.5 percent while the second most challenges related to ATM service was poor ATMs network ranked with 75.9 percent. The number of installed machine is very few as compared to the number of customers looking for the machine and it results a long and tiresome queue most of the time. Likewise, out of the total ATM user, 67.50 percent them reported, ATM out of service was another challenge and ranked third.

Table 8. Challenges associated with ATM

Challenges associated with ATM	Freq.	%	Rank
Poor ATMs' network	126	75.9	2 nd
ATM out of service	112	67.5	3 rd
Inadequacy of number of ATMs	127	76.5	1 st
Lack of sufficient cash balance on ATM	83	50	6 th
Failure to gate immediate response when ATM machine deduct customers money	102	61.4	4 th
Debiting accounts without dispensing cash to customers	97	58.4	5 th
ATM location inconvenience	43	25.9	8
ATM swallow card and fails to return	79	47.6	7 th
CBE is not efficient in making quick delivery of ATM card for new card application	36	21.7	9 th
Inability to get ATM service of CBE out of Haramaya.	24	14.5	10 th

Source: Computed from the survey data

Other challenges, failure to gate immediate response when ATM machine deduct customers money; debiting accounts without dispensing cash to customers; lack of sufficient cash balance on ATM; ATM swallow card and fails to return; ATM location inconvenience; CBE is not efficient in making quick delivery of ATM card for new card application; lack of access CBE of ATM service of out of Haramaya were ranked based on ATM user from fourth to tenth, respectively.

4.1.4. Level of Customer Satisfaction with ATM services

In order to find out the level of satisfaction of customers, the ATM user respondents were asked to express their satisfaction with ATM service quality. The overall customer satisfaction with the ATM service delivery of the CBE bank calculated using the 5-point Likert scale (starting with 1- Very dissatisfied, 2-Dissatisfied, 3-Neutral, 4-Satisfied, and 5-Very satisfied) for each attributers.

The result indicated that the average satisfaction level of ‘the ATM services are customer-oriented’, ‘the ATM services quality is good’, ‘the ATM services completely meet your expectations’, and ‘remain as a customer of the ATM services’ were 3.37 (67.4 percent); 3.72 (74.4 percent); 3.44 (68.8 percent) and 3.67(73.4 percent), respectively. Table 7, also indicated that the mean score of overall customer satisfaction (average of the above four attributers) toward the ATM services was 3.55, which is above average mean score. This shows that on average satisfaction level of the quality of ATM services delivered by three CBE branches in Haramaya area was 71 percent.

Table 9. Customer Satisfaction with ATM services

Variable	Mean (%)
The ATM services are customer-oriented	3.37 (67.4)
The ATM services quality is good.”	3.72 (74.4)
The ATM services completely meet your expectations	3.44 (68.8)
Remain as a customer of the ATM services	3.67(73.4)
Overall satisfaction with CBE ATM service	3.55 (71.0)

Source: Computed from the survey data

4.1.5. ATM service quality dimensions

Table 8 shows the mean score for the seven dimensions of service quality. The ATM users asked their level of satisfaction on ATM Service quality against the 32ATM service quality attributes that was adopted from previous studies. These ATM service quality attributes are classified into seven services quality dimensions: Tangible, Reliability, Responsiveness, Assurance, Empathy, Security and easy to use.

As clearly indicate in the Table 8, ATM users respondents on tangible, reliability, responsiveness, assurance and empathy were 3.37, 3.22, 3.45 3.80 and 3.64, respectively in terms of mean score which have above average. Similarly, security and easy to use services quality dimensions have the first and second mean score with 4.12 and 4.07, respectively.

