ADDIS ABABA UNIVERSITY

COLLEGE OF BUSINESS AND ECONOMICS

CHALLENGES AND OPPORTUNITIES OF ETHIOPAY ATM SERVICE

BY

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Declaration

I, the undersigned, declare that this thesis is my original work, prepared under the guidance of Mesfin Fikre (PhD). All sources of materials used for the thesis have been duly acknowledged, the researcher further confirm that the thesis has not been submitted either in part or in full to any other higher learning institution for the purpose of earning any degree.

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Addis Ababa University, Addis Ababa **June, 2018**

Endorsement

This thesis has been submitted to Addis Ababa University, collage of business and economics for examination with my approval as a university advisor.

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Advisor Signature

Addis Ababa University, Addis Ababa **June, 2018**

Challenges and opportunities of ethioPay ATM service

BY

GETACHEW TADESSE

A THESIS SUBMITTED TO ADDIS ABABA UNIVERISTY COLLAGE OF BUSINESS AND ECONOMICS IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE DEGREE MASTERS OF BUSINESS ADMINISTRATION

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Abstract

Irrespective of its importance to the customers and financial system, ethioPay interbank service is operating inefficiently. Since there are no studies conducted on this topic especially on ethioPay, this study has been conducted with an objective of identifying challenges and opportunities of ethioPay ATM from perspectives of interconnected banks and supervisors. This study used descriptive research design that uses descriptive survey. Primary data was collected from 68 workers at EthSwitch, interconnected banks and national bank through interviews and questionnaires. Data was analyzed through Statistical Package for Social Science (SPSS). The study identified challenges such as inappropriate ATM location, low level of customer awareness, inefficient ATM management by the banks, frequent network failure, low level of interest and skills of the banks to use the service. This service brought opportunities to banks by reducing investment cost and foreign currency outflow, decreasing unit cost of transaction, improving service quality and reaching customers of other banks. The study recommends creating awareness to customers, improving network quality, appropriate ATM location and proper follow up by supervising organs.

Key Words: ethioPay interbank ATM service, Descriptive Design, network failure, ATM location

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

The increasingly competitive environment in the financial service market has resulted in pressure to develop and utilize alternative delivery channels. Innovative banking has grown since then, aided by technological developments in the telecommunications and information or electronic banking also known as e-banking (Daniel, 2009). Like all other social entities the financial institutions are being constantly shaken by technological innovations and inventions.

According to Sultan (2009) the ATM is designed to replace the manual banking transactions in which customers walk into the bank to fill tellers, withdrawal booklets or cheque. The manual banking system are based on paper, it is time consuming and lacks efficiency in record keeping then giving room for manipulations. In recent time ATM has served as a device that enhances the cashless policy due to its functionality in fund transfer between one account and other.

Apart from using ATMs other computer-based/IT based banking technologies are available for examples internet banking and mobile banking, but the demand for cash still remains high and bank branches are rising continually worldwide as customers demand cash to be accessible at different locations. Internet, mobile and traditional banking cannot allow customers to have access to their cash at convenient (Odusina, 2014).

Almost half of the ATM transactions made that year occurred at machines that were not owned by the cardholder's bank, that is, at so-called foreign ATMs. For instance, till recently bank clients were used to stand in line and perform their financial transactions only from the ATM of their own bank, but now because of the interbank ATM networks they can perform it at any of the ATM (Mushabati, 2008).

Interbank ATM Networks also expands the geographic area within which customers can obtain transaction services. In addition, it enables small banks to provide some "big bank" Services. To achieve these benefits, interbank networks require some degree of

cooperation among participating financial institutions. Such cooperative agreements can be complex and unstable.

This study is intended to identify challenges and opportunities of ethioPay interbank ATM service.

1.2 Statement of the Problem

Firstbank (2014), Mushabati (2008), Odusina (2014), Sultan (2009), Yazeed, Yazidu, & Ibrahim (2013), and Schlichter (2015) identified importances of ATM and interbank network for customers, participating banks and financial system of the country. This studies gives precondition of infrustructure and management for the service effectiveness. This service is applicable in efficient finantial system. ATM creates a paperless office, ensures security of customers' accounts and privacy, it grants customers 24 hours access to their accounts, eliminates cash induced robbery, it reduces cost of operation and enhances proper and effective record keeping (Mushabati, 2008). Increased ATM usage is also helped by the fact that customers have now the flexibility of using ATMs of other banks, as most of the banks are part of major interbank networks (Sultan, 2009).

The interbank networks have brought together ATMs of several banks so that customers would gain access to any of the ATMs interconnected banks (Firstbank, 2014). Banks find it cheaper to pay membership fees to these networks as against setting up additional units in expensive to deploy areas (Odusina, 2014). The fixed costs associated with owning and operating a large network of ATMs is considerable (Schlichter, 2015). By spreading the fixed costs over a large volume of transactions, a bank can lower the unit cost of operating a network. However, only very large banks generate sufficient transaction volume to get profit from a proprietary network of geographically dispersed ATMs. In most cases, moreover, even large banks find off-premise ATMs (those that are not located at a bank branch) unprofitable, since these off-premise machines do not generate sufficient transaction volume to justify the added expenses. Interbank ATM plays a crucial role in banking industry by lowering the unit cost of operating an ATM network by increasing the number of transactions conducted at each ATM. To get these advantages, the interbank ATM service has to be efficient and effective. Centrally, strong

management is important. Inefficient service has adverse effect on customer satisfaction and banks performance (Yazeed, Yazidu, & Ibrahim, 2013).

Commercial banks in Ethiopia have played key roles in the establishment of EthSwitch S.C. for national central financial switch system and infrastructure wherein NBE has played decisive roles as overseer and consensus builder in the establishment process, as the financial sector regulator and owner of the national payment system modernization strategy. NBE creates cooperation among competitor banks in regulating National Payment System. EthioPay connects all banks' ATMs to each other. Its features include instant payment to bank Customers, next business day settlement between banks, online dispute management & settlement (EthSwitch, 2017). EthioPay interbank ATM service is established with an objective of providing efficient and effective ATM service to customers and interconnected banks. It is an opportunity for the banks to make their service accessible. On the other hand, customers get easily accessible service. But customers are paying higher service charge for other bank than own bank. In addition to this, service charge varies from bank to bank. There are frequent transaction declines that result in service dissatisfaction by customer and additional reconciliation tasks for the banks. According to (EthSwitch S.C;, 2017), 68% transactions are successfully processed whereas 32% are declined. From the successfully processed transactions 3.6% are reversed. The main reason for declined transaction is issuer is not operating properly and the transaction times out due to network problem. Adjustment for other bank transaction takes significantly longer time than adjustments for own bank transaction. These inefficiencies negatively affect perception of customers for this service and create additional reconciliation workload and customer complains. Therefore, the researcher found that studying challenges and prospects of ethioPay interbank ATM service is important (EthSwitch, 2017).

As far as the knowledge of the researcher is concerned, most of the studies such as Adeoti (2011), Bassey (2008), Daniel (2009), Haruna (2012), and Kumaga (2010), focused on importance of interbank ATM service but did not identify challenges and opportunities of the service on specifically in the case of ethioPay interbank ATM

service. As a result, this study intends to identify challenges and opportunities of ethioPay interbank ATM service.

1.3 Objectives of the Study

1.3.1 General Objective

General objective of this study is identifying challenges and opportunities of ethioPay Interbank ATM service.

1.3.2 Specific Objectives

i. Identifying effect of network failure on performance of ethioPay interbank ATM services;
ii. Examining role of interconnected banks on ethioPay interbank ATM services;
iii. Exploring effect of ATM location on efficiency of ethioPay interbank ATM services;
iv. Identifying effects customer awareness on performance of ethioPay interbank ATM services;
v. Analyzing supervising organs' effect on performance of ethioPay interbank ATM services; and
vi. Identifying role of ethioPay interbank ATM services on reducing costs.

1.4 Research Questions

1. What is the effect of network failure on performance of ethioPay interbank ATM services?
2. What is the role of interconnected banks on ethioPay interbank ATM services?
3. How does ATM location affect efficiency of ethioPay interbank ATM services?
4. What is the effect of customer awareness on performance of ethioPay interbank ATM services?
5. How do supervising organs affect performance of ethioPay interbank ATM services?
6. What is the role of ethioPay interbank ATM services on reducing costs?

1.5 Significance of the Study

This study will help the interconnected banks by identifying the challenges that they face and analyzing how they can overcome them. The study will provide deep knowledge for the researcher on the challenges and opportunities of the interbank ATM. The study will be useful in building up ground work for further research on the same area or other related fields. This study will help both supervisory organizations such as NBE and EthSwitch S.C by identifying their role in managing the service. The study may help for policy makers in making effective policy for financial system.

1.6 Scope and limitation of the Study

Regardless of the volume of work involved in interbank ATM services in different interconnected banks in branches and head offices, this study covered only head offices where majority of management and reconciliation activities take place. However, since activities in head offices supervise role of branches, the researcher believes the research finding represents overall interbank ATM services activities in interconnected banks. The interview and questionnaires were administered only to randomly selected concerned employees in EthSwitch and NBE.

1.7 Organization of the Study

The rest parts of the papers are organized as follows: The second chapter is about literatures reviews which include theoretical literature, and empirical literatures. The third chapter discusses about methodology of the study which includes description about study area, research design, data source and collection method, sampling techniques and sample size determination, method of data analysis and ethical consideration. The fourth chapter presents result and discussion. The last chapter, fifth chapter, is about conclusion and recommendation.

CHAPTER TWO: REVIEW OF RELATED LITERATURE

2.1 Theoretical Review

2.1.1 Electronic Banking (E-banking)

The revolution of e-payment as captured by Cheng (2006) in his work "Evolution of Electronic Payment" started in 1918, when the Federal Reserve Bank first moved currency via telegraph. However, it was not until the Automated Clearing House was set up by the U.S Federal Reserve in 1972 that electronic currency became widespread. This provided the U.S treasury and commercial banks with an alternative to processing cheque.

According to Daniel (2009) e-banking is electronic connection between the bank and customer in order to prepare, manage and control financial transactions. He also added that e-banking is online banking (or Internet banking) which gives customers the opportunity to conduct financial transactions on a secure website operated by their retail or virtual bank, credit union or building society. This implies that e-banking is a service that allows an account holder to obtain account information and manage certain banking transactions through a personal computer via the financial institution web site on the internet. He also indicated that e-banking has a variety of platforms which are: (a) Internet banking (or online banking), (b) telephone banking, (c) television-based banking, (d) mobile phone banking, and (e) PC banking (or offline banking) and (f) Automated teller machine (ATM). For many consumers, electronic banking means 24-hour access to cash through an Automated Teller Machine (ATM) or Direct Deposit of pay checks into checking or savings accounts. But e-banking now involves many different types of transactions. E-banking, also known as Electronic Funds Transfer (EFT) is simply the use of electronic means to transfer funds directly from one account to another, rather than by cheque or cash.

