



ST. MARY'S UNIVERSITY SCHOOL OF GRADUATE STUDIES

**PROGRESS, OPPORTUNITY AND CHALLENGES OF ETHIOPIAN
AUTOMATED TRANSFER SYSTEM (EATS) INTERFACING WITH
BANKS**

**BY
BOGALE TEFEREDEGNE
ID SGS/0048/2004B**

**FEBRUARY, 2014
ADDIS ABABA, ETHIOPIA**

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**A THESIS SUBMITTED TO ST.MARY'S UNIVERSITY SCHOOL OF
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ACRONYM

ACH	Automated Clearing House
AIB	Awash International Bank
ATM	Automated Teller Machine
CBS	Core Banking Solutions
CBE	Commercial Bank of Ethiopia
CPO	Casher's Payment Order
CTD	Certificate of Time Deposit
DD	Demand Draft
DOI	Diffusion on Innovation
EATS	Ethiopia Automated Transfer System
ERCA	Ethiopian Revenue and Custom Authority
ECX	Ethiopian Commodity Exchange
ECS	Electronic Clearing Service
EFT	Electronic Fund Transfer
IT	Information Technology
MoFED	Ministry of Finance and Economic Development
MT	Message Type
NBE	National Bank of Ethiopia
NPS	National Payment System
NIB	Nib International Bank
POS	Point-of-Sale
RTGS	Real Time Gross Settlement
STP	Straight Trough Process
SPSS	Statistical Package for Social Scientists
SEPA	Single Euro Payments Area
TT	Telephone Transfer

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ABSTRACT

This thesis intends to explore the progress, opportunity and challenges of interfacing Ethiopia Automated Transfer System with Banks. The study was conducted to address what are the challenges of participant banks interfacing with Ethiopia Automated Transfer System (EATS)? and what are the opportunities to participant banks implementing Ethiopia Automated Transfer System (EATS)? based on the data gathered from seven banks including NBE in Ethiopia. The researcher used an exploratory research design and mixed research approach to answer these research questions. The study statistically analyzes data obtained from the survey questionnaire and qualitatively presents the interview results. The result of the study indicated that the major challenges that the participant faces interfacing of EATS are inadequate infrastructure, business continuity plan, security risk, requirement gap in core banking solutions implementation, inadequate IT strategy and leadership resistance to change, lack of comprehensive and standardize risk management document, limitation on geographical coverage of clearing process, lack of updated procedural manual, absence of service line agreement between participants and NBE. The study also identified the benefits, the major ones are inter-bank transactions of high value and low value payments, ease of use, reduction of error and fraud, increase number of transactions, encourage competitiveness, eases to incorporate other payment instruments in the future. The study concluded that to enhance efficiency, reduce costs; avoid risk and speed up the payment, clearing and settlement systems, communication between the system provider (NBE) and the participants in the system should be based on electronic data interchange in standardized format. Therefore it needs close follow up and monitoring and regular dialogue session among the stakeholders in order to exploit the most out of it.

Key words: Clearing, Ethiopian Automated Transfer System, high value payment, low value payment, inter-bank transactions, Settlement

CHAPTER ONE

1. INTRODUCTION

1.1. Background of the Study

A bank is one of the industry that contributes a lot to the development of a country's economy and it can be considered as bridge that links customers with capital deficits to customers with capital surplus, some researchers presented that the history of banking begins with the first prototype banks of merchants in the ancient world, which made grain loans to farmers and traders who carried goods between cities (Abhinesh, 2011). Information technologies are having a great impact in the reshaping of the banking industry, by leading to the development of new financial products and of new means of delivering them. With regards to the delivery of products, for instance, the last decades have seen the appearance of Automated Tellers Machines (ATMs), telephone banking, internet banking, mobile banking, and straight through processing (STP) which include Real Time Gross Settlement (RTGS) and Automated Cheque Clearing (ACH). These new channels for the delivery of products and facilitating payments have the advantage for customers of longer hours of service, but are also a more efficient, cheaper means of delivering the products and enhancing the banking operations, a means for attracting customers and increasing profitability (Anna et.al, 2001).

In Ethiopia the practice of banking has started in 1905, the first bank "Bank of Abyssinia" established at this year. It was owned and managed by the British-owned National Bank of Egypt. It was given a banking monopoly for fifty years, including the right to issue notes and coins. However, three other banks were established in the next ten years. In 1931, the Bank of Abyssinia was replaced by the Bank of Ethiopia which was wholly owned by the government and members of the Ethiopian aristocracy, becoming the first 100% African-owned bank on the continent; after the liberation in 1942, the State Bank of Ethiopia was established. It became operational in 1943, with 43 employees and two branches, and acted as the country's central bank. The new banking law [Proclamation No. 84/1994] was passed in January 1994 (Charles Harvey, 1996, pp.2, 26). Ethiopia's

financial sector is dominated by state-owned banks, mainly the CBE. Currently public banks account for 67% of total deposits and 55% of loans and advances. The financial sector is shallow, with a limited range of services. Banking coverage stands at about 120 755 people per commercial bank branch, making Ethiopia one of the most under-banked countries in sub-Saharan Africa. The vast majority of small entrepreneurs lack the collateral necessary to obtain a bank loan. By June 2011 the private credit to GDP ratio for Ethiopia was around 9% compared with the average of 30% for sub-Saharan Africa (Birhanu, 2012). According to the World Economic Forum's Global Competitiveness Report 2011-12, Ethiopia ranked 125 out of 142 countries with respect to financial-market development. Further, the banking sector remains closed to foreign participation and capital markets are non-existent. This has limited progress in innovation and dynamism in the sector. The government has recently taken further steps to strengthen the financial sector. In 2011 the National Bank of Ethiopia (NBE) launched a modern payment system and set up a centralized clearing system which will speed up the time for settlement of cheques (Ethiopia, African Economic Outlook 2012).

The National Bank of Ethiopia was established in 1963 by proclamation 206 of 1963 and began operation in January 1964. Prior to this proclamation, the Bank used to carry out dual activities, commercial banking and central banking. Following the demise of the Dergue regime in 1991 that ruled the country for 17 years under the rule of command economy, the EPRDF declared a liberal economy system. In line with this, Monetary and Banking proclamation of 1994 established the national bank of Ethiopia as a judicial entity, separated from the government and outlined its main function. Monetary and Banking proclamation No.83/1994 and the Licensing and Supervision of Banking Business No.84/1994 laid down the legal basis for investment in the banking sector. Consequently shortly after the proclamation the first private bank, Awash International Bank was established in 1994 by 486 shareholders and by 1998 the authorized capital of the Bank reached Birr 50.0 million (NBE, 2013).

An efficient national payment system reduces the transaction cost, time, facilitates exchanging of goods and services, and is essential to the functioning of the interbank. A weak payment system may severely drag on the stability and developmental capacity of a national economy; its failures can result in inefficient use of financial resources, inequitable risk-sharing among agents, actual losses for participants, and loss of confidence

in the financial system and in the very use of money. The technical efficiency of payment system is important for a development of economy. For instance, Real time gross settlement systems (RTGS) are funds transfer systems where transfer of money takes place from one bank to another on a "real time" and on "gross" basis. Settlement in "real time" means that payment transaction does not require any waiting period. The transactions are settled as soon as they are processed. "Gross settlement" means the transaction is settled on one to one basis without bunching or netting with any other transaction. Once processed, payments are final and irrevocable (Bruce J. Summers, 2012).

The national payment system is an essential component of the financial infrastructure of the country, whose safety, security and efficiency is critical to ensure financial stability, economic growth and financial inclusiveness and it has become necessary to provide rules on establishment, governance, operation, regulation and oversight of the national payment system so as to ensure its safety, security and efficiency (Federal Negarit Gazeta, 2011, no.718). Currently in our country, most of the Banks have changing the way they practice and use technology as business enabler and it has opened new avenues for the industry in terms of business opportunities as well as their role in supporting for country's economy growth. In order to create strong and modern payment system, the government has launched National Payment and Settlement System to be effective, by declaring the [Proclamation no.718/2011] that the National Bank shall establish, own, operate, participate in, regulate and supervise.

As we can see below the number of banks and their branches increasing from year to year, and on the year 2013 the number of banks reach to 20 including NBE out of which 11 banks (55%) of the banks are interfacing with the Ethiopia Automated Transfer System (EATS) through their core banking system and able to transact payment, clearing and settlement, and 7 Banks (35%) of the Banks are not yet interfacing EATS they are using Point of Originator, the remaining 2 Banks (10%) are totally manual to process payment, clearing and settlement.

Table 1.1.1 Total number of banks and branches year 2012

Item	Year								
	2004	2005	2006	2007	2008	2009	2010	2011	2012
Banks	9	10	10	11	11	13	15	16	17
Branches	358	390	421	496	562	636	680	937	1289

Source: - birritu 2012, No 114

In general the National Bank of Ethiopia (NBE) and other commercial Banks in our country are increasingly relying on technologies and the use of technology in the banking operations has brought some new issues and challenges such as costs and risks. Therefore the aim of this study will be to see the progress, opportunity and challenges of Ethiopia Automated Transfer System (EATS) and its integration with participant Banks to perform payment, clearing and settlement.

1.2. Statement of the Problem

The primarily commercial banks activities are deposits, payments, and lending, the payment system is of great important to the economy and payments are an inseparable part of trade in goods and services. The lower the transactions cost of making payments, the more trade there will be and the greater will be the gains from it. In general how well the payments system does its job has an enormous impact on the overall efficiency of the economy (Meir & Kohn, 2004). In Ethiopia, the NBE install the Ethiopia Automated Transfer System that can interface with all participant Commercial Banks, Ethiopian Revenue and Custom Authority (ERCA), Ethiopian Commodity Exchange (ECX), Ministry of Finance and Economic Development (MoFED) and NBE, but currently the ERCA and MoFED transaction is executed by NBE on behalf of them.

In the non-integrated payment activities the cash or cheque transactions, clearing and settlement is costly and cumbersome, customer need to hold large amount of cash, large payments require secure transportation, time taking the counting of large amount of money, security (difficult to encrypted paper), and integration (Meir & Kohn, 2004). Hence in order to tackle such problems and offer a service that reduces the transactions

costs, attract more customers and make good profit the integrated payment system like EATS is a best solution. In our current payment practice all participant banks are not interfacing with EATS even if some of them are installing core banking solutions and others are in the process of installing it, still all participant Banks exchanges cheque physically, there is duplication of tasks, Banks use non-standardized cheques, Banks are geographically limited to Addis Ababa for cheque clearing, lack of uniformity in facilitating the clearing and settlement process, security, getting uninterrupted and full-fledged service are the prominent challenges. Therefore the main objective of this study is to investigate the progress, opportunity and challenges of EATS interfacing with participant Banks to perform payment, clearing and settlements.