Table 10. Service quality dimensions mean and standard deviation

Service quality dimensions	Mean	Std. Deviation	Minimum	Maximum
Tangible	3.37	0.63	1.5	5
Reliability	3.22	0.60	1.17	5
Responsiveness	3.45	0.66	1	5
Assurance	3.80	0.90	1	5
Empathy	3.64	0.71	1	5
Security	4.12	0.72	1	5
Easy to use	4.07	0.58	2	5

Source: Computed from the survey data

According to Table 8 the security dimension of service quality is carried out superior to the other six dimensions with a mean score of 4.12. This indicates the commercial banks are performing at satisfactory level in security services such as login process, secured from theft and fraud, and keeps personal data as private. The second dimension as per the rating of the ATM customers is easy to use with a mean score of 4.07. The ATM customer perceived that the banks are performing better in ATM machine provides clear instructions on usage, easy to use for transactions, easy to understand of language, provides graphics and adverts of bank services.

The third service quality dimension of ATM service is assurance with 3.80 mean score. This implies that the bank is performing good sufficient advice about ATM usage and Security, and sufficient security at ATM stations. The fourth dimension is empathy with mean score 3.64. This indicated that the bank performing at satisfactory in customer management particularly employees are friendly and easily accessibility to solve in dealing with customers as well as to make ATM card application process easy. The fifth and sixth service quality dimensions of ATM service are responsiveness and tangible with mean score of 3.45 and 3.37, respectively. In this denotes that regarding responsiveness, the bank perform above average to satisfy the ATM users to ensure sufficient cash are availability in ATMs, lost ATM cards are quick

replaced, less waiting time at ATMs, swallowed ATM cards are returned quickly. In the other hand concerning tangible also the bank perform good to have sufficient number of ATMs per ATM station and convenient locations, provides readable slips and clean notes to ATM users.

The least performed dimension is reliability with a mean score of 3.22 which is slightly high than average score. As per the response of the customers, commercial banks somehow agree that the bank exhibit average performance in providing wide range of services, and speed, easily usability and accessibility of ATM machine.

4.2. Econometrics Results

As already discussed in chapter 3, the binary logit and two-limit Tobit model were used to identify factors influencing customer's use of ATM and the determinants of customer's satisfaction with ATM services, respectively. Prior to running the logit and Tobit model, the hypothesized explanatory variables were checked for the existence of multicollinearity. Multicollinearity problem arises when at least one of the independent variables is perfect or is an exact linear relationship of the other independent variable (Gujarati, 2003). The existence of multicollinearity might cause the estimated regression coefficients to have the wrong signs and smaller t-ratios that might lead to drawing the wrong conclusions. Therefore, it was important to check whether serious problems of multicollinearity existed among explanatory variables of the model estimation. Thus, the problem of multicollinearity was checked using Variance Inflation Factor (VIF). The results indicated nonexistence of a serious multicollinearity problem. That is a mean VIF of 1.64 for factors influencing customer's use of ATM services (logit model) and 1.81 for the determinants of customer's satisfaction with ATM services (tobit model) (Appendix Table 1 and 2)

4.2.1. Factors influencing customer's use of ATM services

In this section, the results of the logistic regression model used to identify factors affecting customers use ATM services in Haramaya area CBE branches. As indicated earlier, the dependent variable in this model is a binary variable indicating whether the customers were used ATM or not. The Wald test of the model (Wald Chi-squared = 65.78 and P= 0.000) is

significant at the 1 percent probability level, implies that the overall model is fitted and the explanatory variables used in the model were collectively able to explain customers use of ATM.

As shown in Table 9, eight explanatory variables were considered in the econometric model out of which, 4 variables were found to significantly influence the probability of being use of ATM services. Accordingly, Age of customers, Education level of customers, Availability of ATM in customers location and Perception of ATM were important factors, influencing the probability of use of ATM service whereas Sex, Marital status and Experience of customers were not significantly influence use of ATM services.