As evidenced by Abor (2014) technological advancement has revolutionized e-banking in Asia and Africa since people in these areas have embraced e-banking services which have contributed positively to the growth of the banking industry.

2.1.2 Importance of E-banking

The importance of e-banking cannot be over emphasized. E-banking provides easy access to banking services. The interaction between user and bank has been substantially improved by deploying ATMs, Internet banking, and more recently, mobile banking (Claessens, Dem, Cock, Preneel, & Vandewalle, 2012). According to Cheng (2006), it reduces the transaction costs of banking for both Small and Medium Enterprises (SMEs) and banks. SMEs need not visit banks for banking transactions, providing round the clock services. He also posits that e-banking ensures conveniences, quick services and access to the account from any part of the world. E-banking offers benefits to banks as well. Banks can benefit from lower transaction costs as e-banking requires less paper work, less staffs and physical branches. E-banking leads to higher level of customers' satisfaction and retention (Polatoglu & Ekin, 2011).

Adeoti (2011) opined the most dominant importance of electronic banking were easy access to money and account information 24-hour and time saving for customers to carry out other duties. Others included no more long queues as associated with the traditional mode of banking; transactions are very fast and convenient. Averagely, a customer spends less than 5 minutes transacting business with the use of E-banking products. Furthermore, E-banking products have security features such as username and passwords which are used to protect the products from easy theft.

2.1.3 Challenges of E-banking

Despite the benefits customers derive from e-banking, it has its challenges. Historically, new banking applications were implemented over relatively long periods of time (Basel Committee on Banking Supervision, 2001). Today, however, banks are experiencing competitive pressure to roll out new business applications in very compressed time frames, often only a few months from concept to production. This competition intensifies the management challenge to ensure that adequate strategic assessment, risk analysis and security reviews are conducted prior to implementing new e-banking applications. E-banking increases banks' dependence on information technology, thereby increasing the technical complexity of many operational and security issues and furthering a trend

towards more partnerships, alliances and outsourcing arrangements with third parties, many of whom are unregulated. This development has been leading to the creation of new business models involving banks and non blank entities, such as Internet service providers, telecommunication companies and other technology firms.

The internet is ubiquitous and global by nature. It is an open network accessible from anywhere in the world by unknown parties, with routing of messages through unknown locations and via fast evolving wireless devices. Therefore, it significantly magnifies the importance of security controls, customer authentication techniques, data protection, audit trail procedures, and customer privacy standards. Other e-banking related problems are user error, bad internet connections, access problems and security issues. Most of these problems happen less to outweigh its benefits (Polatoglu & Ekin, 2011).

2.1.4 Automated Teller Machines (ATMs)

Ebiringa (2010) defined Automated Teller Machine (ATM), also known as a automated banking machine (ABM) or Cash Machine and by several other names, as a computerized telecommunications device that provides the clients of a financial institution with access to financial transactions in a public space without the need for a cashier, human clerk or bank teller. On most modern ATMs, the customer is identified by inserting a plastic ATM card with a magnetic stripe or a plastic smart card with a chip that contains a unique card number and some security information such as an expiration date or CVVC (CVV). Okiro & Ndungu (2013) stated that ATM, also called 24-hour tellers are electronic terminals which give consumers the opportunity to bank at almost any time. ATM banking is one of the earliest and widely adopted retail e-banking services. It is described as a combination of a computer terminal, record-keeping system and cash vault in one unit, permitting customers to enter the bank's book keeping system with a plastic card containing a Personal Identification Number (PIN) or by punching a special code number into the computer terminal linked to the bank's computerized records 24 hours a day.

2.1.5 Importance of ATMs

Introduction and development of ATMs has given facility to the banks customers for banking beyond the banking hours. According to Okiro & Ndungu (2013) ATMs were introduced first to function as cash dispensing machines. However, due to advancements

in technology, ATMs are able to provide a wide range of services, such as making deposits, funds transfer between two or accounts and bill payments. Banks tend to utilize this electronic banking device, as all others for competitive advantage. According to the study, an ATM transaction is an average of about 6,400 per month compared to 4,300 for human tellers. According to Abor (2014), it saves customers time in service delivery as alternative to queuing in bank halls. In addition, ATMs continue to serve customers whiles human tellers in the banking hall have stopped work, thereby increasing productivity for the banks.

Adeoti (2011) stressed that the use of ATM is safe and convenient. The ATM has made settlement of bills system easy and saver. These benefits have resulted into phenomena growth in number of ATMs. Another great impact of automated teller machine and information Technology is that it contributes immensely to the promotion of marketing banking services. With the aid of Information Technology, funds can be moved one account to another at the push of a button, essential information relating to a transaction could be made available thousands of miles away within minutes. Today, banks are developing and deployed better personalized services through the use of automated teller machine. Banks are providing customers with Access Terminals with which they can access their balances and view or print movement in their accounts.

It allows withdrawing cash, normally up to a maximum limit per day. In spite of a number of innovative services being made available at many ATMs, cash withdrawal still remains the most accessed service at ATMs. However, the migration of routine bank transactions like cash withdrawals and balance enquiries from teller counters to ATMs significantly raises the potential for savings in employee costs and greater employee focus on value-added revenue-enhancing activities such as selling other financial products and advisory services to customers (Idowu, 2008).

Most utilities have inadequate infrastructure for receiving bill payments resulting in long queues at collection centers. Hence, bill payment at ATMs has achieved noticeable acceptance by bank customers. Most banks provide this service through bi-lateral

arrangements with bill-payment service providers. ATM users register their water, electricity and telephone utility accounts with banks, check their dues at ATMs, approve bill payments that are debited to their bank accounts and receive printed receipts for the transactions. This service has the effect of improving customer satisfaction for both the bank as well as the bill-payment service providers. Provide the balance of the accounts Order check book Transfer of money from one account to another account of the same bank (Adeoti, 2011).

ATM withdrawal transaction generates surcharge income for the owner of the ATM. It leads to reduction of the labor cost, as one ATM can perform the task which could be performed by several human tellers which cost of maintaining them are of the high side than maintaining the ATM much. Another advantage is that it facilitates reduction in paper work and documentation, with ATM paper work is drastically minimized as the customers receive the services through the machines. If you are running low on cash and it's later in the evening when all of the banks are closed, you can go to an automated teller machine to get money from your bank account. Instead of having to complete a withdrawal slip or write a cheque (Maiyaki & Mokhtar, 2010).

2.1.6 Challenges of ATMs

Despite the fact that ATM provides a great deal convenience to the customers, it also comes with various challenges which range from economic, security and legal challenges. According to Emmanuel (2011) stated that technological changes normally outpace legal and regulatory reforms but we face the situation where old rules are being used to govern new things. The fact that, the ATM allows a person to access money wherever he or she is in the world connotes the application of international banking law as well as security related matters.

Adeoti (2011) stated that ATM banking depends on information technology, thereby increasing the technical complexity of many operational and security issues and furthering a trend towards more partnerships, alliances and outsourcing arrangements with third parties, many of whom are unregulated. This service depends on performance

of telecommunication companies and other technology firms. Other challenges include user error, bad internet connections, access problems and security issues. Most of these problems happen less to outweigh its benefits (Polatoglu & Ekin, 2011).

The potential for identity theft is a major disadvantage related to automatic teller machines. Fraudulent card readers, called skimmers, are placed over the authentic reader to transfer numbers and codes to nearby thieves. Spy cameras are also used by password voyeurs to collect access codes. Lost access cards are another potential for fraud (Yazeed, Yazidu, & Ibrahim, 2013).

Occasionally, ATMs will malfunction and swallow a user's ATM card. The customer will then be directed to contact a service number or their bank and wait for a repair technician to retrieve this card. While this happens only rarely, if it occurs on a weekend or at night, the user may be left to wait for several days before they can again use their card, something that would not happen with a human cashier (Sultan, 2009).

Chung (2009) stated that privacy is not guaranteed because ATM transactions are completed using a keypad or touch screen. The people standing nearby may be able to see your personal identification number, or PIN, and account balance information, making it easier to steal your identity. However, once you are inside a bank, the account numbers and other personal information are maintained behind a desk and the information is more secure. Unlike bank tellers, ATMs do not require the person performing the transaction to present picture identification. Rather, the person must only insert a bank card and enter a personal identification number. If the bank card is stolen and the number ascertained, an unauthorized person can easily access the account.

ATMs can only perform relatively basic transactions. This means that people who need to complete these longer transactions will be forced to use the teller, restricting use of the ATM for people who need to complete simple business. In this sense, the ATM is rather like the express line in a supermarket-faster for some, but unavailable to others (Odusina, 2014).

2.1.7 Interbank (shared) ATM service

Mambi (2010) 21st century has produced a great achievement brought about by revolution in information communication technology (ICT), which has fundamentally changed society and will probably continue to do so in future. Technological development especially information technology has led to invention of Automatic Teller Machines (ATMs) which has far reaching consequence and has changed dramatically the provision of the core banking activities of deposits taking and payments. The banking sector takes advantage of such development to provide improved services to their customers.

Globalization has brought major changes to banking with respect to resources, markets, processes, and business strategies. This situation has led to a paradigm shift in operations. ICT (information communication technology) application has become strategic for supporting investment and operational decisions (Banker, Bardhan, Lin, & Chang, 2006). Over the years ICT has grown its support role to banking activities. At first, banking activities performed using computers were the very few simple ones, but presently, ICT supports almost all activities through the financial service cycle, including product design, development and marketing chain. E-Payment is a specific area of banking where ICT has found wide application. One area where ICT application has helped the operational environment of banking is the use of inter switch Automated Teller Machine (ATM) systems which integrates all licensed banks into a network, thereby reducing or eliminating the limitations of traditional branch-based nature of banking and making the promised real time- on-line concept of globalised banking a reality.

According to Howells (2008), ATMs were first introduced in 1967 in UK and the first machine was installed at Barclays bank in London. However, at the beginning they faced resistance from users as they did not trust them. The resistance faded as young people especially college students accepted the services with open hands. The use of this device has now become the way of life worldwide. It has been observed by the Congressional Budget Office (CBO) that technological advances have made the ATM machines more functional, cheaper and easier to accommodate. Hence all ATM users worldwide enjoy the ATM services.