1.3. Research Questions

The study tried to address the research problem by answering the following questions.

- What are the challenges of participant banks interfacing with Ethiopia Automated Transfer System (EATS)?
- What are the opportunities to participant banks implementing Ethiopia Automated Transfer System (EATS)?

1.4. Objective of the Study

The general objectives of this study was examining the progress, opportunity and challenge of EATS, and interfacing Banks to perform payment, clearing and settlement. Based on the general objective, the study will have specific objectives as follows:

1. To explore the challenges of banks in interfacing Ethiopia Automated Transfer System (EATS) to process payment, clearing and settlement
2. To explore the opportunity of the Ethiopia Automated Transfer System (EATS) and the interfacing participant Banks
3. To study the progress of Ethiopia Automated Transfer System (EATS) and the participant Banks

1.5. Definition of Terms¹

Automated Clearing House (ACH): An electronic clearing system in which payment's orders are exchanged among participants primarily via electronic media and handled by a data processing centre.

Cheque: A written order from one party (the drawer) to another (the Drawee; normally a credit institution) requiring the Drawee to pay a specified sum on demand to the drawer or to a third party specified by the drawer.

Clearing: The process of transmitting, reconciling and, in some cases, confirming payment or securities transfer orders prior to settlement, possibly including the netting of orders and the establishment of final positions for settlement.

Clearing house: A common entity (or common processing mechanism) through which financial institutions agree to exchange transfer instructions for funds or securities. In some cases, the clearing house may act as central counterparty for the participants and therefore assume significant financial risks.

clearing system: means a system whereby participants present and exchange information relating to the transfer of funds, securities or other financial instruments to each other through a centralized system or at a single location and includes mechanisms for the calculation of participants' positions on a bilateral or multilateral basis with a view to facilitating the settlement of their obligations

Gross settlement: The settlement of transfer orders one by one.

Net settlement: The settlement of transfer orders on a net basis.

Payer: The party to a payment transaction which issues the payment order or agrees to the transfer of funds to a payee.

Payment: In a strict sense, a payment is a transfer of funds which discharges an obligation on the part of a payer vis-à-vis a payee. However, in a technical or statistical sense, it is often used as a synonym for "transfer order".

Payment instrument: A tool or a set of procedures enabling the transfer of funds from the payer to the payee. The payer and the payee can be one and the same person.

¹ These definitions are definitions of concepts used by market participants (European central bank, 2008)

Payment system: This expression has two meanings. In some cases, it refers to the set of instruments, banking procedures and interbank funds transfer systems which facilitate the circulation of money in a country or in a currency area. In most cases the expression is used as a synonym of funds transfer system.

Real-time gross settlement (RTGS) system: A settlement system in which processing and settlement takes place on a transaction-by-transaction basis in real time.

Settlement: The completion of a transaction or of processing in a transfer system, such that participants meet their obligations through the transfer of securities and/or funds. A settlement may be final or provisional. With the exception of a zero net balance, settlement requires the opening of accounts by competent institutions.

Settlement system: means a system for the discharge of payment and settlement obligations established and operated by National Bank or any other settlement system authorized by the National Bank;

Straight-through processing (STP): The automated end-to-end processing of trades/payment transfers, including, where relevant, the automated completion of confirmation, matching, generation, clearing and settlement of orders.

Truncation : A procedure in which a paper-based transfer order or other financial instrument is replaced, in whole or in part, by an electronic record of the content of that instrument for further processing and transmission.

1.6. Significance of the study

The payment system of Ethiopian Automated Transfer System was introduced on June 2011, and it will give a new face to banking system in the country. The interfacing of such system by participant banks with their electronic core banking systems promises customers and the overall economy many benefits. The importance of the integration of Banks to ‘national payment system’ is unquestionable and it contributes a lot for the fast, reliable and controlled flow of payment, clearing and settlement activities. Therefore, it needs a thorough investigation, because it will be an input for policy and strategy makers of the National Bank of Ethiopia (NBE), participant banks as well as new entrants furthermore, it will provide a conceptual insight in the area of payment, clearing and

settlement process. Moreover, it will be an input for other students or researchers for further investigation.

1.7. Scope of the Study

After the effect of “national payment system” all participant banks are expected to make ready their core banking solutions (CBS) to interface with Ethiopia Automated Transfer System (EATS). The area of study were mainly focuses on examining the progress, opportunity and challenges of interfacing Ethiopia Automated Transfer System (EATS) by participants Banks to perform, payment clearing and settlement. The study was focused to surveying, interviewing of the purposely selected banks, National Bank of Ethiopia (NBE), Commercial Bank of Ethiopia (CBE) and other five private banks. Those banks were selected based on their familiarity with technology use and number of cheque transactions. In general this study might not be generalized to all areas of the commercial banks because purposive sampling try to show what is happening in the areas and it avoid the generalization of findings.

1.8. Organization of the document

The research paper is divided into five chapters. Chapter one presents the introduction part, which contains, background of the study, statement of the problem, research questions, objectives of the study, definition of terms, significance of the study , scope of the study and organization of the paper. Chapter two presents the literature review regarding banking and technology, factors affecting the adoption of technology, core banking solutions, IT strategy and leadership, IT infrastructure and security, Technology and regulations, national payment system overview, payment clearing and settlement, Addis Ababa Clearing Office, Ethiopia automated transfer system, opportunity and challenge. Chapter three present research design, population and sampling techniques, method of data collection, procedures of data collections and data analysis. The results and discussion part of the research is presented in chapter four. The final chapter five contains conclusion and recommendation parts.

CHAPTER TWO

2. REVIEW OF RELATED LITRATURE

2.1. Banking Overview

In the ancient time there was trade called “barter-trade” it takes place with the exchange of goods; some of the characteristics of such trade were two items had to be available at the same time and place, no delivery of half of the item and the two parties interest should match. Later on the way people exchange changed because money introduced and it become a lot easier means of exchange; it simplifies trade and the development of money also permitted the development of the banks function. Generally the quick growth of the payment traffic further led to the organizing of central clearing institutions (Ethiopian institute of financial studies, 2011). Bank is the mediator between the depositor and borrower (Buckle, M. et.al, 1998) stated that banks traditionally provided intermediation and payments services to individuals and small businesses with all the components of those services supplied by the bank. (Frances X, et.al, 1998) describe banks as financial services firms provide the payment services and financial products that enable households and firms to participate in the broader economy, moreover liberalized domestic regulation, competition, rapid innovations in new financial instruments, and the explosive growth in information technology fuel this change.

Technology is strong business driver in all functional areas of the banking business such as core banking solutions, electronic clearing service (ECS), national electronic funds transfer (NEFT), real-time gross settlement (RTGS) have accelerated the pace of technology adoption by banks and enabled interconnectivity between banks (Ernest & Young ,2010). Haag et.al, (1998) stated that all organizations today are struggling with how to use technology to support the sharing and communication of information among employees, and using technology and computer networks to extend beyond organizational boundaries to reach customers and work with other partners. Networks support that the electronic movement of information from one location to another and networks are perhaps the most

important aspect of IT in business today (Muneesh, 2003). The advantage of technology for the banking activity would be undeniable, but the initial investment and security will remain a crucial issue for banks in all sizes as mentioned by (George Hanc, 2004). The (Capgemini, 2012) consulting firms study revealed that certain major trends are seen in the banking industry, for instance replacement and upgrades of legacy core banking systems continues to be a strategic priority for banks; payment processing hubs have evolved from concept into reality and are seen as a tool for driving better customer experience and increasing business opportunities the report also mentioned that the importance of technology in enabling the banking sector to deal with changing customer demands, improve operational efficiency, and enhance regulatory compliance is increasingly recognized by banks across the globe.

2.1.1. Core-Banking Solutions

Nowadays banks are adopting technology to improve the process of the frontline and back-office banking operations in order to gain an operational excellence and one of the mechanism that assist banks to provide better service to their customers is implementing the core banking solution (CBS). (Capgemini, 2012) consulting firms study reported that reliance on legacy systems has resulted in most institutions suffering from poor data consistency, low data quality, and limited visibility of data across the enterprise which in turn have led to regulatory, compliance, and customer management issues. It allows banks to exercise interoperability within the banks inter-branch as well as inter-banks transactions. A core banking implementation is challenging (Hitachi Consulting, 2010) mentioned that converting from an existing banking platform to a new core banking system is a major undertaking requiring significant planning, budget, resource, time and implementing a new core banking system typically takes between 12-18 months and impacts dramatically the entire enterprise and better risk management due to centralization of information and real time availability of critical data for decision making. (IBM, 2012) reported that banks can dramatically cut operational and other costs by moving to a common platform and infrastructure, that enable them to provide a real time services by implementing straight through processing (STP) infrastructure.

2.1.2. Strategy and Leadership

Strategy is a course of action for achieving an organization's purpose and IT strategy used to describe how business firms use technology to gain competitive advantage (R.M. Riecket.al, 1993) define technology strategy as:

“Technology strategy is the process by which firms utilize their technological resources to achieve corporate objectives.”

Technology strategy is primarily focused on the development and innovation of the firm's technology capabilities, resulting in the firm's competitive advantage and the overall corporate strategy is thus a match between technology and business strategies. (Colin White, 2004) describes the strategy which it takes accounts of the strategies of other players like competitors, governments and cooperators. (Haag, 1998) describes that once our organization has a clear view of how IT can support the business, we can use that view to identify specific areas of opportunity or need within the businesses.

Currently business challenges are becoming more complex, due to rapid technological change; change in business model and process and these factors demands a close follow up by leaders to manage the phenomena. (Brian Phelps, 2001) explain leader is the central person who guides the group toward its goal and leaders usually have more skill, ability, or competency that can determine the success or failure of the institutions. Moreover, (Syed AtifEjaz ,2012) in his study come up with a conclusion that even though technology has a vital role for the success of a company and enhancing performance it would fails to provide sustainable competitive edge with the absence of effective leader and no single leadership style yields desired results in most of the situations whereas a combination of different style is desired. The aligning of IT strategy with the business strategy (Eyob Dagne, 2010) explained that firm has to make sure that the investment on IT and the business strategy has to go in line to ease and improve the development of organization.