Table 11. Factors influencing customer's use of ATM services

Logistic regression			Number of obs	260
			Wald chi2(7)	65.78
			Prob > chi2	0.000
			Pseudo R2	0.5459
			Log pseudolikelihood	-77.2483
Variables	Coef.	Std. Err.	z	P>z
Sex	0.5159	0.4933	1.05	0.296
Age	-0.6778	0.3489*	-1.94	0.052
Education level	0.6810	0.1662***	4.1	0.000
Marital status	-0.2403	0.5390	-0.45	0.656
Income	-0.1504	0.2106	-0.71	0.475
Experience	0.1977	0.2557	0.77	0.439
Availability of ATM	2.2864	1.1290**	2.03	0.043
Perception of ATM	2.0149	0.3386***	5.95	0.000
_cons	0.9421	1.9333	0.49	0.626

***, ** and * significant at the 1, 5, and 10% probability levels, respectively

Source: Computed from the survey data

The results of the logit model reveal that age of customer's affected the use of ATM services negatively at less than 10 percent level of probability. This implies that older CBE customers

were less likely to use ATM services as compare young customers. The study further infer this to the inverse relationship between age and use of ATM machine: as the age of customers increases, their use of new technology decreases because the old customers opt for the conventional banking system to deposit or withdraw for purposes as well as risk avert behaves. The result of descriptive statistics also support the result obtained from logit model, that is most of ATM users were young customers (67.47) the age range between 21-30 years. Evidence from Lee *et al.*, (2003), Kolodinsky *et al.*, (2004) and Choudhury and Bhattacharjee (2015), also suggested that age of customers were negatively related to the consumer probability to adopt ATMs.

The results of the logit model reveal that, education have a statistically positive association with use of ATM at a one percent probability level. It's believed that this was related to the capacity of education in increasing customers' knowledge and information absorption about new technology and services. In other word, customers with high year schooling have no trouble gathering and analyzing information, and they are better able to make meaningful assessments of new technology and services than customers with less years of schooling. Thus study can say that more the education level, the more is the chance of ATM adoption. The findings comparable with the result of Choudhury and Bhattacharjee, (2015) and Kolodinsky et al., (2004) who studied impact of socio economic factors on adoption of e-banking amongst salaried employees and the adoption of electronic banking technologies by US consumers, respectively. They found that customers with a higher level of education were more likely to use E-Banking (ATM card, Credit card, Mobile Banking).

Availability of ATM machine in customers location is another important factor that affect use of ATM services positively and significantly ($p < 0.05$). This indicated that the customers who easy access to ATM machine (ATM machine availability in their location) were more like to use ATM services as compared to less access to ATM machine customers. The reason behind this is that, availability of ATM machine in customers location is increase accessibility as well as save time and money for ATM customers which, in turn, motivate them to use ATM services. Our results suggest that customers from available ATM machine have the chance of use ATM services than customers from less available ATM machine.

Other important variable positively and significantly associate with use of ATM is customers perception on ATM. The use of ATM increased with the perception of customers about important of ATM services ($P < 0.01$). This implies that customers who positive perception on ATM were more like to use ATM services than customers who have negative and neutral perception on ATM. Therefore, the study concluded that customers who have positive perception would preferably to use ATM services. According to Lee et al., (2003) the more a consumer perceived the advantages of electronic banking (convenience and effective management of personal finances) the more likely to adopt computer banking and ATMs.

4.2.2. Effect of ATM services quality on customer's satisfaction

Table 10 presents the tobit model result of the determinants of customer's satisfaction with ATM services in Haramaya area CBE branches. As indicated earlier, the dependent variable in this model is customer's satisfaction with ATM services which is continues but its value ranged between 0 and 1. Before interpreting the results, it is essential to determine the statistical validity of the tobit model. The Likelihood Ratio (LR) Chi-Square test (LR χ^2 (7) = 65.78 and $P = 0.000$) is significant at the 1 percent probability level, implies that the overall model is fitted and the explanatory variables used in the model were collectively able to explain customer's satisfaction with ATM services.

As shown in Table 10, seven service quality dimensions (independent variables) were considered in the econometric model out of which, three variables were found to significantly influence the customer's satisfaction. Accordingly, reliability, responsiveness and easy to use were important factors, determine customer's satisfaction with ATM services while the remain explanatory variables such as Tangible, Assurance, Empathy and Security were insignificant.