The development of ATMs takes place in paces; originally ATMs were connected directly to an individual bank. Thus it allowed the access only for the customers of the same bank. The situation continued until 1974 when the first networked machines were invented. This allowed the customers to get cash from any ATM in the world regardless of bank affiliation. It is also allowed for banks to place ATMs in more than one area including shopping centers, sports arena or even in cruise ships. Throughout the 1970's and the 1980's interbank network like cirrus which is being owned by Master and plus which is being owned by visa were created to authorize transactions between the banks (Simpasa, 2011).

Elizabeth (2005) defined interbank ATM service as a computer network that connects the ATMs of different banks and permits these ATMs to interact with ATM cards of non-native banks. Therefore, a card holder of one bank will enjoy the ATM service of another bank which had reciprocal agreement. The interbank networks provide capabilities for all ATM cards within the same network to use other banks' ATMs that belong to the same network; however the customers will enjoy the basic services such as withdrawals and balance inquiries. Interbank ATM networks are created by setting up apex level switches. Interbank ATM networks are created between the ATM switches of different banks. The interbank ATM networks facilitate ATM card use of one bank at the ATM of another bank. This is done mainly for basic services like cash withdrawals and balance enquiry. Banks other than the bank of account holder charge a fee for providing the ATM facility to the customers known as interchange fee. This fee is later charged to the card issuing banks. Banks with larger ATM network treat interchange fee as an important stream of revenue.

Interbank networks are convenient because people can access the ATMs of other banks who are members of the network when their own bank's ATM is unavailable. Inter-banking ATM services is especially convenient for travelers traveling abroad, where multinational interbank networks, like Plus or Cirrus, are usually available (Cabas, 2011).

Each ATM withdrawal transaction generates surcharge income for the owner of the automated teller machine. Additionally, an automated teller machine can provide revenue from on-screen advertising, couponing, and alternative media (e.g., prepaid phone cards, postage stamps) dispensing opportunities. It leads to increase of the number of the customers who can be served, as the machine function faster than human being, hence increase the number of customer who can obtain services in a particular time. It facilitates direct input of information into the record keeping system; all the records of the information of the ATM transaction are automatically kept in the banks record keeping system. Not only do banks of which you are not a member charge fees for the use of their ATMs, but users are often charged surreptitious fees by their own banks for using other banks' ATMs--meaning the customer is docked twice for the same transaction (Chung, 2009).

Automated Teller Machine (ATM) technology has its significant impact in banking system in the world. The most significant impact of ATM technology is the customers' ability to withdraw money outside banking hours. Tremendous refinement in the functioning has made it possible to carry out almost complete banking with the machine at the customers' convenience and banker best interest. The above developments have necessitated inter-banking services on ATMs all over the world, but the issue is how the contract between banks involving customers' use of these services has been featured in law (Sultan, 2009).

Elizabeth (2005) identified that interbank ATM networks benefit banks and ATM users alike. Sharing lowers the unit costs of operating an ATM network by increasing the number of transactions conducted at each ATM within the network. Sharing also expands the geographic area within which customers can obtain transaction services. In addition, it enables small banks to provide some "big bank" services. To achieve these benefits, interbank networks require some degree of cooperation among participating financial institutions. Such cooperative agreements can be complex and unstable.

According to Elizabeth (2005) the fixed costs associated with owning and operating a large network of ATMs is considerable. Spreading these fixed costs over-a large volume of transactions, a bank can lower the unit cost of operating a network. However, only very large banks generate sufficient transaction volume to profit from a proprietary network of geographically dispersed ATMs. In most cases, moreover, even large banks find off-premise ATMs (those that are not located at a bank branch) unprofitable, since these off-premise machines do not generate sufficient transaction volume to justify the added expenses. Interbank networks, in contrast, enable banks to spread the fixed costs of an ATM network over a larger volume of transactions, thereby lowering the unit cost of transactions. Likewise, interbank networks can make off-premise ATMs profitable. Just as ATMs themselves are subject to falling unit costs, so is the sharing technology. The main element in the interbanking technology is the "switch" which facilitates the transfer of transactions between interbank network members. Transactions carried out by one bank's customer on another bank's ATM, referred to as "foreign transactions," are routed from the ATM, through the switch, and on to the data processor of the customer's bank. The switch has a large fixed cost, so switch costs per transaction fall as the number of foreign transactions increases, up to a large number of foreign transactions. The existence of falling unit costs in the switch means that *every* member of a interbank network benefits from an increase in foreign transactions originated at *any* member's ATM, and suffers from a decrease in foreign transactions. The interbank network's costs per switched transaction, which have to be met by member "switch" fees, thus should vary inversely with the number of foreign transactions.

According to Kumaga (2010) to achieve the benefits of sharing, all interbank networks require cooperation among banks that are otherwise competitors. For instance, member banks must agree on certain technological specifications for their ATMs to permit the transmission and processing of foreign transactions. In addition, members may be required to meet certain security standards or advertising practices to protect the public image of the network as a whole. In most interbank networks, cooperation is formalized through the organization of the network as a joint venture. In these networks, equity ownership and control of the decision-making processes regarding membership access,

organizational structure, and specific details of network operation are interbank between some or all of the members. Cooperation in interbank networks often extends to agreements on certain types of fees and prices. In addition to setting the switch fee and other network fees, interbank networks set the "interchange" fee which members pay to *each other* (as opposed to the network owners) to cover the costs of foreign transactions. The interchange fee is paid by the customer's bank to the ATM owning bank and is the same for all members. In turn, the bank that is charged the interchange fee often will pass this fee on to the customer who initiated the foreign transaction. Interbank networks set fixed interchange fees to avoid each individual member negotiating with each individual ATM-owner. The large number of bilateral negotiations necessary in such a situation likely would be prohibitively expensive to define and implement. Moreover, if some pairs of members could not reach agreement, the interbank network could no longer offer universal access to all customers of all members.

The widespread imposition of surcharges could have adverse impact on consumers. The introduction of surcharges would raise the price of foreign transactions both directly, through the surcharge, and indirectly, through the rise in the per unit network cost of foreign transactions. If the costs of sharing rise too much, the interbank network could break up, increasing the costs of *all* ATM transactions, not just foreign transactions. Moreover, surcharges could lead to the break-up of interbank ATM networks because banks might be reluctant to remain in sharing arrangements in which they have no control over the price that their customers pay to use other banks' ATMs. It is possible that banks could regain control by negotiating with ATM owners and setting up contracts on a case-by-case basis, but this may be prohibitively expensive. On the other hand, permitting ATM-owning banks to levy surcharges may have some beneficial effects, as well. It is possible, as advocates of surcharges argue, that the number of ATMs installed would increase. Under current interbank network practices, the interchange fee is the only compensation that an ATM owner receives for the costs of a foreign transaction. Thus, the supply of ATMs is restricted by the fixed interchange fee. If ATM owners in interbank networks were permitted to impose a surcharge and thus were able to capture

the full value of ATMs installed at popular locations, it is likely that more ATMs would be installed at such locations (Mushabati, 2008).

2.2 Empirical Reviews

Interbank ATM service improves customer service and ensures greater efficiency in the Banking sector. As different studies showed there are different opportunities and challenges on the service. According to Puopiel, (2014) opportunities of the service for the customers include predominant time saving, easy access to cash and convenient in the use of the products. Notwithstanding the benefits associated with interbank ATM service, there are challenges associated with the system. The paramount among them is the network failure. In the course of a transaction, the network could easily break down resulting in an incomplete transaction. Other challenges associated with the service is limit on amount of cash withdrawn, wrong debits being made and increase in bank charges for the use of the services. However, Puopiel (2014) showed that considerable education and marketing the service from the bank could attract more customers. Adoption of the products has influencing factors. Predominant factors are customer satisfaction and competition from other banks. Increasing competition among banks to increase or retain their customer base is driving the banks to continue to adopt the product.

Information technology has appreciable positive effect on banking productivity; casher's work, banking transactions, bank patronage, bank services delivery and customer services. In effect, it enhances savings mobilization and financial intermediation. Efficient payment systems rely on non-cash payments and an efficient and reliable payment system facilitates economic development (Okiro & Ndungu, 2013).

According to Kumaga (2010) electronic payments in most African countries is very limited in use or virtually non-existent. In most African countries the required infrastructure, legal and regulatory framework for electronic payments are lacking. Banks and other financial institutions are not adequately automated to enable e-banking and e-payment. Bassey (2008) revealed the challenges to the adoption of e-payment systems in

Africa. The author put the challenges into three categories namely "…the infrastructure, regulatory, cultural-cum-human dimensions". In the author's view the infrastructural challenge is the most paramount. Infrastructural challenges relate to ICT accessibility, affordability, networks, connectivity and usage. Related to these are issues of interconnectivity, network failure, low bandwidth, high cost of connectivity, and frequent power outage. This presupposes that the future of e-commerce in Africa is intrinsically linked with investments in IT infrastructure. This undoubtedly requires African governments and other stakeholders to invest hugely in IT infrastructure and to create a conducive environment for the same. Kumaga (2010) explained that lack of acceptance, ignorance, network lapses and lack of tips are the major challenges to the adoption of the e-ZWICH.

Ebiringa (2010) and Maiyaki & Mokhtar (2010) identified the advantages of interbank ATM service to the banks and customers. According to these studies advantages interbank ATM service include investment opportunities, reduction in costs (i.e. cost savings), effective service delivery, branding of interbank network, satisfaction of customers and competitiveness. According to Cabas (2011) interbank ATM facility resulted in speed of transactions and saved time for customers.

Inter banking ATM use is associated with many challenges which are difficult to control. Odachi (2010) identified that once there is theft in a customer's account it takes too long to identify the thief, and if he/she is identified, the prosecutions normally fail. Besides, the customer is not redressed. When the customer's card is trapped in the ATM other than that of his banker, it takes long to have his card recovered. Despite the general rule that a customer has the right to have his money on his demand, it sometimes becomes impossible to have money when there is a network failure. This becomes a very big problem to the customers who would go in the areas where their banker has no branch on assumption that they would withdraw from other banks vide ATM cards. All these problems are one sided and lie on the side of customers.

Idowu (2008) outlined the following as the reasons for adoption of e-banking in Nigeria; To the bank it includes: Facilitation of decision making, availability of essential information at finger tips, Improved service delivery, New product development, Savings in space and running costs, Relevance among league of global financial institution. To the customer they are: Quality services are enjoyed, Great reduction in time being spent in banking halls and own bank search, Confidentiality, Bank statement, balance etc. obtained at ease, 24/7 service delivery and Account could be accessed almost anywhere in the world. While to the economy: Creation of jobs and specialization are improved, Improvement in commerce is attained, Technological development is advanced, and Data bank for National planning is increased.