2.1.3. Infrastructure and Security

The primary responsibility of a manager is to control the resources effectiveness to attain the common goals of the organization, while ensuring security. Hebbar Raveendranath, (2003-04), said that one can ask questions like how can one trust the banking channels which are driven by technology? Are they reliable and accurate? So, security is an important issue must be taking in to consideration by banks after and before implementation of any systems. Muneesh, (2003) mentioned that the networking primary objective is to sharing resources by establishing line of connection between resources by using the available network facility and give access the centralized system of a give business; IT infrastructure resources are, perhaps more vulnerable to the risks of security than any other resource and any failure to them brings the entire enterprise to a decline. The banking sector in Ethiopia is one of the rapidly growing sectors of the country's economy. Banking business competition has moved the advancement of services enabled by IT which in turn increased the information security risk. Martins et.al, (2006) explain security characteristics such as confidentiality, integrity and availability of information. Any mishandling of confidential information asset can cause huge financial loss, and the reputation of the bank will be severely damaged (Abiy et.al, 2012) revealed that the level of proper information security governance and security awareness in the sector is unsatisfactory, there is a trust space between managers and employees and the security standards didn't complies with international standards. Maryam sohrabi, et.al, (2013) also revealed that trust and privacy concerns have the highest effect towards electronic banking adoption.

ICT for greater development impact and World Bank Group (WBG) strategy document 2012 stated that the ICT sector infrastructure, networks, ICT service industries contributes to country growth. The policies and arrangements are also necessary to strengthen the private sectors ability to create new ICT enabled services and it cannot get started unless the central bank has established enabling banking legislation and regulations, payment security standards, and rules for what happens when things go wrong. Finally WBG suggests that regulatory frameworks that establish trust in ICT use are important. Legal and regulatory frameworks for secure electronic transactions are essential to foster trust and enhance the use of ICTs in business. In general lack of a secure and trusted

environment would lead to delayed adoption of ICTs, putting developing nations at a disadvantage in participating in global innovation, and commercial networks.

2.1.4. Technology and Regulations

According to WBG document (2012), the government has to play a great role in promoting ICT, rather than direct intervention, governments should focus on the key enablers of ICT innovation by developing a skilled workforce, implementing ICT innovation policies, promoting ICT entrepreneurship, and facilitating a bottom-up approach to innovation. The first Internet connection was established by the Ethiopian Telecommunications Corporations (ETC) in October 1996 with a T1 connection to the United States. The Ethiopian Ministry of Communication and Information Technology (MCIT) has a mission to develop, deploy and use ICT to improve the livelihood of Ethiopians and optimize its contribution for the development of the country (MCIT 2011). The government of Ethiopia develop multiple policies, most notable of which are the National ICT Strategic Plan and the ICT4D Action Plan for the year 2006-2010 and ICT policy, 2009.

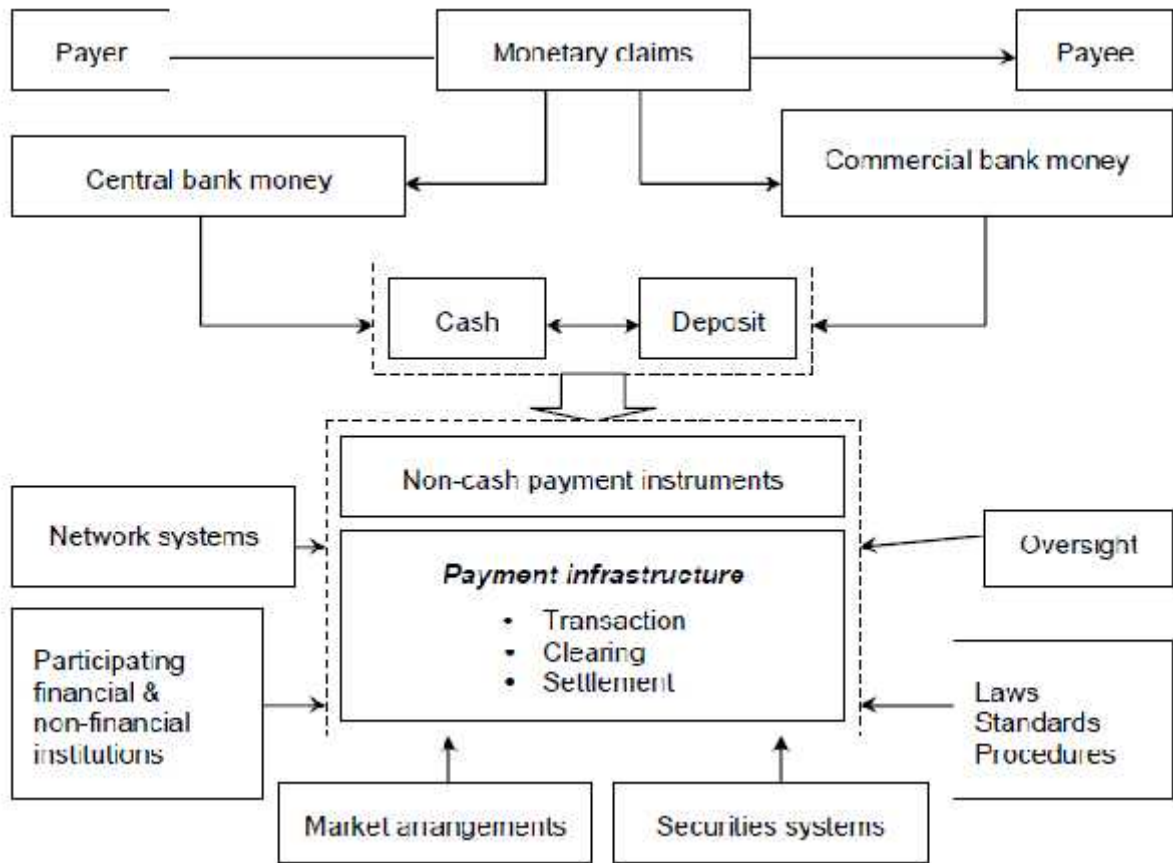
The systems implemented by the banks are expected to compliance to the regulation and risk management of the country. Banking services regulatory issues most of the time includes what should be done or not, using the existing law in order to improve the effectiveness of the banking. The regulatory body work to identify and eliminate restrictions that are out dated and unnecessary one and that helps the industry to place at a competitive advantage (WBG, 2012). In our context to mentioned some of the regulation regarding banking activist 1) bank risk management guideline which mainly deals with risk identification, measurement, monitoring and control standards for all banks operating in the country (NBE ,2010) 2) the licensing and supervision of banking business directive 2006, SBB/1/94, the NBE may undertake an inspection of any financing bank at any time to verify that the financing bank complies with the provisions of these Directives 3) The regulation of Mobile and Agent Banking Services Directives No. FIS /0112012, it mentioned the use of technology and innovative financial service delivery channels and 4) payment and settlement regulation, proclamation no. 718/2011, this rule has become necessary to provide rules on establishment, governance, operation, regulation and oversight of the national payment system so as to ensure its safety, security and efficiency.

2.2. National Payment System Overview

There is no general guide line “blue print” for the payment system that meets specific need of each country. Bank for international settlement (BIS), 2005 provide a guidelines focus on the main elements of a national payment system to be considered when initiating a process of reform, especially major structural reform. Therefore, the planning and implementation of payment system development is a difficult task, due to its complexity and the varying approaches to reforms. This document will use this reference to show some points on regard to national payment system, payment system development and other concept related to payment system in general. There are 14 guidelines grouped together to reflect the four key dimensions of developing a national payment system: (i) the role of the banking sector (ii) effective planning and project implementation, (iii) developing the institutional framework required to sustain payment system reform, and (iv) designing a safe and efficient payment infrastructure to meet the particular emerging needs of a country’s economy.

Bank for international settlement, 2005 described that a national payment system is one of the principal components of a country’s monetary and financial system and, therefore, crucial to a country’s economic development. It is through the national payment system that money is transferred between buyers and sellers in commercial and financial transactions .A payment is the process by which monetary instruments, typically cash and deposit claims, are transferred between the two parties to finalize a transaction thus; national payment system is the configuration of diverse institutional and infrastructure arrangements that facilitates the transfer of monetary value between the parties. The following figure 2.2.1 depicts what look like the overall national payment system for non-cash payments and such payments involve a complex process and it involves an array payment instruments, institutional and processing procedures, and money or “funds” transfer mechanisms to complete payments.

Figure 2.2.1 National payment system models, BIS-2005



Source, Banks for International Settlement (2005)

In general a country expected to establish a framework to facilitate the safe and efficient development of payment system because, the complexity of the dimensions of payment instruments, organizations, standards, rules and procedures, and market arrangements increases as the development of the system progresses.

2.3. Payment, Clearing and Settlement

2.3.1. Overview

Payment systems is defined and explained by (Ethiopian institute of financial studies, 2011).

“Payment system encompasses a set of instruments and means generally acceptable in making payments, the institution and organizational framework governing such payments and the operating procedure and communications network used to initiate

and transmit payment information from payer to payee and to settle payments. A modern payment system typically has a range of specialized subsystems developed to serve particular sets of customers; some of these clear and settle small payments, some large payments, while some cover both large and retail payments.”

In traditional business transactions banks are forced to pay using coins and paper, but the introduction of information technology is a driving force that is changing the banking industry payment services. Payments services a service defined by (Buckle, M. and J.L. Thompson, 1998) as an accounting procedure whereby transfers of ownership of certain assets are carried out in settlement of debts incurred. The new methods of payments are debit card, ACH debit, credit card, smart card, and internet cash. (Buckle, M. and J.L. Thompson, 1998) further explained that there are essentially two types of systems for making settlement payments between two banks either End of day net settlement or Real time gross settlement and there is a system risk that associate with the central settlement banks fails then this could lead to settlement failures at other banks.

The current banking business environment faces pressure on development and utilization of alternative service delivery channels in order to retain customers, attracting new customers, improving customers' perceptions, and sustaining growth and competition. Banks role is act as intermediaries between depositor who have excess money and borrowers and investors who are in shortage of finance usually involve payment transactions and this is an essential part of the financial system. The world payment report 2012 stated that a healthy 7.1% gain in non-cash payments volume globally and payments continue to grow and increasing regulation. The Report finds that some regulations such as SEPA are set to enable payments innovation, directly or indirectly and customer-centric innovations can drive the industry the fastest and the farthest. Additionally the world payment reports of 2013 stated the world non-cash market and trends in Central Europe, Middle East, Africa (CEMEA) and Emerging Asia regions each grew by more than 20%, while Latin America also recorded above average growth of 14.4%. The findings was mainly focused about the three forces that stimulate the growth, mobile, electronic payments transactions increased penetrations of smart phones and internet usage, advances in technology and innovate products and services. Industry expectations are that m-payment transaction will grow 58.5% annually to 28.9 billion transactions in 2014; and e-payments, as demonstrated by trends in e-commerce, are expected to grow by 18.1%

yearly in same period to a total of 34.8 billion transactions. About the various payment and payment instruments (FFIEC,2013) describes payments involve the use of various payment instruments or access devices like cheque, Automated Clearing House (ACH), cards, phones and high value payments Real Time Gross Settlement (RTGS), direct debit and direct credit.