The results of the tobit model reveal that, one of the influential factors for customer satisfaction is reliability. Reliability service dimension was positively and significantly influence customer satisfaction at one percent probability level. ATM provided wide range of services and transactions are accurate as well as easily accessed and usability will create very positive perceptions of quality and enhance the customer satisfaction. The findings from the

tobit regression analysis with regards to this dimension is similar with the work of Ibanez *et al.*, (2006) examined the relationship between service quality dimensions and customer satisfaction. They found a significant and positive association between reliability of services and level of customer's satisfaction.

Table 12. Factors influencing customer's satisfaction with ATM services

Tobit regression		Number of obs	166	
		LR chi2(7)	62.42	
		Prob > chi2	0	
		Pseudo R2	-1.637	
		Log likelihood =	50.2747	
Variables	Coef.	Std. Err.	t	P>t
Tangible	-0.0258	0.0325	-0.79	0.429
Reliability	0.0962	0.0255***	3.78	0.000
Responsiveness	0.1113	0.0285***	3.9	0.000
Assurance	-0.0094	0.0209	-0.45	0.654
Empathy	0.0227	0.0274	0.83	0.409
Security	-0.0409	0.0261	-1.56	0.120
Easy to use	0.0914	0.0338***	2.7	0.008
_cons	-0.1492	0.1153	-1.29	0.197
/sigma	0.1787	0.0098		

***, ** and * significant at the 1, 5, and 10% probability levels, respectively

Source: Computed from the survey data

Another important service dimension positively and significantly influence on customers satisfaction is responsiveness ($p < 0.01$). Under this dimension, quick replacement of lost cards, employee effectiveness in solving ATM related problems, employee speed in responding to ATM problem, returning fast swallowed cards and cash availability in ATMs were also create very positive perceptions of quality of ATMs services which may increase customer satisfaction. Sulieman (2011) also found that reliability have significant and positive relationship with customer satisfaction.

Easy to use dimension was hypothesized to influence customer satisfaction positively. The results of the tobit model also indicate that easy to use services dimension were positive and significant influence on customers' satisfaction. The possible explanation is that under easy to use, ATM machine provides clear instructions on how to use, have alternative language and easy to understand, and provides graphics and adverts of bank services are important factors enhance customers perceptions of quality of ATMs services as well as customers satisfaction. This result is similar with the work of Aslam *et al.*, (2018) examined the relationship between service quality dimensions and customer satisfaction.

5. SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

This chapter presents the summary, conclusions and recommendations of the present study.

5.1. Summary

One of the innovative technologies that overcome the problem associated with human bank tellers is ATM banking, which is significantly reducing the banking costs in the long run. In the other hand, it has significant effects on the productivity of the organization and individual through facilitate transaction and save cost and time. However, if the technology is not widely spread and sustainable, it is difficult to grasp the benefit as well as enhancing customer satisfaction which is key to business success of any banking institution in Ethiopia. For instance, the distribution of ATM to adult populations is far below compare to other countries. Accordingly, the distribution of ATM to 100,000 adult population in Ethiopia is 3.41 while, 6.12 and 5.07 in Sub Sahara African and low-income economies, respectively (Sileshi, 2019). Particularly in the study area, out of the total CBE customers in Haramaya area (Haramaya Branch, Finkile Branch and Weltesis Branch), only 19.6 percent customers has access to ATM services while 64 percent, 26 percent and 36.36 percent in Addis Ababa, Dire-dawa and national level, respectively. Therefore, this study was identify factors facilitate or impede to use of ATM services and examine the effect of ATM service quality on customer's satisfaction. More specifically, the objectives of the study are to describe demographic, socio-economic and institution among ATM users and non-users; to identify the factors influencing customer's use of ATM services; and to determine the effect of ATM services quality on customer's satisfaction in Haramaya area CBE customers.

The study was conducted in Eastern Hararghe, particularly Haramaya area all CBE branches. The study is utilized cross-sectional data collected from sample of 260 (non ATMs users =94 and ATMs Users=166) customers of CBE in Harmaya area branches using multi-stage stratified sampling procedure. To address the research objectives, the study was used descriptive statistics (mean, frequency, percentage, frequency and standard deviation), inferential statistical (chi square) and econometrics model (logistic and tobit regressions model).