Ebiringa (2010) modeled five strategic decision clusters in which inadequate availability of quality infrastructure was identified as the most critical limitation to efficient e-payment system via ATMs. The conclusion therefore is that provision of adequate infrastructure such as power is critical for effective integration of the Nigerian banking system to the global network of electronic payment via ATMs, however for this to be possible, concerted effort must be made by stakeholders to resolve the lingering crisis in the energy sector.

According to Chung (2009) any bank participating in a interbank ATM network will have opportunities of enjoying customer access to far more than the bank alone could ever provide, making substantial cost saving compared with the cost of continually extending its ATM network on an independent basis, benefiting from the branding of the interbank network, achieving more financial resources and help for international ATM sharing.

Haruna (2012) conducted study to unravel the challenges and prospects associated with the Electronic Payment Systems in Ghana. The main task of this paper is to examine the challenges associated with the use of Electronic Payment Systems in retail payments. The Kendall's coefficient of concordance and the Kruskal Wallis test were employed to analyse data from respondents. The study revealed a number of challenges that are militating against the success of the Electronic Payment Systems service. Among these

are link failure, frequent breakdown of machines, slow process of service delivery, long queues and inaccessibility of the point of sale devices before and after banking hours. The findings show that despite these challenges, the prospects of the Electronic Payment Systems are great among both users and non-users.

2.3 National E-payment system in Ethiopia

According to EthSwitch S.C (2017) the development of Ethiopian banking system has largely been affected by the dominance of cash. In Ethiopia, cash is "king" since the bulk of personal consumption is done through the medium of cash. For big companies in particular, this has resulted in the problems of cost and delay, arising from the counting, bundling, transporting and depositing of large volumes of cash, as well as the risk and inconvenience of dealing with counterfeiting and the treatment of notes.

According to report of EthSwitch S.C (2017) though, there is no official statistics on the banking services of the country, it is estimated that out of a total population of 100 million, less than 10 percent are getting banking services. Cash remains as the main method of payment especially among individuals. Although the number of bank account holders is increasing since the liberalization of banking industry in the country, the account holders are mainly high-income earners in urban areas. This may be due to the concentration of bank branches at the major cities and towns. The payment system is manually handled using papers that moves from banks to National Bank of Ethiopia. To improve payment system of the country, the National Bank of Ethiopia (NBE) is working on the modernization of the National Payment System project that encompasses the following components:

1. RTGS (Real Time Gross Settlement);
2. ACH (Automatic Clearance House);
3. Central/ National Switch; and
4. Central Security Deposit (CSD).

According to instruction of National Bank of Ethiopia (2009) to Ethiopian Bankers Association (EBA) to handle the National Card Switch project implementation to create

interoperability among the ATMs and POS installed in the country. Upon the accomplishment of this assignment, there will be a switching company with unique brand that will be connecting all ATM machines and POS terminals from the currently fragmented card alliances. The unification of card alliances will ensure the effective usage of card payment infrastructure, bringing more convenience for card users and providing access to small banks. This National Card Switch solution shall be interfaced with the ACH of the National Bank of Ethiopia. This unified card payment switch infrastructure will be upgraded to the fully functional ACH in the future.

From the experience of other countries banking services, electronic payment systems are found to benefit commercial banks by extending bank customer base; reducing operating costs; enhancing customer service and improving banks' competitive advantage. For example, some proactive banks have considered cards as the strategic products to broaden their customer base, cut down paper-work, invoices and casher's service, and build competitive advantage over other banks without card products (National Bank of Ethiopia, 2009).

Jan (2009) opined that the development of the NPS infrastructure is a co-operative responsibility and the commitment and active participation of all stakeholders should be ensured. A safe, reliable and fast NPS infrastructure is crucial for the development and smooth functioning of the economy and financial sector and the development of financial markets. All stakeholders will therefore loyally cooperate to achieve the objectives and goals of the NPS modernization project. A special role in this process will be played by the banking community. Banks are the key players in the NPS due to their central role as payment services providers. Due to its overall responsibility for a sound currency the central bank has a central role in the development of the use of money as an effective means of payment. It will take the lead in the modernization process, establish a proper project structure and project management and ensure that all stakeholders will be involved in the project. The NPS has to adapt continuously to future challenges, technological developments, changing needs and possible threats. Also after the modernization project is completed and the final goals are achieved the central bank will

still play a central role as overseer of the National Payment System and as catalyst for change and development. It will establish a permanent framework for consultation, cooperation and decision taking that will ensure the awareness of stakeholders of payment issues and developments and the adequate adaptation of the NPS to a changing environment and demands. Competition between banks is at the heart of the financial system. However, a good balance has to be found between competition and cooperation on the building of a commonly used infrastructure and the standardization of payment instruments.

Access criteria should encourage competition and should promote efficient and low cost payment services. However, the advantages of open access should be weighted against the need to protect systems and their participants against excessive legal, operational or financial risks brought forward by the participation of an institution or group of institutions. If for this reason it is deemed necessary to restrict the access, these restrictions should be objective, based on appropriate criteria and all access criteria should be publicly available and transparent. Banks and other payment service providers allowed to participate in the infrastructure, compete on equal footing. All banks licensed by the NBE to be active in the payment area and fulfill the access criteria are eligible to clear and settle under their own name. The NBE as overseer and leader of the modernization process may also allow other institutions to participate in the systems if that is in the interest of the Ethiopian community as a whole. An infrastructure for payments is all about networks economies. By connecting the networks of individual banks optimal convenience and practicability for the users will be achieved while for the banking industry economies of scale and efficiency gains can be realized. Therefore banks should be willing to connect their networks. No incentives should be built in that prevent customers to send payments to clients of other banks or using the ATM and POS network of other banks, for instance by charging prohibitive fees for such activities. Neither should a bank charge such prohibitive fees to another bank for inter-bank transfers. Customers have the right to choose their bank freely or to change banks. They should be able to route all incoming and outgoing payment flows via the payment account they have with the bank of their choice. They should not be forced to open an

account with the bank of their employer under a payroll scheme or with the bank chosen by the sender of the payment such as pension funds. If the beneficiaries have opened an account with another bank the payments should be distributed by the bank of the sender/payer/employer via the inter-bank clearing and settlement infrastructure (Jan, 2009).

The NBE acts as the banker of banks and the cashier of the government. Settlement of inter-bank payments takes place in central bank money. Clearing and settlement of payments is the exclusive domain of banks and other institutions licensed by the NBE to provide payment services and to participate in the inter-bank clearing and settlement infrastructure (Jan, 2009).

2.4 EthioPay Interbank ATM Service

As stated by EthSwitch S.C (2017) EthSwitch S.C. is established to provide research, technical support and advisory services for member financial institutions in areas related to card and retail payment systems business development, risk management, security, dispute resolutions, and standardization.

The National e-Payment Switch is one of the four major components of the National Payment Systems (NPS) strategy being implemented by the National Bank of Ethiopia (NBE), in which modernization of the NPS takes the core. National Bank of Ethiopia (NBE), in 2009, has issued instruction to all Banks advising them to cooperate in the establishment of a central/national switch system. The major driver in the NBE instruction was to create interoperability among all electronic retail payment systems of the Banks and thereby expand access to financial services. After conducting study on the subject through an interbank technical committee established by the Ethiopian Bankers Association, which took lessons of similar experience in other countries, all Banks in the country (both public and private) agreed to establish the Interbank ATM Networks or the National e-Payment Switch as a share company wherein each Bank invested equally (Jan, 2009).

Ethiopian Bankers Association (2009) described ethioPay as the brand given the National

e-Payment Switch infrastructure and the newly established domestic card scheme for Ethiopia that the banks are connected to each other in a single network. The general benefits considered for establishing the interbank ATM Network (National Switch) are: Interoperability between providers; Gains from economies of scale arise as fixed costs are interbank across more transactions and more efficient technology is used; Easier access for new entrants to a particular payments stream, as access needs to be obtained only to the central switch rather than to every individual Bank; Assured stability, reliability and security standards including disaster recovery standards and business continuity plans; Enabling easier adoption of new innovation, sharing of costs and adoption of new standards; and Enabling a network effect, resulting in the wider application and use of electronic retail payments in the country.

There are 19 banks that are currently shareholders in EthSwitch S.C that include National Bank of Ethiopia, development bank of Ethiopia and all commercial banks in Ethiopia. Development Bank is in technical process of connecting to EthSwitch. There are 17 Commercial banks in Ethiopia that include; Abay Bank, Addis International Bank, Awash International Bank, Bank of Abyssinia, Berhan International Bank, Bunna International Bank, Commercial Bank of Ethiopia, Cooperative Bank of Oromia, Dashen Bank, Debub Global Bank, Enat Bank, Lion International Bank, Nib International Bank, Oromia International Bank, United Bank, Wegagen Bank and Zemen Bank.

The following figure represents Banks connected through ethioPay:

Figure 1 EthioPay Interbank Network

Source: EthSwitch S.C, 2017

2.5 Literature Gap

Most of the studies such as Adeoti (2011), Bassey (2008), Daniel (2009), Haruna (2012), and Kumaga (2010), focused on importance of interbank ATM service but did not identify challenges and opportunities of the service on specifically in the case of ethioPay interbank ATM service. As a result, this study intends to identify challenges and opportunities of ethioPay interbank ATM service.