2.3.2. Payment System Standards and Principles

The Bank for International Settlements (BIS) established on 17 May 1930, the BIS is the world's oldest international financial organization. It serves as central banks in their pursuit of monetary and financial stability, to foster international cooperation in those areas and to act as a bank for central banks. Standards for payment, clearing and settlement systems review by (CPSS-IOSCO, 2010). The CPSS established a Task Force on Payment System Principles and Practices in May 1998 to consider what principles should govern the design and operation of payment systems in all countries. There are 10 core principles and they are expressed deliberately in a general way to help ensure that they can be useful in all countries and that they will be durable. They do not represent a blueprint for the design or operation of any individual system, but suggest the key characteristics that all systemically important payment systems should satisfy (CPSS-IOSCO, 2013). (www.bis.org/cpss) the CPSS serves as a forum for central banks to monitor and analyze developments in payment and settlement infrastructures and set standards for them and IOSCO is a policy forum for securities regulators. The organization's membership regulates more than 95% of the world's securities markets in over 100 jurisdictions (www.iosco.org).

2.3.3. Payment Activities

The traditional banking service has lengthy process, queue to effect payment and it creates dissatisfaction to customers. Payment system changes the activities of banks in regard to cash and cheque handling and processing as (George Hanc, 2004) on the review of American banks future, explained that major changes are underway in retail non-cash payment systems that means electronic forms of payment have increased and reduced the physical transportation of large amounts of paper and he suggested that regulators should aware the risk implications of the changes in payment systems and must adapt their

approaches accordingly. Moreover it is not an exaggeration to say that it is an incredibly exciting time to be working in payments because of the technology trends, the growing maturity of the internet. Furthermore the banks are expected to act accordingly in order to exploit the opportunity in the industry. (Haruna Issahaku, 2012), mentioned that in sub-Saharan Africa, developments in information and communication technology (ICT) are radically changing the way business is done and an efficient and reliable payment systems rely on non-cash payments that facilitates economic development.

2.3.3.1. Payment Instruments

As per the definition of national payment system directives, Proclamation No. 718/2011, No. 84, pp 6007 payment instrument. Banks are the main actors in the payments system, and there are different payment instruments such as cash, direct debit, credit transfer, direct debit, cheque, credit card, smart card, m-banking and internet banking and virtual money on the internet is the one stated by (Haag, 1998 pp. 282) currently, there are three major methods of paying for products and services, cash, debit card or cheque, and credit card and in our context we use one of the payment instruments for a given transaction. In our country the most common payment instruments that banks offer to their clients are cheques, Cashier's Payment Orders (CPO), Demand Drafts (DD), Telegraphic Transfer (TT), Mail Transfer (MT), Certificate of Time Deposit (CTD), standing instructions, Cards and they start offer bank-to-bank electronic fund transfer (EFT) (NIB, 2012).

2.3.4. Clearing and Settlements

The definition of national payment system directives, Proclamation No. 718/2011, No. 84, pp 6007 is define cleaning and settlement. For clearing process at least three parties involved, two banks (payer and payee) and the clearing house. The function of a clearing can often help accelerate the transfer of funds from the payer's account to the payee's account and the clearing house is important to maintain the level of safety and efficiency of the clearing process at the given standards.

As per the explanation of "what-is-a-clearing-bank", a clearing bank is a banking institution that is a member of a national cheque clearing network that has the ability to approve or clear checks for payment. Typically, a clearing bank is a commercial bank.

Depending on the policies of the individual clearing participants, cheque can be cleared that on the same day this type of activity can be very helpful in cheques having a large sum of money. A clearing bank may also work with member banks to manage electronic funds transfers or standing payments between payer and payee accounts that are associated with more than a single bank. The important of clearing bank can also extend to offers the payee some level of protection since the clearing process requires that the funds to cover the check be present in the payer's account at the time the evaluation begins, the payee is assured of only being credited if the payer does have the funds on hand to honor the check.

The payment system document prepared by the Ethiopian institute of financial studies and the Frankfurt School of Financial and Management described the function of a clearing house for inter-bank payment that the payment transaction within the bank is somehow simple task whereas the numbers of a transaction increase the inter-bank payment becomes difficult, so in order to facilitate the payment exchange among participants we need a central clearing on which their mutual credits and obligations will be settled ('cleared'), therefore central bank has an important role in the national clearing system (Ethiopian institute of financial studies, 2011).

2.4. Addis Ababa Clearing Office (AACO)

2.4.1. Overview

In Ethiopia there is only one cheque clearing houses and it is managed by the National Bank of Ethiopia (NBE). The clearing house explained by Proclamation No. 718/2011, pp. 6007. The NBE has issued the regulations and rules which have been adopted by the clearing house. The procedure shows the necessary and sufficient conditions for conducting of clearing and settlement among members. The payment, clearing and settlement activities of Banks need the central unit or system that facilitate and regulate the exchange of the payment instruments, and that authorize the operation of clearing house in the country. Thus the National Bank of Ethiopia (NBE), established the office Addis Ababa Clearing Office (AACO) to support this activity. The objective of AACO is to ease the daily exchange of payment instrument among the member banks and create an effective and efficient payment system by speeding up the settlement process. Any

licensed bank that is situated in the city of Addis Ababa may apply for membership to the NBE (AACO procedural manual, 2005).

The procedural manual of AACO, for participant banks of year 2000 and 2005 mainly focus and state the major clearing business process of Addis Ababa Clearing house based on that the core elements will describe as follows. To initiate the clearing process, there should be payer, payee, clearing house and collateral/ reserve account of participant banks. In the current practice the clearing and settlement process take place in NBE and the NBE designate officer who shall control and supervise the day-to-day operations of the Office. This officer shall act as a chief officer of the AACO and shall be responsible for the smooth running. The clearing process continue every week days, in order to perform uninterrupted/smooth operations each member banks shall maintain an adequate balance in their payment and settlement account that cover the payment of the day-to-day clearing; each member should agree that the NBE to debit and credit their accounts for settlement of payments in the clearing process and the payment and settlement account is inadequate to cover the obligation the member bank shall deposit the required amount.

The participant banks are fully liable for any inconsistency and the NBE, like any other member bank, shall be liable only for its own items and discrepancies. When a dispute arises between the representatives of member banks in connection with the clearing business, the decision of the Chief Officer shall be accepted temporarily, and in the event of a continued dispute, it must be brought to the attention of the COC and then settled by it.

2.4.2. Manner of Conducting Clearing

The clearing process shall be conducted morning from 9:00 A.M up to 10:30 and Afternoon from 3:00 P.M to 3:30 P.M on each working day and eligible activity and payment instruments are decided by COC.

2.4.3. Manner of Delivery and Receipt of Documents

In the document delivery and receipt process for clearing activity the two banks representative and the Chief Officer would involved. The presenting bank should present

clearing documents and the receiving bank should check that the clearing documents are sealed and stamped in the presence of the CCO and witnesses for exchange at the AACO between representatives. The presented document includes two copies of Form-A² and two copies of Form-B³ and the CCO should check that the Forms (A & B) are sealed and stamped, after checking and balancing, initiates and gives back one copy of Form-A and B to the representative while retaining one copy of Form A & B for further processing of transactions and documents which are not sealed and stamped, altered, unsigned and unbalanced Form A & B shall be returned on the spot by the representative of the presenting bank or the CCO or by both.

2.4.4. Activities of Clearing and Settlement

The activities that are expected from the participant banks for the activities of clearing are presentments of exchange lists Form-A in two copies with annex and the receiving party shall sign on it and return the copy to the presenting bank and prepare summary of exchange list Form-B, sign on it and then present it to the Chief Officer, fill the settlement register Form-C the chief officer transfers each receiving member bank's total number of instruments and their value from Form-B to Settlement Register Form-C then balances the outward clearance and the inward clearance and signs on it and Form-D shall be fill by the clearance office chief officer transfer balance from Form-C to Form-D by bank and send it to domestic banking department of NBE, and they pass the appropriate entries on the payment & settlement account of each member bank. On each working day, the chief officer of the clearance office send Form-B and D to domestic banking department in NBE for settlement of balances due form or to member banks at or before 11:00 A.M for ordinary clearance and at or before 4:00 P.M for returned items clearance. Each banks payment and settlement account on the same day it receives the net settlement and it pass

²Which contains information like the date; the name of presenting member bank; the name of receiving member bank ; the cheque or draft nos. and the Birr amount of items; and signature spaces for both presenting and receiving banks' representatives; signature space for the supervisor of the presenting bank and stamp of the presenting bank

³Which contains information like the date; the name of the representing member bank; signature space for presenting bank; the name of the receiving member bank; number of instruments; value in Birr; and the serial number?

on gross basis (i.e. debit for the total amount of inward clearance & credit for the total amount of outward clearance) (AACO procedural manual, 2005).

2.5. Automated Transfer System (ATS)

2.5.1. Overview and Regulations

The development of a nation's payment system is of the utmost importance to its relevance for national monetary policy, financial stability and the overall economy, and the reforms in a national payment system strive for improved safety and efficiency (Ethiopian institute of financial studies, 2011). (Jan Woltjer et.al, 2009) mentioned the payment system as a system that has specific set of instruments, banking procedures and inter-bank funds transfer (eg clearing and settlement) systems that ensure the circulation of money. The report document on January 2011 about e-government strategy and implementation, stated that the strategy supports in development and inclusion of private sector service delivery that facilitate the delivery of services and information through alternate channels in a manner that is convenient for the citizens aligned with their expectations and aspirations. Among the different projects that are mentioned in the document, the development of National Payment Gateway for Ethiopia to enable all modes of electronic payments to be transacted through the electronic channels was the core one. The Federal Negarit Gazeta, 2011, no.84, pp. 6007, stated that, the national payment system is an essential component of the financial infrastructure of the country, whose safety, security and efficiency is critical to ensure financial stability, economic growth and financial inclusiveness and it has become necessary to provide rules on establishment, governance, operation, regulation and oversight of the national payment system so as to ensure its safety, security and efficiency.