The descriptive statistics result indicated that out of the total respondents, 166 (63.85 percent) and 94 (36.15 percent) were ATM users and non-users, respectively. Regarding respondents profile majority of the respondents 61.70 percent and 66.27 percent of them were male among non-users and users of ATM, respectively. The age distribution of the respondents, majority of ATM users were younger than non-ATMs users. Study also indicated that out of the total respondent most 190 (73.08 percent) were married and 70 (26.92 percent) were unmarried while majority of non-ATM users (82.98 percent) were married than ATM users (67.47 percent). Regarding education level 54 (20.77 percent), 35 (13.46 percent), 32 (12.31 percent), 38 (14.62 percent) and 92 (35.84 percent) respectively represented illiterate, primary school, high school, diploma, and first degree and above. However, ATM users had better education status than non-ATM users. Related to respondents' perception on important of ATM services, ATM users had positive perception as compare to non-ATM users. Likewise, most of ATMs users (98.19 percent) answered ATM machine were available in their location than non-ATM users (63.83 percent). Regarding experience as CBE customers, most of ATMs users had more than 6 years' experiences as CBE customers while majority of non-ATM users had 1-3 years' experience as CBE customers. Moreover, 20.48, 21.08, 16.27 and 42.17percent of ATM users and 13.83, 22.34, 32.98 and 30.85 percent of non-ATMs users monthly earned below Birr 2000, 2001-4000, 4001-6000 and above 6000, respectively. The chi-square results also revealed that age, education level, marital status, monthly income, experience as CBE customers, perception of ATMs services, availability of ATM had statistically association with use of ATM.

The result also indicated that the mean score of overall customer satisfaction toward the bank ATM is 3.55, which is above average mean score. Customers' expectation regard to ATMs services quality dimension, tangible, reliability, responsiveness, assurance and empathy were 3.37, 3.22, 3.45, 3.80 and 3.64 mean score respectively which have above average. However, security and easy to use service quality dimensions have the first and second mean score of 4.12 and 4.07, respectively.

The logit model results indicate that among eight explanatory variables, which hypothesized influence the use of ATMs services, four variables were statistically significant. Accordingly

Age of customers, Education level of customers, Availability of ATM in customers location and Perception of ATM were important factors significantly influencing the probability of use of ATM services. On the other hand, tobit model results indicates that out of seven services quality dimensions were considered in the econometric model, out of which, three variables were found to significantly influence the customer's satisfaction with ATM services. Accordingly reliability, responsiveness and easy to use were important factors, determine customer's satisfaction with ATM services while the remain explanatory variables such as tangible, assurance, empathy and security were insignificant.

5.2. Conclusions and Recommendations

Understanding and realizing the customer's satisfaction with ATM services and identify factors influencing use of ATM services are vital to bring strong trustworthiness services and customer oriented, as well as increase numbers of ATM users. Therefore, the main objectives of this study are identify the factors influencing customer's use of ATM services and determine the effect of ATM services quality on customer's satisfaction in Haramaya area CBE branches customers.

The results of descriptive statistics revealed that age, education level, marital status, monthly income, experience as CBE customers, perception of ATMs services, availability of ATM had statistically significant association with use of ATM. In addition, the mean score of overall customer satisfaction toward the bank ATM is 3.55, (71 percent) which is above average mean score. Customers expectation regard to ATMs services quality dimension, security and easy to use had the first (4.12 mean score) and second (4.07 mean score) respectively while reliability was the least (3.22 mean score).

The logit model results indicate that among eight explanatory variables, four variables were statistically significant. Accordingly Age of customers, Education level of customers, availability of ATM in customers location and Perception of ATM were important factors, significantly influencing the probability of use of ATM service. On the other hand, reliability, responsiveness and easy to use were important factors, determine customer's satisfaction with ATM services

Based on the findings and conclusions, the following recommendations are forwarded to the management of the bank.