2.6 Conceptual Framework

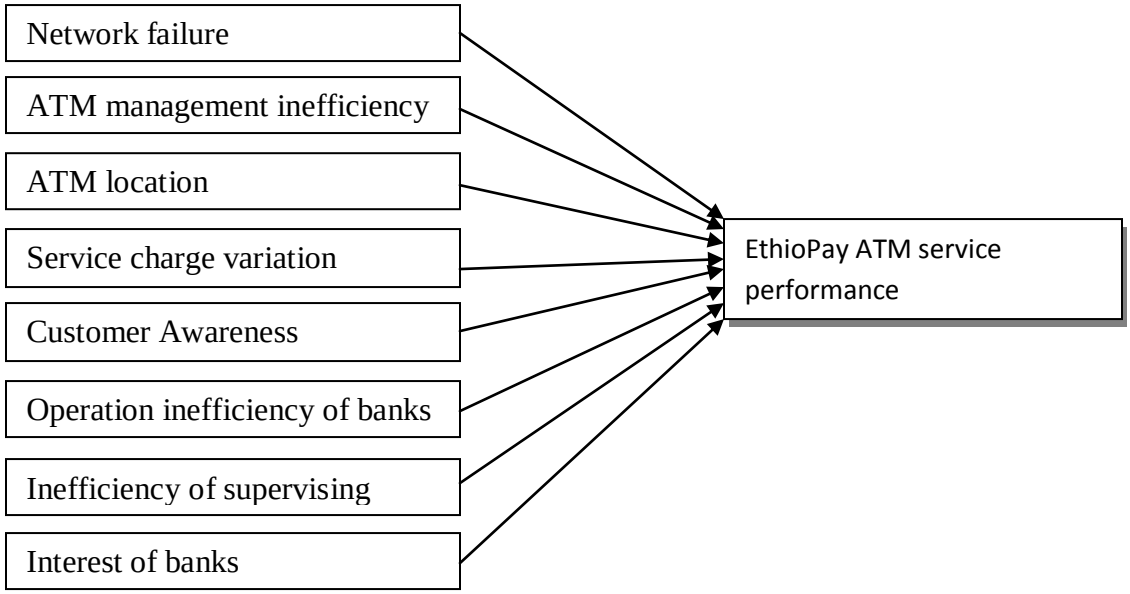

Figure 2 Conceptual Framework

Source: Researcher's design, 2018

CHAPTER THREE: METHODOLOGY

3.1 Study Area

The research is conducted and surveyed by using respondents from National Bank of Ethiopia, EthSwitch, and banks connected through ethioPay in order to examine the real situation taking place. This study is conducted in Addis Ababa where intended respondents for the study found. This area is selected because main activities of the service in interconnected banks such as management and reconciliation are based in head offices and main stakeholders such as NBE and EthSwitch are in Addis Ababa. For this reason the selected area of study enables better generalization.

3.2 Research Design

Designing a study helps the researcher to plan and implement the study in a way that will help the researcher to obtain intended results, thus increasing the chances of obtaining information that could be associated with the real situation (Burns & Grove, 2001). This study is an applied research which follows descriptive research designs in order to address the aforementioned objectives. It was conducted in Addis Ababa using the stakeholders of the service such as National Bank of Ethiopia, EthSwitch, and interconnected banks. The data used for the study were both quantitative and qualitative in which were collected from both primary and secondary sources. The researcher used the Cross-sectional field survey method to assess the challenges and opportunities of the service. In the cross-sectional field survey variables were measured at the same point in time by using questionnaires and interview. Hence, after the data were collected, the researcher analyzed the data by using descriptive analysis technique. Kothari (2004) notes that descriptive design is concerned with describing, recording, analyzing and reporting conditions that exist or existed. Engel (2009) argues that descriptive methods are widely used to obtain data useful in evaluating present practices and in providing basis for decision-making.

3.3 Population of the Study and Sampling Method

3.3.1 Population of the Study

According to (Hair, Joseph, William, Black, Barry, & Babin, 2010) target population is said to be a specified group of people or object for which questions can be asked or observed made to develop required data structures and information. This study used employees who are dedicated for the service as respondents. These employees are who works in national bank of Ethiopia, Etswitch, and commercial banks. 17 commercial banks are interconnected on ethioPay service. These banks include Abay Bank, Addis International Bank, Awash International Bank, Bank of Abyssinia, Berhan International Bank, Bunna International Bank, Commercial Bank of Ethiopia, Cooperative Bank of Oromia, Dashen Bank, Debub Global Bank, Enat Bank, Lion International Bank, Nib International Bank, Oromia International Bank, United Bank, Wegagen Bank and Zemen Bank.

Table 1 Population of the Study

No.	Participants	Population
1	National Bank of Ethiopia	4
2	EthSwitch	14
3	Abay Bank	5
4	Addis International Bank	6
5	Awash International Bank	11
6	Bank of Abyssinia	9
7	Berhan International Bank	7
8	Bunna International Bank	4
9	Commercial Bank of Ethiopia	17
10	Cooperative Bank of Oromia	6
11	Dashen Bank	12
12	Debub Global Bank	5
13	Enat Bank	6
14	Lion International Bank	8
15	Nib International Bank	7
16	Oromia International Bank	8
17	United Bank	11
18	Wegagen Bank	13
19	Zemen Bank	5
	Total	158

Source: Respective organs, 2017

3.3.2 Sampling Method

EthioPay interbank ATM service is provided jointly by commercial banks, EthSwitch and national bank of Ethiopia. The stakeholders of the service include NBE, EthSwitch, and interconnected banks. The study area is stratified into these stakeholders. In each stakeholder there are employees who are dedicated for the effective provision of service. The study used workers in this service area through convenience sampling method for respondent selection.

3.5 Sample Size Determination

According to Alreck & Settle (2005) the choice of sample size is normally made after considering statistical precision, practical issues and availability of resources. On the other hand, Tabachnick & Fidell (2001) noted that samples are selected on a random basis and those samples are considered as representative of the population. A different sampling paradigm noted that there is no a single precise way for the determinations of sample size hence there are a number of inadequacy for deciding on sample size. Malhotra & Peterson (2006) stated that, the larger the sampling size of a research, the more accurate the data generated. All respondents from national bank are selected, half of concerned workers were selected as respondents from EthSwitch and four respondents from each interconnected bank are selected. Therefore, sample size for the study is 79 respondents.

3.6 Data Type and Collection Techniques

Both primary and secondary data were collected for the purposes of identifying challenges and opportunities of the service. The researcher collected primary data from respondents in different stakeholders and dedicated staffs in interconnected banks through interview and both open ended and close ended questionnaires and secondary data from such as reports, websites and bulletins.

In order to achieve the objectives of this study, the researcher used both qualitative and quantitative (mixed) research methods. Generally, both quantitative and qualitative research approaches employ interview, group discussion, survey, document review and questionnaire as data collection techniques (Crotty, 2008). The researcher used semi structured interview and open ended questionnaire for the qualitative data collection because these give respondents reasonable freedom to express their views, opinions and experiences on the one hand, and to minimize the burden of the researcher to compile and interpret the result, questionnaire for the quantitative data collection on the other hand. The questionnaire helps to cover larger target groups than the interview, given the quality and chance of no response.

The questionnaire was prepared using 5 point Likert-Scale approach (i.e., from "Strongly Disagree to Strongly Agree"), "yes" and "no", as well as multiple choices with multiple response and open-ended questions. According to Creswell (2007) open-ended questionnaires are appropriate when the objective is to discover opinions and attitudes. Accordingly, respondents were asked to indicate their level of agreement on 5 point Likert scale with the following ratings; Strongly Disagree (1), Disagree (2), neutral (3), Agree (4) and Strongly Agree (5) . To elicit additional information, the respondents were also requested to provide open-ended responses if they have opinions which they feel would strengthen their responses. Pilot survey was conducted in interconnected banks in order to ascertain if the questionnaire adequately addressed the critical aspects of the research objective.

3.7 Method of Data Analysis

Since this study is descriptive type of research, the study used descriptive analysis such as mean, standard deviation, frequencies and percentiles. To show and rank responses, tables were used. According to Bryman & Bell (2007) stated, in most types of research studies, the process of data analysis involves the following three steps: first preparing the data for analysis, then analyzing the data and finally, interpreting the data. Based on these steps, content analysis of data involved presenting data or responses in table form forms then data were analyzed using frequency, percentage, mean, standard deviation, minimum, maximum, tables, graphs, and charts. Then the data from open-ended questions in the questionnaire and from the interview were coded, analyzed and discussed using qualitative methods. In addition to these, the study used factor analysis to identify key challenges. Descriptive analysis and open coding were done by using the Statistical Package for Social Science (SPSS) version 20 and qualitative data analysis from the interview was narrated qualitatively.

3.9 Ethical Consideration

Every person involved in the study was entitled to the right of privacy and dignity of treatment, and no personal harm was caused to subjects in the research. Information

obtained was held in strict confidentiality by the researcher. All assistance, collaboration of others and sources from which information was drawn were acknowledged.

CHAPTER FOUR: RESULT AND DISCUSSION

This study was conducted with objective of identifying challenges and opportunities of ethioPay ATM service. It used respondents from interconnected commercial banks, national bank of Ethiopia and EthSwitch. The researcher distributed 68 questionnaires to commercial banks and 7 questionnaires to EthSwitch with the total of 75 questionnaires. 58 questionnaires were returned from commercial banks and all questionnaires were returned from EthSwitch with total of 65 questionnaires and with response rate of 86.67% that are completely filled.

4.1 Demographic Characteristics of the Respondents

Table 2 presents the background information of respondents both in commercial banks and EthSwitch. 45 (69.2%) of the respondents were male and 18(30.8%) are females. This implies that most of dedicated staffs for the service are males. 50(76.9%) of the respondents have first degree and 15(23.1%) of the responds have second degree. Educational background of the respondents shows that majority of the dedicated staffs have bachelor degree. 22(33.8%) of the respondents have experience with the service for less than a year. majority of the respondents, 31(47.7%) have experience between one year and two years. But only 12(18.5%) of the respondents have experience of above two years. This indicates that most of the responds have few years experience as the service is new for the banks.

Table 2: Background information of the Respondents

Factor	Category	Frequency	Percent
Gender	Male	45	69.2
	Female	20	30.8
Education	Bachelor	50	76.9
	Masters	15	23.1
Experience	Less than a year	22	33.8
	One to Two Years	31	47.7
	Above 2 Years	12	18.5

Source: Survey, 2017

4.2 Descriptive Analysis

4.2.1 Practices in the Banks

Table 3 Responses from Banks about Practices

Practices	Category	Frequency	Percent
Efficiency of branches in handling their responsibilities	Inefficient	32	55.2
	Efficient	26	44.8
Timely claims for unsuccessful transactions received from branches	Yes	22	37.9
	No	36	62.1
Timely responses for claims from other banks	Yes	18	31.0
	No	40	69.0
Management and employees cooperation	Uncooperative	33	56.9
	Cooperative	25	43.1
Skills of ATM reconciliation officers in branches	Very Weak	14	24.1
	Weak	32	55.2
	Good	10	17.2
	Very Good	2	3.4

Source: Survey, 2017

As it is indicated in the table 3 above, 55.2% of the responses indicates that branches are not efficient in handling their responsibilities of timely reconciliations and follow up of unsuccessful transactions unless it is requested by the customers. This implies that branches are not efficiently handling their responsibilities. 62.1% of responses show that claims are not sent on time for unsuccessful transactions. Customers claim banks to adjust wrong debit from their accounts that account of customers is deducted but the customers are not paid with cash requested. Although customers need immediate adjustments, the banks are not forwarding immediate adjustments. Most of the time customers are not requesting the banks because they are expecting automatic adjustment from the system. In addition transactions that are not adjusted automatically are adjusted by branches without any application. Customers request banks to adjust the wrong debit after expecting for a long time. This implies that unless the customers are requesting the banks, the banks are not adjusting the transactions.