The payment systems in the country consist of both paper based as well as electronic based systems. The paper based systems where the instruments are physically exchanged as well as they are electronically exchanged through the EATS system. A settlement worked out manually for some banks and electronically for some other banks since 2011 onwards national bank of Ethiopia launch EATS for participant to effect payments electronically. The EATS system has two basic functionalities, real time gross settlement (RTGS) and automated clearing house (ACH) and the ACH facilitates payment instruction that include clearing and settlement of payment instruments such as cheques, CPO etc. There is only

one type of electronic clearing system functioning for payments initiating from Addis Ababa city banks. The NBE directive, Proclamation No. 718/2011, pp. 6007 defined clearing system and settlement system.

2.5.2. Financial Services File Formats and Document Standards

There are many financial services file formats, document standards and message types to mention some (www.corporatetobank.com). 1) ACH (Automated Clearing House) The United States ACH Network is a batch processing, store-and-forward system, governed by The NACHA Operating Rules, which provide for the interbank clearing of electronic payments for participating depository financial institutions. 2) BTRS (Balance Transaction Reporting Standard) is the next generation of cash management. The goals of the BTRS standard are to enable straight through processing through standardization, be as backward compatible as possible and align with the global ISO 20022 standards. 3) UN/EDIFACT (United Nations rules for Electronic Data Interchange for Administration, Commerce and Transport) comprise a set of internationally agreed standards, directories, and guidelines for the electronic interchange of structured data, between independent computerized information systems. EDIFACT is widely used across Europe; mainly due to the fact that many companies adopted it very early on and 4) SEPA (Single Euro Payments Area) stands for the European Union (EU) payments integration initiative. SEPA is a set of harmonized payment schemes and frameworks for electronic euro zone payments and it established new standards for credit transfers and direct debits based on ISO XML 20022.

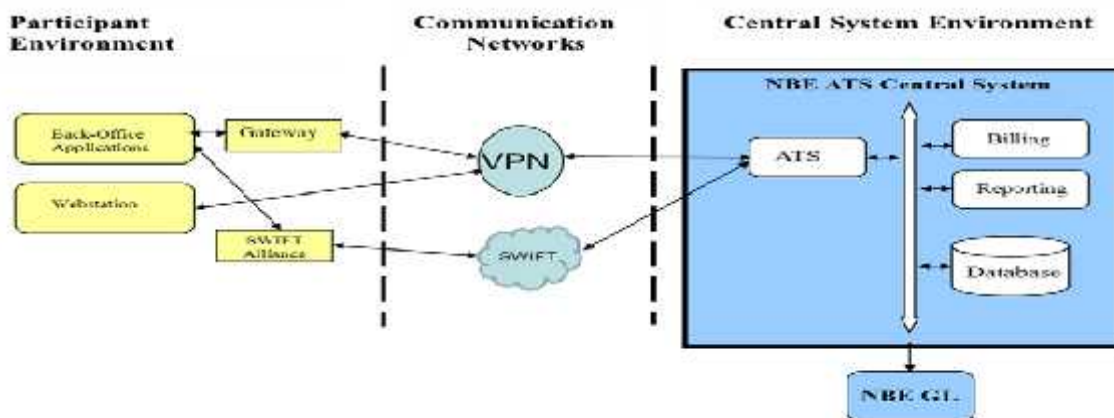
2.5.3. Features of the EATS System

The EATS system is a standardized payment system it follows SEPA file and message formats that enable the participant banks and central bank to exchange a standardized electronic transaction message and file. The document prepared by the Ethiopian Institute of Financial Studies in collaboration with Frankfurt School of Finance and Management, 2011 stated that the recent trends in national payment system development involved initiatives to broaden the range of payment instruments and services; improve cost efficiency in terms of operating costs and access to and usage of liquidity; enhance interoperability of banking, payment and security; create more suitable oversight and regulatory rules for the national payment system and improve the efficiency and stability

of payment service markets (Ethiopian institute of financial studies, 2011). The EATS technical participant document(2011), described that the system provides a settlement mechanism in which both processing and final settlement of inter-bank funds transfer instructions take place continuously and in EATS, the settlement of funds occurs on a transaction-by-transaction or bulk-by-bulk basis depending upon whether the originating instruction is an individual transaction or a bulk transaction and the system also tested funds availability, and settled, continuously, and in real time across the central bank settlement accounts, provided that the sending bank has sufficient covering balance or credit. The participant has a settlement and collateral account in EATS central system.

According to EATS technical requirement document, 2011, the Ethiopian Automated Transfer System (EATS) consists of Automated Transfer System application and various interfaces and it includes Real-Time Gross Settlement (RTGS) and Automated Clearing House (ACH) high-value and bulk low-value payment and settlement services. EATS complies with the existing principles and standards of the core principles of payment systems set out by the Bank for International Settlements (BIS) and the BIS principles on netting, clearing and settlement. The EATS participants are NBE participant as well as the system operator, licensed commercial banks, Ministry of Finance and Economic Development (MoFED), the Ethiopian Revenue and Customs Authority (ERCA) and Ethiopian Commodity Exchange (ECX) and they interact through the defined participant interfaces. The figure depicts below show us the component architecture of the EATS system.

Figure 2.5.3.1 EATS component Architecture,

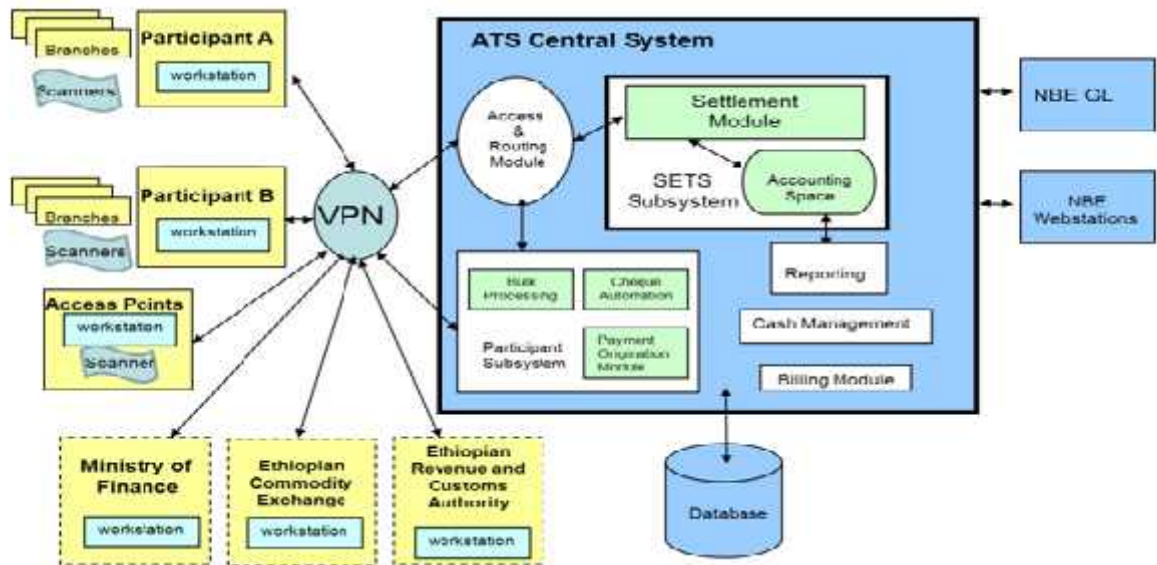


Source, NBE technical document, 2011

To illustrate the diagram the participant environment consists of the systems and network belonging to and being operated by EATS Participants. There is a gateway that enables the participants and EATS system to delivering message and files via Virtual Private Network (VPN). In the participants' server there are two folders, "IN" and "OUT" folders, every incoming message from EATS system put in "OUT" folder and every outgoing message shall put in "IN" folder and in parallel the participants and EATS system process the message accordingly from this gateway server and the participant banks Core Banking Solution should enable to pick and drop data in this gateway or in other words the participant banks CBS should interface with this gateway. The NBE and the participants are communicating by the already established virtual private network (VPN) connection and the central system environment supporting the EATS central applications, here a single point of failure might be the problem because every participant is accessing the central ATS system.

The Ethiopian Automated transfer System uses the Montran's ATS application and it can process both high value and low value payment instructions, in gross or net settlement form. The following figure depicts the functional architecture of the EATS system.

Figure 2.5.3.2 EATS functional Architecture,



Source, NBE technical document, 2011

As per the explanation of NBE technical participant document 2011, ATS is clearing and settlement system that combines the functions of Real-Time Gross Settlement for high

value/urgent payments with those of an Automated Clearing House for Bulk/Low value payments. The Payment Originator (PO) component, which resides on the Participant and NBE workstations, provides facilities for Participants to submit and receive individual payments and bulk payments and to facilitate Straight-Through-Processing (STP) of payments from and to Participants' own proprietary payment processing systems.(www.montran.com, 2013) mentioned that ATS is also an electronic clearing system that enables files of low-value payment instructions, including truncated cheques together with their scanned images, to be exchanged among financial institutions. It calculates multilateral net positions and settles them within the settlement module in either a continuous or deferred settlement mode. Different national payment systems support different payment instrument, the EATS supporting payment types such as high value payments MT103 customer payment and MT202 (inter-bank transfer) formats; Bulk credit transactions (e.g. payroll or pension payments); Bulk debit transaction ; cheque transactions. As per the EATS document description the STP or Straight-Through-Processing is the process of delivering payments into EATS directly from the core banking applications of the participants and also the process of consuming the outputs generated by EATS directly by the core banking applications of the participants.

2.5.4. Activities of Clearing and Settlement

The automated clearing house (ACH) is a nationwide mechanism that processes electronically originated batches of high-volume, low-value credit and debit transfers. Rather than sending each payment separately, ACH transactions are accumulated and sorted by destination for transmission during a predetermined time period. This provides significant economies of scale and faster processing than paper checks. More recently, the ACH network is used to convert check payments into ACH debit transfers which provides faster processing and reduces payment processing costs. An originator is a person or entity that agrees to initiate ACH entries in to the payment system according to an arrangement with a receiving person or entity The Originator is usually a company or an individual directing a transfer of funds to or from a consumer's or a company's account. Net settlement allows participants in private-sector clearing arrangements to exchange and settle transactions on a net basis through reserve or clearing account balances. Net Settlement is available to transactions that settle across Federal Reserve Districts as well as

transactions that settle entirely within a single Federal Reserve Bank. The net debit and credit positions of the financial institutions are calculated and debited or credited to the reserve accounts of the financial institutions. A daily settlement occurs with the Federal Reserve Bank unless the financial institutions designate another member to settle on its behalf. An agreement should exist between the financial institutions and the Federal Reserve Bank that establishes the terms of ACH funds transfers.