- ✓ Education and perception on ATM are an important variable to enhance the use of ATM. Hence, management of the bank should create awareness about the important of ATM and how to utilize through adverting and CBE TV and radio programs.
- ✓ Availability of ATM machine is another significant variable which positively influence use of ATM. Therefore, management of banks should increase the availability ATM machine by increase the numbers of ATMs station where the ATM machine not available.
- ✓ Easy to use dimension is one of the most important factors influencing customer satisfaction. Thus, management of banks should see to the development and design of less complex and easy to use systems (ATM machine provides clear instructions on how to use, have alternative language and easy to understand, and provides graphics and adverts of bank services) that do not require a lot of mental and physical effort to accomplish transactions.
- ✓ Another important factors influencing customer satisfaction is reliability dimension. However, as indicted result the least satisfy dimension by the customers was reliability. Therefore, the bank have to put effective ATM management and maintenance programmes to keep ATMs in good working, and to have power back up to avoid sudden system failure that may enhance the customers satisfaction.
- ✓ Responsiveness dimension is also one of the most important factors influencing customer satisfaction. But, the customers of the banks were less satisfied with responsiveness attributes as compare to assurance, empathy, security and easy to use. Therefore, bank should have to put effective ATM management related to sufficient cash are availability in ATMs, lost ATM cards are quick replaced, less waiting time at ATMs, swallowed ATM cards are returned quickly, employee respond promptly with ATM problems, and employee are effective in solving ATM problems.

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7. APPENDICES

7.1. Appendix Tables

Appendix Table 1. Multicollinearity test with VIF for factors influencing customer's satisfaction with ATM services

Variable	VIF	1/VIF
Perception of ATM	2.07	0.4830
Age	1.87	0.5356
Education level	1.8	0.5541
Availability of ATM	1.76	0.5673
Experience	1.58	0.6314
Marital status	1.42	0.7033
Average monthly income	1.41	0.7103
Sex	1.18	0.8489
Mean VIF	1.64	

Appendix Table 2. Multi-collinearity test with VIF for effect of ATM services quality on customer's satisfaction

Variable	VIF	1/VIF
Tangible	2.1500	0.4647
Easy to use	1.9500	0.5118
Empathy	1.9300	0.5172
Responsiveness	1.8200	0.5487
Security	1.8200	0.5505
Assurance	1.8100	0.5524
Reliability	1.2100	0.8294
Mean VIF	1.8100	

7.2. Survey Questionnaire

QUESTIONNAIRES

ADOPTION OF AUTOMATED TELLER MACHINE AND ITS SERVICES QUALITY EFFECT ON CUSTOMER SATISFACTION IN COMMERCIAL BANK OF ETHIOPIA IN HARAMAYA AREA BRANCHES

Haramaya University College of Business & Economics Department of Management

Part I: Respondents' Biographical Information

Please put right mark (✓) in front of your choice box that express yourself.

(እባክዎን ለተጠቀሱት ጥያቄዎች መልስ ለሚስጡ ማዎችን አንዱ ላይ ራይት (✓) ምልክት ያድርጉባቸው።)

1. Gender (ጾታ) Male (ወንድ) Female (ሴት)

2. Age (እድሜ) _____ (አመት)

3. Education (የትምህርት ደረጃ)

Illiterate (ያልተማረ) Primarily School (የ1ኛ ደረጃ የጠናቀቀ) High School

(የ2ኛ ደረጃ የጠናቀቀ) Diploma (ዲፕሎማ) Degree (ዲግሪ) Masters +PhD

Degree (ማስተርስ) .