In addition, 69% of the responses indicate that other banks also are not responding claims as soon as possible. This results in customers' dissatisfaction for the service. According to EthSwitch S.C (2017) on average it is taking about 15 days to respond claims for wrong debits. Customers are waiting for 15 days to get their own money. This is due to that the banks are processing the wrong debit adjustments after they get application from customers. This implies that the banks are not properly following up the transactions on the ATM.

Skills of ATM reconciliation officers are weak as 55.2% of responses indicate. The service is new but reconciliation has no much difference from reconciliation of own bank ATM. In addition, the officers are missing important information. According to EthSwitch S.C (2017) there are wrong credits. It is taking months to adjust transaction not affected account of customers but paid the customer. The banks are not managing their own suspense accounts in addition to accounts of customers. This implies that there is inefficiency in both branches and other banks in performing the service.

Management and other employees are uncooperative in undertaking the duties of the service. The managers are not giving attention to the service but it requires their decision both in head offices and branches. Especially in branches they are focusing on other operations. There are responsibilities given to branch managers regarding the service. But it is considered that it is responsibility of only dedicated staff. This indicates that management and other employees have no good awareness and cooperation about the service. Inefficiencies of branches and other banks are one the challenges for the service.

Table 4 Responses from EthSwitch about Practices

		Frequency	Percent
efficiency of participants in handling their responsibilities	Inefficient	4	57.1
	Efficient	3	42.9
requests for adjustment of unsuccessful transactions received as per standard	Yes	4	57.1
	No	3	42.9
Timely clearings and settlements among banks are undertaken	Yes	2	28.6
	No	5	71.4
Cooperation of management of participating bank	Uncooperative	2	28.6
	Cooperative	2	28.6
	Very cooperative	3	42.9
Frequency of supersizing the participants	Sometimes	6	85.7
	Frequently	1	14.3

Source: Survey 2017

Table 4 presents responses from EthSwitch that shows participating banks are inefficient in handling their responsibilities. 57.1% of responses indicate that banks are inefficient and 42.9% of the responses indicate that they are efficient. This implies that the banks are not properly handling their responsibilities that results in inefficient service and they are not giving appropriate attention for the service. As 57.1% shows that requests for adjustment of unsuccessful transactions are not received as per standards of time and requests. This indicates that the banks are not Complying the time standard for the service. 71.4% of the responses indicated that timely clearing and settlements are not undertaken from participating banks. Top management of banks is cooperative although branches did not undertake their responsibilities properly. EthSwitch is not supervising frequently. Since this service is at beginning stage, it requires appropriate follow up from supervisory organs. But major supervisory organ is EthSwitch but it is not properly handling this responsibility. This indicates that the service lacks appropriate follow up in order to become efficient. Although it is indicated that responsibility of EthSwitch is actively supervising the service delivery, it is not performing this duty properly.

4.2.2 Causes of Transaction Failure

Table 5 below indicates there are different reasons for frequent transaction failures.

Table 5 Causes of Network Failure

Causes of unsuccessful Transaction	Responses		Percent of Cases
	N	Percent	
Network problems	45	23.6%	69.2%
Inefficiencies of branches in managing ATM	47	24.6%	72.3%
Electricity interruptions	27	14.1%	41.5%
Inefficiencies of banks in managing their ATM networks	39	20.4%	60.0%
Awareness of customers	33	17.3%	50.8%

Source: Survey, 2017

The researcher analyzed causes of unsuccessful transaction using both respondents from EthSwitch and commercial banks. The researcher used multiple response method to analyse the causes of unsuccessful transactions on ATMs. 24% of the response indicates that the main cause of unsuccessful transitions is inefficiency of branches in managing ATMs especially cash management. The machines frequently become cashless and have distribution error message that the counter holder bad notes. The second main cause of transactions failure is problem of frequent network failure. The network is provided by ethiotelecom. The network failure requires frequent report to the network provider. Banks are not efficient in managing ATMs centrally. They have responsibility of following up status of ATMs of branches and giving immediate response for problems on ATMs. Awareness of customers is among the causes of transactions failure. The customers of the banks became cause of transaction failure through impatience during transaction process. They expect the same time length on interconnected banks as own bank to process transactions. They request amounts of funds that are not in their accounts because the ATMs recommend amount that is not available in the account of the customer. Electricity failure is the least cause of unsuccessful transactions. This indicates that different parties involving in the service such as infrastructures, management and users are becoming causes of inefficient service.

4.2.3 Challenges

Table 6 below presents challenges of the service that are identified by using responses from commercial banks and EthSwitch.

Table 6 Challenges

	Mean	Std. Dev
There is frequent network failure that results on occurrence unsuccessful transactions	4.2201	.66719
Frequent unsuccessful transaction results on bad image on customers for the service	3.8828	.77779
Service charge variation can be considerable by customers	3.9897	.84203
ATMs are located at the same place especially in malls and marketplaces	3.9207	.89497
There is reconciling inefficiency among inter banks that results in inefficiency of other banks.	4.0000	.79472
There is inefficiency of supervising organs	3.8966	.71793
Different banks have different level of interest to the service	4.0690	.58825
There is inefficiency of banks in managing ATMs	4.0001	.67721

Source: Survey, 2017

There is significant rate of transaction failure on the machines. There are two types of transaction failures. The first and very serious is that debits customers account but not adjusted automatically. This transaction takes longer time to adjust. It takes weeks to adjust this transaction. Lengthy adjustment process for unsuccessful transaction hinders customers to use the service. The second one is transaction failures that may debit customers account but automatically adjusted and transaction failures without debiting customer account. The respondents moderately agree that the rate of unsuccessful transaction is that may results on bad image on customers for the service and the

customers may perceive that the service is inoperative. This implies that perception of the customers becomes challenge to the service because they may not have patience to tolerate the weaknesses of the service and they have an option to use on their own bank. Customers have no appropriate awareness on the service including time it takes to adjust. With the fear of transaction failure the customers may not use service unless they are properly convinced about associated problems.

Banks have different service charge rates that forces customers not to use machines of the other banks. The researcher cannot conclude that the service charge collection is inappropriate because the banks are already charging even their own customers for the service they provide. But the service charge varies from bank to bank. The responses show that this variation will result on preferring their own bank. There are additional duties on banks that are related with the service. But the charge variation is that may result on not using the service. This implies that the service charge rate is hindering not to use the service.

The researcher collected data about effect of ATMs distribution on the effectiveness of service. Respondents moderately agree (mean of 3.9) that the density of the ATMs is affecting customers' acceptance of the service. ATMs are located at the same place especially in malls that results in using own bank ATM and inaccessibility of service in other places. There are banks that have more than one machine in a single place. This implies that unfair distribution of the machines results on inefficiency of the service.

Figure 3 ATM Location

Source: Survey, 2017

Mean value for there is frequent network failure that results on occurrence of unsuccessful transactions is 4.22 that respondents agreed on existence of frequent network failure and as a result there is unsuccessful transactions. This implies that network failure become challenge to efficiency of the service. This network problem is both from network provider and information technology department in the banks. There is an infrastructure problem and inefficiency of concerned department of the banks. This suggests that network management for the service is weak.

Reconciliation is highly dependent on skill of other party in addition to own skills. Reconciling performances of the banks are interdependent. Efficiency of one bank in reconciling and adjusting the transactions is highly dependent on efficiency of other bank. The reconciliation of the interbank ATM has longer process and needs higher skills than reconciliation of own bank ATM. This service needs better experienced human capital than dedicated staffs for own bank ATM reconciliation. As the responses indicated with mean value of 4.00, there is reconciling inefficiency in interconnected banks. This implies that the interconnected banks have different reconciling efficiency that affects efficiency of other banks and the service quality.

Mean for existence of inefficiency of supervising organs is 3.9 that that shows there is inefficiency of supervisors especially national bank and EthSwitch. One of the main responsibilities of the supervisors such as EthSwitch and national bank is following up the service implementation. But as the responses from interconnected banks show that there is inefficiency of supervising.

The interview result indicates that since this service involves different parities it is important to have strong supervising organ. For this objective EthSwitch and National Bank are main supervising organs. They are expected to have strong follow up for the efficient service provision. Since the communication of supervising organs is with top management, it is lacking appropriate implementation of the service. It was planned to decrease the follow up with the time because it is expected that the service efficiency increases with time. The rate of decrease with follow up is greater than increase in service

efficiency. The supervision came out before the service is properly implemented. This implies that the service is not appropriately supervised by concerned organs.

Interconnected banks have different level of interest for the service. Some banks are highly interested and participating in the service. These banks are banks that have fewer ATM machines. Banks that have large number of customers are losing the service charge. Although providing the service has different opportunities such as collecting service charges and introducing the bank, there are associated costs such as reconciliation burdens. Responses indicate that interconnected banks have different attitude for the service. For example Dashen and Zemen bank are not providing the service for other banks.

Another challenge for the service is inefficiency of banks especially branches in managing their ATMs. Most of time the machines become cashless, in distribution error, offline and supervisory mode. In these cases the machines cannot provide the service. Therefore, inefficiency of branches in managing the ATMs is challenge of the service.

The interview result indicates that it was planned that the customers can get with the same service quality as they earn as their own bank. The ATMs were expected to respond as the similar time as they respond to their own customers or with very few variations. It was planned that the banks can easily accept and operate the service efficiently. According to the interview the service quality significantly varies when compared to the service provided by the own bank. This is because the interconnected banks have no similar interest to involve in the service. This service is highly dependent on efficiency of participating banks. External factors also have significant effect on the performance of the service. These factors include telecom company i.e. ethiotelecom which is network provider. Hardware of the machine is serviced by external company. This indicates there are different parties involved in the service that makes performance of the ineffective. There is significant time variation in responding requests on ethioPay. This is due to host bank has to have strong network when the service in requested. Otherwise the request will not be successful. Bank system network speed has significant effect on performance of the service quality. Therefore, challenges such as frequent network failure, inefficiency

and unwillingness of the banks to service, service charge variation and skills of customers significantly affect expected performance and the service is not as efficient as planned.