2.5.5. Straight Through Processing (STP)

The STP or Straight-Through-Processing is the process of delivering payments into EATS directly from the core banking applications of the participants and also the process of consuming the outputs generated by EATS directly by the core banking applications of the participants. There is a Gateway complete solution for the integration of the EATS with the Participant bank's existing back-office and client services. It links the bank's existing internal systems with the ATS for Straight-Through Processing (STP) of all high and low value payments. This interface will use two directories IN and OUT in the IN directory, the back-office application will place files and the gateway will scan the directory for new files every few seconds. As soon as a new file is placed in the IN directory, the gateway reads it, validates it and sends it to the ATS central system. In the OUT directory, the gateway will place the files received from the central system. The participant has the responsibility of transferring the files from the back-office application to the IN directory and taking the received files from the OUT directory (NBE technical participant document, 2011).

2.6. Opportunity and Challenges

To mention some of the benefits and challenges revealed by previous researcher were regulatory and legal issues, inadequate infrastructure, inadequate directives and policy, changes in technology, rapid de-regularization of many parts of finance, lack of security, lack of coverage, shorter access times, reduced access fees, increasing convenience to access information, real time funds transfer, risk control mechanism, simplification of payments process ,optimization of liquidity, efficient funds management, allows large value transfers between banks, enables fund movement between cities, permits on-line real time query of the funds position, (Gardachew Work, 2010) stated the challenges of

adopting e-banking in Ethiopia, cyber security issues, financial institution dependent on ICT creates vulnerability and that may harm banking; lack of trained personnel, frequent power interruption, (Biniam shiferaw, 2011), mentioned that by the introduction of online transaction, money laundering is becoming a challenge for banks and also problem for the country in general and it is clear that such activity damages the financial-sector institutions particularly banks that are critical to economic growth, it reduces productivity, encouraging crime and corruption, slow long-term economic development. Ayana Gemechu, (2012) mentioned that in his study of barriers and opportunity of E-banking, Ethiopia has not yet enacted legislation that deals with E-commerce concerns including enforceability of the validity of electronic contracts, digital signatures and intellectual copyright and restrict the use of encryption technologies and high rates of illiteracy it hinders the accessibility of banking services.

CHAPTER THREE

3. RESEARCH DESIGN AND METHODOLOGY

The purpose of this chapter is to present the research method used by the study. It presents in detail the Research Design, Population and Sampling Techniques, Method of Data Collection, Procedure of data collection and Data Analysis. For the understanding of all the contents, section 3.1 describes research design in details, population and sampling techniques is presented in section 3.2 and it followed by method of data collection in section 3.3, the procedure of data collection shown in section 3.4 and finally the data analysis presented in section 3.4.

3.1. Research Design

The purpose of research is to discover answers to questions through the application of scientific procedures (C.R.Kothari, 2004). There are basically three research designs as stated and categorized by Ghauri & Gronhaug (2005) and they distinguished them based on their problem structure or natures such as exploratory, descriptive and explanatory. In both descriptive and explanatory research designs the problem is structured and understood. When the research problem is badly understood an exploratory design is adequate. Exploratory studies are a valuable means of finding out “what is happening; to seek new insights, understanding and knowledge; to ask questions and to assess phenomena in a new light” (Mark Saunders et.al, 2003). It is particularly useful to clarify understanding of a problem and it is also believed that all methods are valuable if used appropriately in light of the research problem and objectives. Therefore, in this study the researcher targeted to survey the progress, opportunity and challenges of EATS interfacing with banks. To do that, an exploratory type of study was selected because it helps to gain familiarity with a phenomenon or to gain new insights or understanding about the situations. The research adopted mixed research approaches. The sampling techniques, method of data collection and data analysis aspect, in this study are further elaborated in the following sections.

3.2. Population and Sampling Techniques

To collect and present the data from every possible corner is time taking, costly. Sampling techniques provide a range of methods that enable to reduce the amount of data need to collect by considering only data from a subgroup rather than all possible cases or elements (Mark Saunders et.al, 2003, pp.204). Purposive sampling represents a group of different non-probability sampling techniques and it is also known as judgmental, selective or subjective sampling, purposive sampling relies on the judgment of the researcher when it comes to selecting the units (e.g., people, cases/organizations, events, pieces of data) that are to be studied. Purposive or judgmental sampling enables to use judgment to select case that will best enable to answer research questions and to meet the objectives. This form of sample is often used when working with very small samples Neuman, 2000 (cited in Mark Saunders et.al. 2003).

There are 20 Banks in Ethiopia, 4 states owned and 16 private commercial banks from these banks 11 banks are connected to EATS through their Core Banking Solution (CBS) and the 7 banks are not connected to EATS through their Core Banking Solution (CBS) and the remaining 2 banks are totally manual (NBE, 2013). In this study 7 banks were selected purposely, based on banks year of establishment, number of cheque transactions and branches and ease of access data. Moreover National Bank of Ethiopia (NBE) the one controls the integration as well as the member/participant bank to EATS system includes in the study. The selected banks functional, technical, finance supervisor and IT managers were included in the survey sample because it is believed that those people have a good exposure with EATS activities. Moreover the number of staff involved in the functional team in different banks may vary due to the number of cheque transaction they handled therefore in order to get relevant information the researcher were focus to distribute the questionnaire to those staff that have a direct contact to the given activities. The total number of people involved in this activity for the selected banks were 70 the largest number of people in CBE whereas the smallest people in Birhan and Wegagen banks and the remaining has an average number (AIB, Nib and Dashen banks) from the distributed questionnaire 48 respondents were returned the questionnaire.

3.3.Method of Data Collection

Data collection is an important component to conduct a research. The common data sources of researches are primary data sources and secondary data sources. The primary data are those which are collected fresh and for the first time, and thus happen to be original in character. The secondary data, on the other hand, are those which have already been collected by someone else and which have already been passed through the statistical process (C.R.Kothari, 2004). The primary data required for the assessment of participants progress, challenges, and opportunity of interfacing EATS. The data was collected using structured questionnaire and interview, the questions was highly related to the concept and activities of National payment system (EATS) and distributed to identify and measure the respondent's opinion. Moreover, the survey questionnaire grouped into three sections.

3.3.1. Questionnaires

Quite often questionnaire is considered as the heart of a survey operation. Hence it should be carefully constructed. If it is not properly set up, then the survey is bounce to fail (C.R.Kothari, 2004). The questionnaires were structured type and responses to the questions were measured on Yes/No questions and on a five likert rating scale where Strongly Agree (SA) = 1; Agree (A) = 2; Neutral (N) =3 (i.e. Neither agree nor disagree), Disagree (DA) = 4; and Strongly Disagree (SD) = 5; the use of Likert scale is to make it easier for respondents to answer question in a simple way and allow them to express their willingness in favor of the statements. In this study questionnaire were used to gather demographic information, status, challenges and opportunity of interfacing EATS. The questions had three sections.

Section I: - in this section the main questions were related to respondent's personal profile.

Section II: - in this section the respondents were asked about year of establishment, availability of core banking solutions, name of core banking system, whether they are interfacing or not using the Core banking solutions and number of branches and number of branches having access to EATS.

Section III: - this section focused on the challenges and opportunity of interfacing EATS. The aim was to obtain the challenges and opportunities of the banks on the perspectives of infrastructure, business continuity, security,, core banking solution implementation,

regulations (rules/policies) , IT strategy and leadership, operational challenges as well as opportunities and information's related to number of transaction in the last three years (2011-2013). Moreover the questionnaire were distributed to IT and Accounts and Finance department of participant banks those have direct connection with EATS processes to assess the opinion and observation about the progress, challenge, opportunity of interfacing EATS, and major efforts done by the NBE and participant Banks to tackle the challenges and in order to exploit the opportunities.

3.3.2. Interview

The interview method of collecting data involves presentation of oral-verbal stimuli and reply in terms of oral-verbal responses. This method can be used through personal interviews and, if possible, through telephone interviews (C.R.Kothari, 2004). The structured interview questions prepared to look the status of Banks interfacing EATS, the national payment system (EATS) contribution to interbank transactions in general and the overall process of payment, clearing and settlement (RTGS, cheque clearing, settlement, bulk debit and bulk credit) activity in particular, its challenge from the technical and functional point view and the overall progress and performance of the services and the future prospects, NBE effort from the very beginning up to now. The dialogues were with senior executives (Manager and V/president) of the IT department, department head of Accounts and Finance of banks as well as the NBE staffs who have a direct contact with payment, clearing and settlement activities. Hence, the interviews were conducted to enhance and add on the results of questionnaires.

Documentary analysis was also conducted to obtain broad, in-depth and specific information, from secondary data mainly about payment, cheque clearing, settlement and interoperability of EATS features and national payment system standards and current practices of payment, clearing and settlement process of banks. The secondary data used books, reports, internet, websites, newsletters, procedural manuals, technical manuals and other relevant materials mainly from the secondary data sources and took definitions of terms and conceptual data's which are relevant to literature, internet are an online source of documents relevant to study areas like concepts, approaches and best practices and other data which may help for literature and analysis.

3.4. Procedures of Data collections

Collecting the cooperation letter from the University and distributed to the selected banks, the banks gave their permission to distributed the questionnaire to the IT and accounts and finance departments and in parallel made an interview appointment to the concerned party. The data were collected from December 2013, to January 2014. The study was planned to examine the progress, opportunity and challenges of banks interfacing with EATS in 7 purposively sampled banks including NBE. The questionnaire was distributed to the selected banks head office for those departments that have direct contact and adequate knowledge with the payment, cheque clearing and settlement process of (EATS) activities and those who support the overall infrastructure and connection facility of EATS. Moreover the researcher believed that they provide genuine information on the points of EATS. The interview was conducted to the IT vice- president and managers, ATS managers, Accounts and finance supervisors of selected banks. Secondary data was collected from different publications to develop the theoretical and conceptual bases for the study and made in-depth interview about over all operations of the exchange of cheque among the participant banks at Addis Ababa Clearing Office.