4. Marital Status (የጋቻ ሁኔታ) Married (የገባ) Un married (ያላገባ)

5. Profession (ሙያ)

Employee (ተቀጣሪ) Business (ነጋዴ) Farmers () Student (ተማሪ) House Wife (ቤት እመቤት)

6. Monthly Income (ወራዊ ገቢ) _____

Part II. General question

1. How long you have been the customer of CBE?

የባንክ ደንበኛ ከሆኑ ምን ያክል ጊዜ ሆኖት? __ (አመት)

2. Do you used ATM? Yes () No ()

3. How do you perceive important of ATM ? 1) Not important 2) neutral 3) Important,

4. If yes How long you have been using CBE service? _____ (አመት)

5. Do you access ATM in your location? Yes=1; No=0

6. Do you have adequate knowledge about use of ATM? Yes=1; No=0

Perception of ATM	Yes=1; No=0	Perception of ATM	Yes=1; No=0
Login process is secure		Comfortable	
Secured from theft and fraud		Flexibility	
Keeps personal data as private		Available at any time and any place	
Confidence to keep safely		User friendly	
Control		Simple and easy to understand	
Speed		No need technical skills	
Relevant			

7. How frequently do you use ATM service?
 (በየምንደረገዜው ሰጥነው የባንኩን ኤቲኤም የሚጠቀሙት?)
 Regularly (በየጊዜው) Sometimes (አላፎካልፎ)
 Rarely (እንብዛም አልጠቀምም) Never (ተጠቅሜ አለውቅም)

8. How often you use the following ATM services?
 ከታች የተዘረዘሩትን የኤቲኤም አገልግሎቶች በየምንደረገዜው ጠቀማሉ?

ATM services የኤቲኤም አገልግሎቶች	Regularly (በየጊዜው)	Sometimes (አላፎካልፎ)	Rarely (እንብዛም አልጠቀምም)	Never (ተጠቅሜ አለውቅም)
Cash withdrawal (ገንዘብ ወጪ ማድረግ)				
Fund Transfer (ከሂሳብ ወደሂሳብ ብርሃስተ ላላፍ)				
Balance enquiries (ባላንስ ማጠየቅ)				
Mini statement (ሚኒ እስቴትመንት ትማውጣት)				

Part III. General Customer feelings about CBE ATM Service (አጠቃላይ መረጃ ስለ ደንበኛው እርካታ)

1= Strongly Disagree, 2= Disagree, 3= Neutral, 4= Agree 5= Strongly Agree

S.N.	Customer satisfaction indicators	Response Options
1	In your view, the ATM services are customer-oriented	
2	In your view, the ATM services quality is good.”	
3	In your view, the ATM services completely meet your expectations	
4	You would like to remain as a customer of the ATM services	

Part IV. What are the most Five (5) frequently problem you face in using CBE ATM service?

No.	Description of problems	1. Yes 0. No
1	Poor ATMs‘ network	
2	ATM out of service	
3	Inadequacy of number of ATMs	
4	Lack of sufficient cash balance on ATM	
5	Failure to gate immediate response when ATM machine deduct customers money and fails to dispense the cash	

6	Debiting accounts without dispensing cash to customers	
7	ATM location inconvenience	
8	ATM swallow card and fails to return	
9	CBE is not efficient in making quick delivery of ATM card for new card application	
10	Inability to get ATM service of CBE out of Haramaya.	

Part V. How do you rate ATM service on the basis of the following items?