Banks are benefited from the service by accessing customers of other banks, providing quality service, increasing number of transactions on ATM and decreasing investment costs and foreign currency outflow. But there are associated costs with service. The banks have accepted not only the service but also additional responsibilities. These responsibilities include additional management and operational responsibilities. Network management, cash management and the service management are additional management activities of the service. Main operational activity is reconciliation of the transactions. Reconciling the transactions of the service is more difficult than reconciling own ATM transactions. This service is less efficient than ATM banking service provided by own bank. This is resulting on significant customer complains. Therefore, the service has negative effects of additional workload and customer complains.

As the number of transactions shows, the customers are highly benefited from the service by easy accessibility of the ATM banking service. But they are paying additional service charge for the service. Customers pay additional charge of 100% to 400% because of using the service. Other cost of using the service is possibility of transaction failure. There is higher possibility of transaction failure by using the service than using the service of own bank. It takes weeks to adjust the successful transaction. When there is transaction failure on own bank ATM service it takes only a day to adjust. Therefore, the customers have an additional cost of higher service charge, higher possibility of transaction failure and longer time to adjust unsuccessful transaction.

4.2.4 Factor analysis of the key challenges

For the key challenges of the service, factor solution with Eigen value greater than one was considered for analysis after Varimax Rotation method. Consequently, the analysis produced only one factor which indicates the key challenges in the provision of service is only measured as a single concept. This factor analysis, confirmed that the key challenges scale measured single dimension which explained 78.6% of variance in the key challenges. All items are strongly loaded to this factor with lowest factor loading of 0.76.

Factor loadings are those values which explain how closely the variables are related to each one of the factors discovered (Kothari, 2004). For instance, the variable "network failure" is more important and key challenge to the service is followed by the variable challenges of ATM management.

Table 7 Factor Analysis Key Challenge

Component Matrix	
Variables	Factor Loading
Network failure	0.867
ATM management inefficiency	0.860
ATM location	0.862
Service charge variation	0.857
Customer Awareness	0.853
Operation inefficiency of banks	0.843
Inefficiency of supervising organs	0.822
Interest of banks	0.761

Source: Survey, 2017

This study identified that network failure become significant challenge to ethioPay interbank ATM service. The machines are out of service because of the network failure. Both inefficiency of the network provider and IT departments of the interconnected banks became cause of inefficient network. In the course of a transaction, the network could easily break down resulting in an incomplete transaction. This study has similar result with result of Puopiel, (2014) that this study has identified network failure become main cause of transaction failure. In addition, Bassey (2008) revealed the network failure main challenge to the adoption of this e-payment system in Africa. Ebiringa (2010) analysed that frequent network failure has negative effect on adoption of the service in Nigeria. Haruna (2012) has identified similar result that network failure become main challenge of the service in Ghana.

ATM management is among the prerequies of the efficient interbank ATM service. this study identified ATMs are not efficiently managed by the commercial banks in Ethiopia. This inefficient ATMs management become challenge to the service. Jan (2009)

identified that inefficiency of ATM management by interconnected banks become main challenge because the banks are the key players in the service due to their central role as payment services providers.

Another challenge this study identified is location of the ATMs. The machines are not fairly distributed. They are located either on branches area or big malls. ATMs of all banks are located in a single place and there are no ATMs totally in a larger geographic area. In addition, in a single branch there are about two to three machines. This study has similar result with Bassey (2008) that inaccessibility of machines negatively affects performace of the interbanks ATM service. Ebiringa (2010) concluded that location of ATMs has significant effect on performance of the service by promoting the service. when customers find ATMs of their own bank they use their own banks' machines and develop culture of using their own banks that makes the service meaningless.

Service charge variation between own bank and ethiopay service is an other challenge on the service. customers pay higher service charge when they use the service. The customers perfer their own bank due to the service charge. Puopiel (2014) identified similar result that higher service charge discourges using the service. The service charge set by interconnected banks are discouraging using the service.

Awareness of the customer has important effect on performance of the service. Options the customers use from the screens of the machines is significantly affecting service quality. They order amount not in their account that resulting in transaction failure. The expectation of customers for the same quality to their own bank is affecting the adoption of the service. Customers are not claiming banks to refund wrong debits. Kumaga (2010) identified that the interconnected banks do not provide appropriate information to their customers that results in inefficient service.

Unsuccessful transactions reqiure immediate adjustments from the involving banks. Banks are not adjusting wrong debits occurred by using the service as immediately as they are adjusting their own customers' wrong debit transactions. The reconciliation of the transactions is taking longer time compared to transaction on own bank. Clearance and settlement is taking longer time. This study has similar result with study by Jan

(2009) that operation efficiency of the interconnected banks significantly affects performance of the service. Sooner adjustments of wrong transaction and clearance and settlement times affect efficiency of the service. According to the study in contrast to this, operational inefficiency of the involving banks is challenge to the service.

This study has identified that inefficiency of supervisors is another challenge to the efficieny of the service. as a new product to the industy, role of the supervisors is significant in affecting performance of the service. But the supervisror's role is minimum that have adverse effect on service quality. This study has identified similar result with Jan (2009) that he opined that the development of the service is a co-operative responsibility and the commitment and active participation of all stakeholders should be ensured. The supervisors will therefore loyally follow up to achieve the objectives and goals of the service.

This study has identified that interconnected banks have no similar interest on providing the service. Interest of the banks became one challenge to the service. Customers have to identify banks that provide the service. In this case they prefer using their own banks ATMs. This study has identified similar result with Kumaga, 2010). To achieve the benefits of sharing, all interbank networks require cooperation among banks that are otherwise competitors. For instance, member banks must agree on certain technological specifications for their ATMs to permit the transmission and processing of foreign transactions. In addition, members may be required to meet certain security standards or advertising practices to protect the public image of the network as a whole. In most interbank networks, cooperation is formalized through the organization of the network as a joint venture. In these networks, equity ownership and control of the decision-making processes regarding membership access, organizational structure, and specific details of network operation are interbank between some or all of the members.

4.2.5 Opportunities

Table 8 below presents opportunities of the service.

Table 8 Opportunities

	Mean	Std. Dev
Easy reach to customers of other banks	3.8966	.85203
Improves Service Quality	4.2759	.83336
Increases economies of scale	4.2414	.62996
Saves foreign currency and investment costs	4.0690	.74603

Source: Survey, 2017

The respondents moderately agree that the service enables easy reach to customers of other banks to promote the bank and products using quality service and the machine screen with mean value of 3.9 and standard deviation of 0.85. This implies that the banks are promoting their products and the bank.

Banks with a fewer machine are providing the same service as the banks that have many machines. Customers do not worry to search for their own bank ATM because they can have the same service as customer of the banks. This implies that the banks that have fewer ATMs are better benefited from banks that have many machines because they are saving costs of purchasing the machines including foreign currency. In addition these banks are providing the same ATM banking as the banks with many ATMs. Therefore, this service is increasing service quality through improving additional banking service. According to responses from dedicated staffs the service gave an opportunity to customers to easily access ATM machines. The networking increased number of service providing ATMs.

Responses for opportunity of increasing economies of scale indicate that banks are benefited from increased use of the service. The mean value for role of the service increasing economies of scale is 4.2 that the respondents agreed effect of the service in increasing economies of scale. This implies that banks engaged in active service provision can be benefited by increasing the users and collecting charges. Response of dedicated staffs for saving foreign currency has a mean value of 4.00 that the respondents

agree that it is saving foreign currency outflow both from accounts of banks and the country. These machines are bought with huge amount of foreign currency. Currently the banks are reducing cost of the machine purchased by saving foreign currency and investment costs.

The interview result indicates that this service is intended to provide strong financial system in the industry. The main beneficiaries of the service are commercial banks. This service has different dimensions that help all banks that involve in the service. These dimensions include service charge collection, decreasing investment on ATMs, increasing service quality for their customers, increasing accessibility of the bank by customer of other banks, and promoting the products of the bank through machine screen. The banks that have larger numbers of ATMs have higher service charge collection because they have higher opportunity of accessibility. Banks invest on ATMs significant amount of money. Purchasing ATM has similar cost with opening new branch. The banks can use ATMs of other banks instead of deploying own ATM. This implies banks with fewer ATM banks have better benefits than banks with larger ATMs. Therefore, new banks are highly benefited than existing banks. On the other hand the service created an opportunity of collecting higher service charge for the banks. Banks that have larger number of ATMs collect higher service charge than banks with fewer number of ATMs. This implies that the service created better opportunity to for the banks to increase income collection from service charge. The banks got an opportunity of providing quality service for the customers. The customers get ATM service from every bank. Customers can not worry for finding ATMs of their own bank. This results in having satisfied customers. Therefore, interconnected banks are highly benefited from the opportunity of better service quality. Banks can easily access customers of other banks. The machines enable to promote services of the bank through displays of the machine. This service creates additional market for the banks.

This study identified that the service has created different opportunities to interconnected banks. Among these opportunities the most important one is improving service quality of the banks specifically ATM service of the banks by creating additional service providing ATMs. The customers do not worry in searching their own banks' ATMs instead they use

the ATM that they easily can access. This service enabled banks that have less number of machines to provide similar service with banks that have larger number of machines. This study has similar result with Elizabeth (2005). Sharing also expands the geographic area within which customers can obtain transaction services. In addition, it enables small banks to provide some "big bank" services.

This study has identified the opportunity of the service in reducing unit cost of transactions. This service has increased number of transactions on the machines. The fixed costs associated with owning and operating a large network of ATMs is considerable. Spreading these fixed costs over-a large volume of transactions, a bank can lower the unit cost of operating a network. However, only bigger banks generate sufficient transaction from geographically dispersed ATMs. In most cases, moreover, even large banks find off-premise ATMs (those that are not located at a bank branch) unprofitable, since these off-premise machines do not generate sufficient transaction volume to justify the added expenses. Interbank networks, in contrast, enable banks to spread the fixed costs of an ATM network over a larger volume of transactions, thereby lowering the unit cost of transactions. This study has the same result with Ebiringa (2010) and Maiyaki & Mokhtar (2010).

The service has reduced investment cost on ATMs. The banks use shared machines to provide the ATM service instead of purchasing new machines. This study has identified similar result with (Odachi, 2010) that anlysed shared ATM service has provided great opportunity of reducing investment costs and foreign currency outflow.

This study has identified that etiopay ATM service has created opportunity of easily accessing customers of other banks. This is indicated by number of transactions done by customers of other banks. By using this opportunity the banks are promoting their products that attract customers of other banks. According to Chung (2009) any bank participating in a interbank ATM network have opportunities of enjoying customer access to far more than the bank alone could ever provide, making substantial cost saving compared with the cost of continually extending its ATM network on an independent basis, benefiting from the branding of the interbank network, achieving more financial resources and help for international ATM sharing.