3.5.Data Analysis

The term analysis refers to the computation of certain measures along with searching for patterns of relationship that exist among data-groups (C.R.Kothari, 2004). Data analysis is bodies of methods that help to describe facts, detect patterns, develop explanations, processed and analyzed. (Geoffrey Marczyk et.al. 2005) describes the research studies the process of data analysis involves the following three steps: (1) Preparing the data for analysis, (2) Analyzing the data, and (3) Interpreting the data. The researcher was analyzed the data collected through survey concerning the progress, challenges and opportunity of interfacing EATS with banks. The data collected via questionnaires was analyzed with simple descriptive statistics (percentage, mean, tables and charts) which facilitate efficient coding and analyses. Furthermore, the data that was collected through the interview were analyzed with interpretation and narration, the review of documents was interpreted qualitatively. Generally the study used both qualitative and quantitative analyses.

CHAPTER FOUR

4. RESULTS AND DISCUSSION

The previous chapter presented the research approaches adopted for this study. This chapter presents the results and discussion of the research.

4.1. Results/ Findings

This section presents the survey results obtained from sample Banks and in-depth interview results gathered from selected financial institutions based on the available information gathered from them. Moreover, the results obtained from the survey are presented in five parts. The first part reveals progress, challenges, opportunities and in-depth interview respectively. I used Microsoft Excel to create charts and tables to correspond the received questionnaire responses that were generated by SPSS. I also adopted the Likert Scale Formula ($\text{Mean} = \frac{\sum (\text{scale} * \text{frequency})}{\sum (\text{frequency})}$) in the 1-5 scale/opinion questions, in order to present result of the responses. In the scale/opinion questions, I used SA to denote Strongly Agree, A to denote Agree, N to denote Neutral, D to denote Disagree and SD to denote Strongly Disagree.

4.1.1. Progress Results and Discussion

This section presented the survey results obtained from respondents and the progress in terms of core banking solution implementation, branches and interoperability of those banks.

Table 4.1.1.1 Core banking system implementation and EATS interfacing

Implementing CBS	Response	Frequency	Percent
	Yes	48	100.0
Interfacing EATS with CBS			
	Yes	28	58.3
	No	20	41.7
	Total	48	100.0

The above table shows that all banks (100%) implementing core banking solutions, this depicted that those banks are at least fulfill the minimum requirements expected from NBE. 58.3 % of the respondent revealed that they are interfacing EATS with their CBS where as the rest 41.7 % replied that they did not interfacing the EATS using their CBS. In terms of EATS the smooth functioning of an individual system often depends on the smooth functioning of other related systems that means the interoperability of the banks are highly dependent to each other. From the result one can learn that implementing core banking solutions half way approaching to interfacing of EATS and the level of certainty that transaction executed by the core banking system and the banks can optimize the enterprise business operation process with inter-branch transactions.

However why banks are not interfacing with their core banking solution to EATS, there might have different reasons, but the critical one is challenges of configuring the new architecture with the existing one, all the applications are not tailored to the given systems. The finance and IT manager of the participant banks were mentioned that the NBE provided the standardization document regarding EATS but, the standardization document was not comprehensive and didn't explained too much for the cheque clearing and RTGS activities as well as it had a problem of clarity to easily understand by the core banking system vendor of the banks. Moreover, some of the IT managers mentioned that the commitment and giving attention for the importance of the EATS system were insignificant. This showed that the follow up and enforcement of NBE on this regards was not too much. Infosys Technologies Limited (2009) stated that vendor's capabilities and understanding the business requirements are a key determinant factors in order to transforming a bank's core systems on the bank's future business strategies and success.

Table 4.1.1.2 participant Banks

Banks Name	Year of Establishment	No of Branches	Branches Connected CBS	Name of CBS
Awash International Bank	1994	125	71	Bank Master
Berhan International Bank	2010	30	30	Rubikon
Commercial Bank of Ethiopia	1963	770	450	T24
Dashen Bank	1995	117	117	Flex cub
Nib International Bank	1999	77	72	T24
Wegagen Bank	1997	80	80	Omni-tech

The above Table present the list of banks, year of establishment, number of branches and branches that are connected to core banking solution (CBS) and the name of CBS, as of December 2013. One can observe that the year of establishment of the bank are more than one strategic years. In today's banking environment the computation is become though and much quick, hence in order to address such quick need banks must meet the marketplace demands. One of the strategies of banks to outreach to clients and increased customer base line is opening new branches or provide different service delivery channels.

Birritu No.114 (2012) edition under its column of branch Net -Work for banking sector By Region as at January 2013, mentioned that Commercial Banks of Ethiopia (CBE) had a total of 675 branches throughout the country and it holds 44.15 % of Bank's share, Awash International Bank (AIB) had 98 branches throughout the country and it holds 6.41 % of Bank's share, Dashen Bank had 94 branches throughout the country and it holds 6.15 % of bank's share, Wegagen Bank had 67 branches throughout the country and it holds 4.38 % of bank's share, Nib International Bank (Nib) had 66 branches throughout the country and it holds 4.32 % of bank's share, Berhan International Bank had 20 branches throughout the country and it holds 1.32 % of bank's share. These banks had a total of 66.73 % of bank's share. One can see from the above Table that the numbers of branches of each aforementioned bank are increased and Figure 4.1.1.3 depicted that the percentile increment of the branch of each bank and Wegagen bank increased its branch by 16 %, Nib increased by 14 %, Dashen bank increased by 20 % CBE increased by 12 %, AIB increased by 22% and Berhan International bank increased by 33% while the branch

expansion increased the NBE expected to expand its clearing activities, but all the participant banks finance supervisors agreed that one of the advantages of having national payment system is to cover all areas of the country in process of payment, clearing and settlement process.

Moreover the IT managers agreed on the advantage of the implementation of core banking solution is to facilitate inter branches operations as well as interbank operations and giving equal opportunity to all customers throughout the country whereas the payment, clearing and settlement coverage of NBE is only city branches the clearing houses also facilitates the city branches cheques only and the geographical coverage has no progress from the very beginning till now (2011-2013), however the NBE working on cheque standardization to overcome such obstacles this is still in progress not yet implemented.

Birritu No.114 (2012) reported that efforts are underway to standardize checks, establish national switch and encourage all banks to install core banking system. The NBE interview result showed that before 15 years NBE implemented a core banking solutions and recently changed to another core banking solutions go-live Nov, 2013, and it is interfaced with the EATS. Birritu No.114 (2012) reported that, the old system could not completely interface with the national payment system (NPS).The new solution acquired by the NBE, besides interfacing with the national payment system will assist the management of the country's foreign currency reserves, gold reserves, payment and settlement of government accounts and issuance of currency.

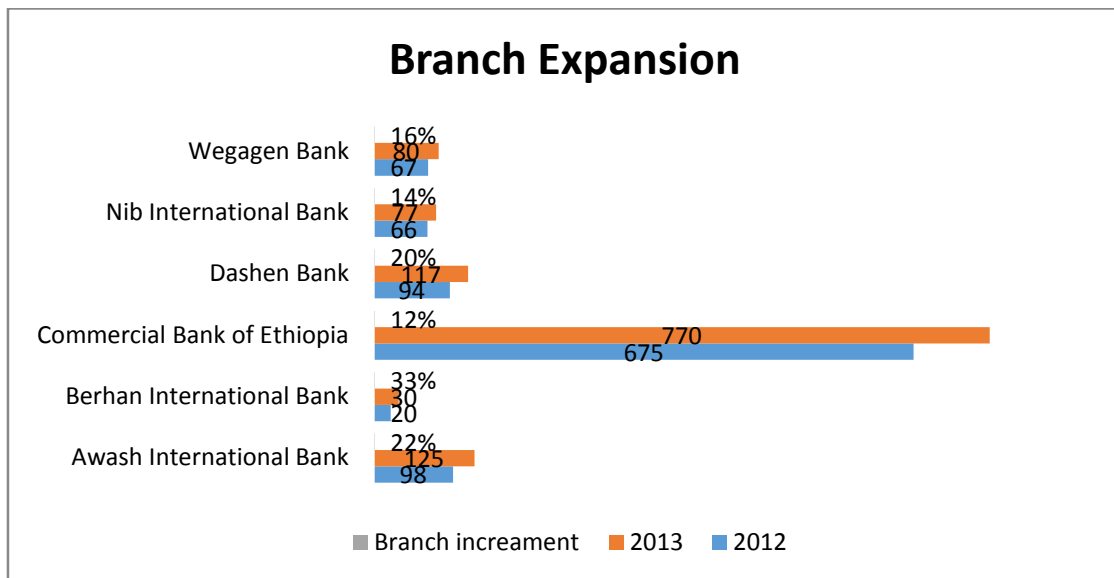
In terms of branches connectivity to the central core banking solutions one can observed 56.8 % branch of AIB are connected to CBS, 100% of Berhan International Bank, Dashen Bank and Wegagen Banks are connected to CBS, 58.4 % of CBE are connected to CBS and 93.5 % Nib are connected to that to CBS. This showed that the banks are ready to transact inter-branch as well as interbank transaction if other infrastructures are in place. Almost all banks using a different core banking solutions.

The NBE mentioned that banks are obliged to automate their working environment by creating a link among the head office and its branches and to interface it further with EATS so as to achieve straight-through-processing (STP) and as we can observe the below figure 4.1 almost all branches have the capability of transacting STP, moreover it speed up the

transaction process, maintain the efficiency of the bank and increased the customer satisfaction.(Olga Lewandowska, 2010) mentioned that STP has made the time between execution and any rejection a matter of seconds furthermore he elaborated that STP as “an end-to-end automation of security trading process from order to settlement. It involves a seamless automated electronic transfer of information to all parties in as close to real time as possible” STP involves the work flow from initial execution to settlement without manual intervention.

One can learn that the CBS has different name which means they have different vendors, system structures, implementation experience, organizational structure, data privacy, hardware support, training session, connectivity option and interface for clearing and payment, technical challenge, these and other factors may differentiate banks interfacing and not interfacing with EATS (Infosys Technologies Limited ,2009). The interview result of NBE revealed that eleven participants have interfaced their CBS with the EATS and the remaining is working on it. The major challenges were timely implementation of CBS by participants and the aforementioned factors may have their own contribution to not deliver timely.