1= strongly disagree, 2= Disagree, 3= Neutral, 4= Agree 5= strongly agree

S.N	ATM Service Quality Attribute	Response Options
Tangible		
1	The bank have sufficient number of ATMs per ATM station. (በቂ የሆነ የኤቲኤም ማሽኖች በእየስቴሽኑ ይገኛሉ)	
2	ATM machines are placed at convenient locations የኤቲኤም ማሽኖች በአመቺ ቦታዎች ይገኛሉ።	
3	Corporate Brand Appearance On ATMs induced me የኤቲኤም ማሽኖች አገልግሎት የሚሰጡበት ቦታ ምልክቶች ለደንበኞች የሚታዩ ናቸው።	
4	ATM machines provides me readable Slips. (የኤቲኤም ማሽኖች የሚሰጡት ሰነድ ግልጽ ነው።)	
5	ATM machines issues clean Notes የኤቲኤም ማሽኖች ንጹህ ቢሮኖች ይከፋፈላሉ።	
6	ATM Stations areas and ATMs are Clean ኤቲኤም ማሽኖች ንጹህ እና አካባቢያቸው የጸዳ ነው።	
Reliability		
7	ATM provide me with wide range of services ኤቲኤም ማሽኖች የተለያዩ አገልግሎቶች ይሰጡልኝ	
8	ATM Transactions are accurate. ኤቲኤም ማሽኖች አገልግሎቶችን በትክክል ይፈጽማሉ (ሂሳብን በትክክል ቀንሶ ገንዘብ መክፈል)።	
9	The Speed of ATMs are good የኤቲኤም ማሽኖች ፍጥነት ጥሩ ነው።	
10	ATMs will not be out of order የኤቲኤም ማሽኖች አገልግሎት ውጭ አይሆኑም።	
11	ATM Systems are easily usability የኤቲኤም ማሽኖች በቀላሉ መጠቀም ይቻላል።	
12	ATMs are easily accessed. የኤቲኤም ማሽኖች ለአገልግሎት በቀላሉ ማግኘት ይቻላል።	
Responsiveness		
13	Sufficient cash are availability in ATMs በእየኤቲኤም ማሽኖች ውስጥ አገልግሎት ለማግኘት በቂ ገንዘብ ይኖራል።	
14	Lost ATM cards were quick replaced	
15	Less waiting time at ATMs ከኤቲኤም ማሽኖች አገልግሎት ለማግኘት የሚወስደው ጊዜ አጭር ነው።	
16	Swallowed ATM cards were returned quickly በኤቲኤም ማሽኖች ተይዘው የሚቀሩ ካርዶችን በቀላሉ መልሶ ማግኘት ይቻላል።	
17	Employee respond promptly with ATM problems የባንኩ ሰራተኞች በኤቲኤም አገልግሎት ላይ ለሚከሰቱ ችግሮች ጥንቃቄ ያሳያሉ።	
18	Employee are effective in solving ATM problems የባንኩ ሰራተኞች ከኤቲኤም ጋር ተያይዞ ለሚፈጠሩ ችግሮች ጥንቃቄ ያሳያሉ።	
Assurance		
19	Privacy at ATMs are good, በኤቲኤም ማሽኖች በምጠቀም በትግበራ የሚከሰቱ አይደሉም።	
20	The bank provides sufficient advice about ATM Usage and Security. ባንኩ ስለ ኤቲኤም ማሽኖች አጠቃቀምና የሆነ ምክርና መደረግ ስለሌለበት ጥንቃቄ ሰጥቶታል	

	∴	
21	There is sufficient security at ATM stations በቂ የሆነ ጥበቃ በኤቲኤም ማሸፍኛ አካባቢ አለ።	
Empathy		
22	The employees are friendly in dealing with customers የባንኩ ሰራተኞች ተግባር ከደንበኞች ጋር ጥሩ ግንኙነት አላቸው።	
23	ATM Fees are fair(free) የኤቲኤም ማሸፍኛ የአገልግሎት ክፍያ ተመጣጣኝ ወይም የለም።	
24	ATM card application process were easy የኤቲኤም ካርድ አገልግሎት ጥያቄዎችን በቀላል ለማስፈጸም ይቻላል።	
25	Employee of the bank are easily accessibility to Solve ATMIssues. የባንኩ ሰራተኞች ከኤቲኤም አገልግሎት ጋር ተያያዘ ለሚገጥሙ ችግሮች ጋር ማንኛውም ጊዜ መግኘት እችላለሁኝ	
Security		
26	Login process is secure	
27	Secured from theft and fraud	
28	Keeps personal data as private	
Easy to use		
29	ATM provides clear instructions on usage	
30	ATMs are easy to use for transactions	
31	ATM language is easy to understand	
32	ATM provides graphics and adverts of bank services	

THANK YOU FOR YOUR COOPERATION AND CONFIDENTIAL RESPONSE!