CHAPTER FIVE: CONCLUSION AND RECOMMENDATION

5.1 Conclusions

This study identified challenges and opportunities of the ethioPay ATM service. To achieve this objective the researcher used different respondents from interconnected banks, EthSwitch and national bank of Ethiopia. The data was analyzed by using descriptive analysis and narrated qualitatively. Based on the findings the researcher concluded that there is inefficiency of banks, EthSwitch and national bank of Ethiopia in making the service efficient. According to this study the challenges of the service are inefficiency and uncooperativeness of management, inefficiency of reconciliation officers in the branches, ATM management by the branches and head offices, network problem, service charge variation, ATM location, willingness of banks to accept the service, customer awareness for the service and inefficiency of supervising organs.

The frequent network failure is discouraging customers to use the service. Users have no confidence on service because of the frequent network failure. In addition to this, the banks are facing additional work burden of adjustment and refund. Inefficiency of banks in managing the machines is reducing the operationality of the service. The machines are not located in a way that makes the service efficient. They are not located strategically that the service can be accessible. The service charge set is that discourages using the service. There is big variation of the service from charge set by own banks. The users have no appropriate information about the importance of the service and how to use it. The supervisory organs specifically EthSwitch and national bank are not following up service performance. The service is solely managed by the commercial banks. There is unwillingness of banks to properly provide the service.

This service has great opportunities for the banks that effectively provide the service. These opportunities are reducing investment cost and foreign currency outflow, increasing economies of scale, easily reaching the customers of other banks, and providing quality service. The banks that have fewer numbers of machines are better benefited than the banks that have larger number of machines in providing better ATM

banking service. The number of transactions on the machine are increased which makes the machines more effective by decreasing unit cost of transaction per a machine. Cost of investment on ATMs and foreign currency outflow to purchase the machines is decreased because the banks are using machines of other banks. The service has increased easy reach of customers of other banks to promote the bank.

5.2 Recommendations

Based on the findings and conclusions reached, the researcher recommends following considerations to making the service effective and efficient.

- Network problem has to be solved using better connection packages and increasing efficiency of the banks in administering the network. Since role of network provider is significant there has to better communication with network provider.
- ATM management of the branches has to be improved through cash check up and following up status of the machine. For the frequent electricity failure the banks have generator and UPS.
- Since the ATMs are accumulated at single area and totally absent in larger geographical area, there must be fair distribution of the machines instead of accumulating in a single mall and ignoring other areas.
- Since service charge variation has effect on the service adoption, as a promotion stage the banks have to wave the service charge or make it minimum and uniform.
- Creating customers awareness through advertisings and branches they use. In addition to this, the banks have to advertise the service on the machines.
- Skills of the reconciliation officers and workers in interconnected banks have to increase through trainings.
- To make the service provision uniform and efficient by all banks and increase cooperation of banks for the service there must be guidelines and controlling mechanism by supervisory organs such as EthSwitch and national bank of Ethiopia.
- Since the service have an opportunity of improving service quality, the banks have to make service efficient by improving network quality, operation of the

machines, immediately adjusting the wrong debits, and improving accessibility of service.

- Since the banks are using machines of other banks to provide ATM banking, service is decreasing investment cost on ATMs and foreign currency outflow to purchase the machines. To use this opportunity, interoperatablity of banks has to be insured through better network connection between ATMs.
- Since the service has an opportunity of reaching customers of other banks, the banks have to provide quality service and introduce other banking services.

5.3 Further Studies

This study has identified challenges of ethioPay interbank ATM service from perspective of interconnected banks and supervising organs such as EthSwitch and national bank. The study has failed to include the responses of customers. In addition, this study has not included responses from branches. External organs such as Telecom Company and ATMs hardware managing companies and other infrastructures providing organizations are not included in the study. The researcher recommends further studies to include customers, branches, telecom company and hardware service providing companies. In addition to ethioPay interbank ATM service, PSS solution is providing the service by using selected commercial banks. To reach at a better generalization, further studies are recommended to include PSS solution.

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Appendix

Annex I: Questionnaire to dedicated staffs in ethioPay interbank ATM service in commercial banks

Dear Sir/Madam

RE: REQUEST FOR PARTICIPATION IN A RESEARCH STUDY

I am a Postgraduate student at Addis Ababa University. As partial fulfillment for the Masters of Business Administration, I am conducting a research study on Challenges and Opportunities of ethioPay Interbank ATM Service.

Therefore, I would appreciate if you could spare a few minutes of your time to answer the following questions. All the information provided will be purely used for academic purposes and your identity will be treated with utmost confidentiality.

Your assistance will be highly appreciated and thank you in advance.
Yours faithfully,

Getachew Tadesse

Part I: General Information of Respondents

1. Gender:
   - Male
   - Female
2. Education:
   - B.A. Degree
   - Masters
3. Experience with the service (in years):
   - <1
   - 1-2
   - >2

Part II: Questions related to identifying practices, challenges and opportunities of the serve.

4. How do you rate efficiency of branches in handling their responsibilities in regarding to ethioPay interbank ATM service?
   - Inefficient
   - Efficient
   - Very efficient
5. Do claims for unsuccessful transactions received from branches on expected time?
   - Yes
   - No
6. Do customer claims from other banks are responded on time that may not result customer dissatisfaction?
   - Yes
   - No
7. How do rate cooperation of management and other staffs in activities of the service?
   - Uncooperative
   - Cooperative
   - Very cooperative

8. How do you rate skills of ATM reconciliation officers in branches?
   - Very Weak
   - Weak
   - Good

- Very Good
- Excellent

9. What are causes of unsuccessful transactions?
   - Network problems
   - Inefficiencies of branches in managing ATM
   - Electricity interruptions
   - Inefficiencies of banks in managing their ATM networks
   - Awareness of customers
   - Other

     _____

     _____

     _____

10. To what extent do you agree on the following statements in regarding to challenges on performance of the ethioPay interbank ATM service? Please mark (X) on appropriate response to your opinion. (where, SD=Strongly Disagree, D=Disagree, N=Neutral, A=agree, SA=Strongly Agree)

Statement	***SD***	***D***	***N***	***A***	***SA***
There is frequent network failure that results on occurrence unsuccessful transactions					
Frequent unsuccessful transaction results on bad image on customers for the service					
Service charge variation can be considerable by customers					
ATMs are located at the same place especially in malls and marketplaces					
There is reconciling inefficiency among inter banks that results in inefficiency of other banks.					
There is inefficiency of supervising organs					
Different banks have different level of interest to the service					
There is inefficiency of banks in managing ATMs					

If any other challenge please specify

_____
_____
_____
_____

11. To what extent do you agree on the following statements in regarding to opportunities of the ethioPay interbank ATM service? Please mark (X) on appropriate response to your opinion. (where, SD=Strongly Disagree, D=Disagree, N=Neutral, A=agree, SA=Strongly Agree)

	Statement	***SD***	***D***	***N***	***A***	***SA***
1	Easy reach to customers of other banks					
2	Improves Service Quality					
3	Increases economies of scale					
4	Saves foreign currency and investment costs					

If any other opportunity please specify

_____
_____
_____
_____

Thank you very much for your cooperation!

Annex II: Questionnaire to EthSwitch S.C

Dear Sir/Madam

RE: REQUEST FOR PARTICIPATION IN A RESEARCH STUDY

I am a Postgraduate student at Addis Ababa University. As partial fulfillment for the Masters of Business Administration, I am conducting a research study on Challenges and Opportunities of ethioPay Interbank ATM Service.

Therefore, I would appreciate if you could spare a few minutes of your time to answer the following questions. All the information provided will be purely used for academic purposes and your identity will be treated with utmost confidentiality.

Your assistance will be highly appreciated and thank you in advance.
Yours faithfully,

Getachew Tadesse

Part I: General Information of Respondents

1. Gender
   - Male
   - Female
2. Education:
   - B.A. Degree
   - Masters
3. Experience in the service (in years)
   - Less than one
   - one to Two
   - More than Two

Part II: Questions related to identifying practices, challenges and opportunities of the service.

4. How do you rate efficiency of participants in handling their responsibilities in regarding to ethioPay interbank ATM service?
   - Inefficient
   - Efficient
   - Very efficient
5. Do requests for adjustment of unsuccessful transactions received as per standard?
   - Yes
   - No
6. Do clearings and settlements among banks are undertaken on the time that may result in efficient service?
   - Yes
   - No
7. How do you rate cooperation of management of participating bank?
   - Uncooperative
   - Cooperative
   - Very cooperative
8. How do you rate your role on supersizing the participants?
   - Not at all
   - Sometimes
   - Frequently
9. What are causes of unsuccessful transactions?
   - Network problems
   - Inefficiencies of branches in managing ATM
   - Electricity interruptions

- Inefficiencies of banks in managing their ATM networks
- Awareness of customers
- Other

_____

_____

_____

10. To what extent do you agree on the following statements in regarding to challenges on performance of the ethioPay interbank ATM service? Please mark (X) on appropriate response to your opinion. (where, SD=Strongly Disagree, D=Disagree, N=Neutral, A=agree, SA=Strongly Agree)

	Statement	***SD***	***D***	***N***	***A***	***SA***
1	There is frequent network failure that results on occurrence unsuccessful transactions					
2	Frequent unsuccessful transaction results on bad image on customers for the service					
3	Service charge variation can be considerable by customers					
4	ATMs are located at the same place especially in malls and marketplaces					
5	There is reconciling inefficiency among inter banks that results in inefficiency of other banks.					
6	There is inefficiency of supervising organs					
7	Different banks have different level of interest to the service					
8	There is inefficiency of banks in managing ATMs					

11. To what extent do you agree on the following statements in regarding to opportunities of the ethioPay interbank ATM service? Please mark (X) on appropriate response to your opinion. (where, SD=Strongly Disagree, D=Disagree, N=Neutral, A=agree, SA=Strongly Agree)

	Statement	***SD***	***D***	***N***	***A***	***SA***
1	Easy reach to customers of other banks					
2	Improves Service Quality					
3	Increases economies of scale					
4	Saves foreign currency and investment costs					

Thank you very much for your cooperation!

Annex III: Interview to National Bank of Ethiopia

1. What are challenges of ethioPay ATM service?
2. What are roles of supervising organs in current status of the service?
3. What is the role of service for the banks?
4. What are costs of the service on the banks and customers?