Figure 4.1.1.3 Branch Expansion



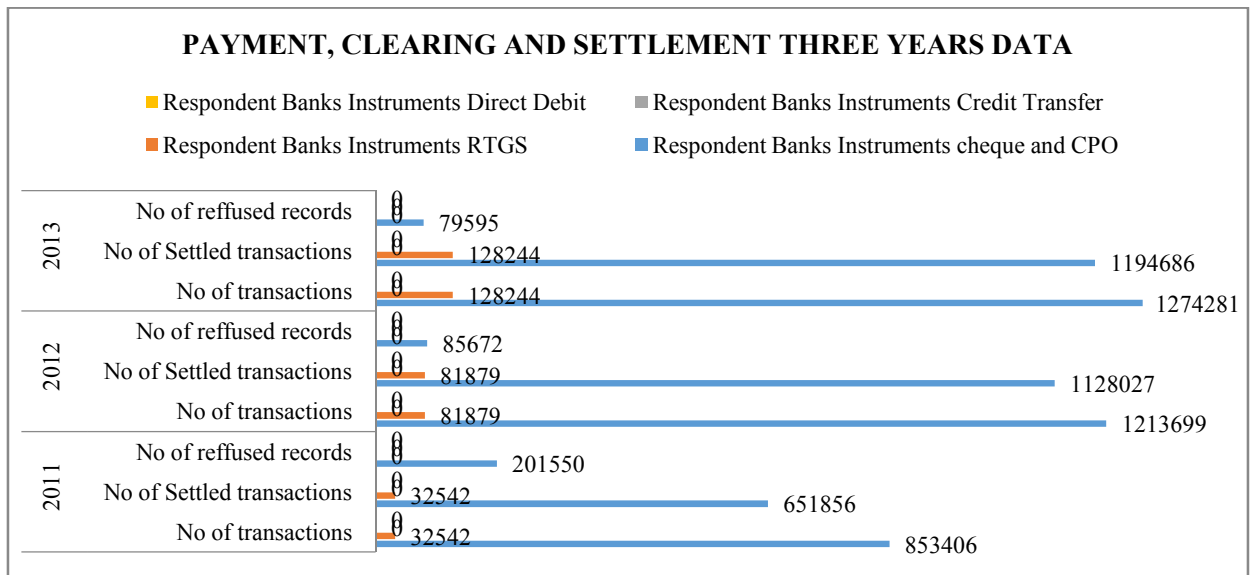
Source, Author result, 2014

Birritu No.114 (2012) explained that, the payment system has been operating smoothly, yet cash remained predominantly important means of transaction. Thus NBE has provided sufficient bank notes and coins in desired denomination to meet the transaction demand of

the economy. Furthermore Cheque is the dominant form of non-cash payment. The below (Figure) presented the instruments that banks are using for the EATS process; on can observe that the participant banks were not transacting the Credit and Debit transfer (ETF) because the result showed that the number of transactions were zero.

The finance manager mentioned that EATS system not yet started to functioning EFT, even if the banks system and EATS support it. On can observe that the transactions of real time gross settlement (RTGS) increased form year 2011 to year 2013 on average by 47 % and due to the transaction nature the number of transactions equals to the number of settled transactions no refusal transactions. Moreover the number of transactions of cheque and CPO were increasing from the year 2011 to 2013 on average by 83 % on the other hand the numbers of refused transactions were decreased on average by 17 %, even if the reasons of the returned cheques decreased in order to maintain efficient, safe and reliable transactions it should be minimized further by avoiding the “reasons of returned”⁴ cheque.

Figure 4.1.1.4 Selected Participant Banks Payment, clearing and settlement transactions (2011-2013)



Source, Author result, 2014

⁴ Endorsement missing, Payee’s endorsement required, Payee’s endorsement irregular, Drawers signature differs, Alteration in xxx requires drawer’s full signature, Cheque is post dated, Cheque is out dated, Amount in words and figures differ, Payment stopped by drawer, Deposit items not cleared, cheque is mutilated, Drawer’s signature missing, Additional signature required, Account closed, Account transferred to branch, Insufficient funds, crossing stamp missed and Network failure etc...

4.1.1.1. Payment Instrument

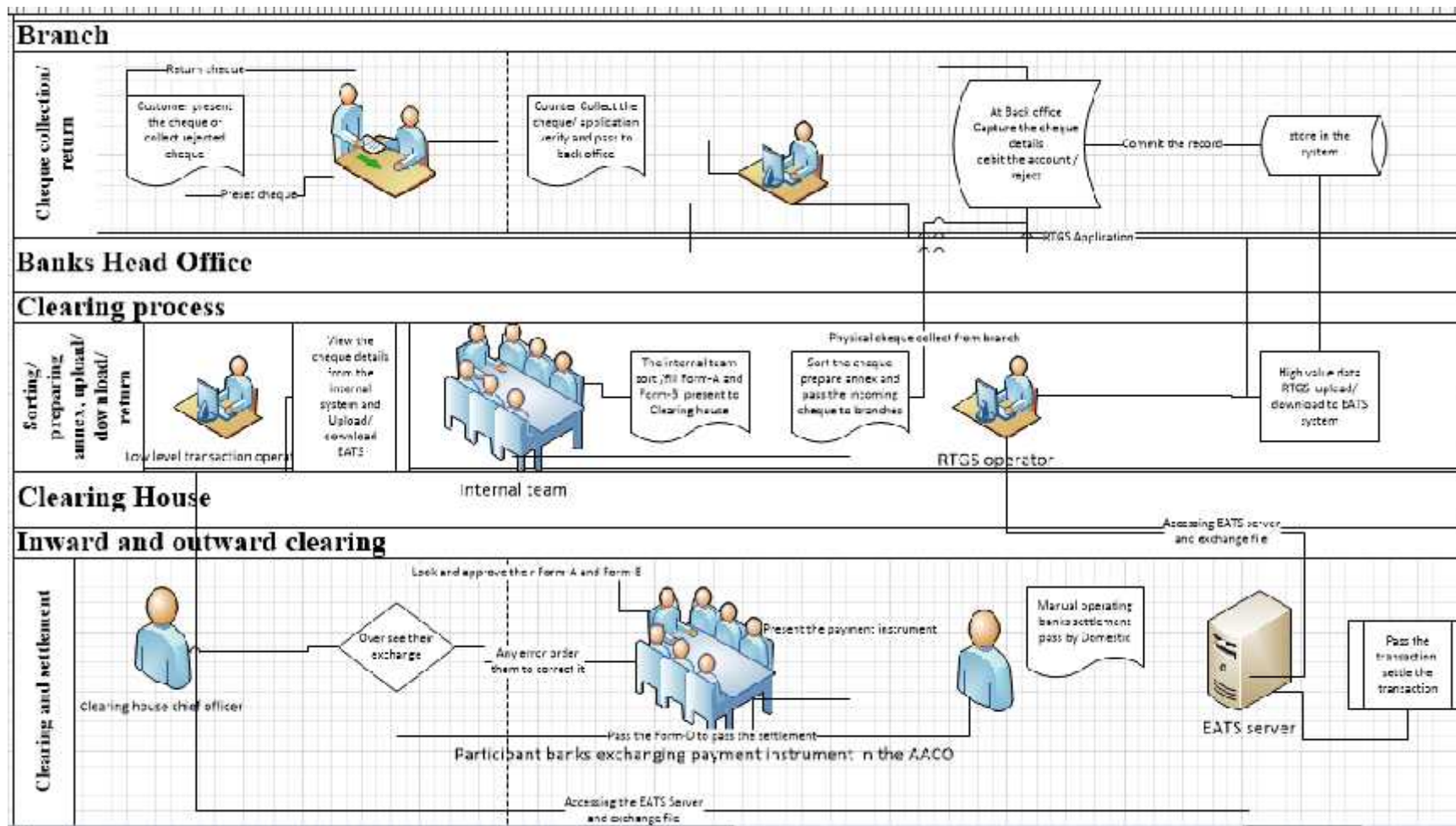
A payment instrument is an instrument that facilitates the transfer of funds, for instance a cheque, debit card, or credit transfer, furthermore electronic payment instruments that uses electronic means for beginning, authorization and authentication of a payment transaction. Even though a transaction might be initiated electronically, the subsequent processes of clearing and settlement might involve a combination of manual and electronic procedures (World Bank, 2012). In our context the interview result showed that the process of clearing and settlement involves both electronic transaction and exchange of cheque as well as a manual exchange of cheque, but the clearing and settlement process except two banks done using Ethiopia automate transfer system (EATS).

The payment instrument that includes cash, cheques, traveler's cheques are category of paper based instruments, direct credit and direct debit transaction types are the category of electronic fund transfers (EFT) and card-based instruments these includes credit, debit, prepaid etc. Cheque is the non- cash paper based instrument that used for value higher than that of cash payment. One can see from the above Table 4.8 that the participants of EATS dominant payment instruments are cheque, CPO, RTGS.

Moreover the interview respondent finance and IT managers mentioned that the banking industry highly rely on technological innovations in order to avail the service to the customer as well as to provide an alternate service channels that facilitate and speed up their payment, clearing and settlement process, but they mentioned that still using only cheque ,CPO for low payment and government payment respectively , RTGS for high value payment and MT 202 for bank to bank fund transfers, whereas the market demands for instance bill payments, payroll facility and other electronic fund transfer (EFT) instrument however, there was no progress on this regards, moreover the customer want to effect payment using its card still this area also not addressed yet as the respondent confirmed. On the other hand NBE described that the EATS facilitate the introduction of electronic payment instruments. Therefore the NBE together with the participant banks must work to further incorporate the missing functionality of national payment system in order to provide the desired product and service by the customers.

4.1.1.2. Clearing Process

Figure 4.1.1.2.1. Clearing process



Source: - Author result, 2014

The above Figure depicted that the process of clearing, one can observe that initiation comes from branches, and then head office and head office post the transaction to EATS. The branch accept the cheque, CPO or application letter (for RTGS) from the customer, the clerk crosscheck its validity and pass it to the back office the back office clerk post it to the bank's core banking solution/system.

1. For RTGS transactions (Message Type -MT 103)⁵, the head office clerk open the RTGS data verify it and cheque the availability of fund, if the status of the payment and settlement account at NBE is good, directly post the transaction to the EATS system and it automatically affect the respective accounts, otherwise (if liquidity issue exist) hold the transaction at head office. From this one can learn that the activity typically violate the transaction nature of RTGS high value payment should pass at real time and settle automatically. Moreover the concept of STP also violate, straight through processing means a transactions initiated from bank A branch B and automatically affect Bank C branch D accounts, however in the current scenario every transactions pass through the head office. On the other hand the incoming RTGS from the EATS automatically affect the respective accounts, within a fraction of second the beneficiary can withdraw its money. Therefore the efficiency and internal process of one participant can affect the overall EATS participant activities and interoperability becomes a problem. The finance manger of the banks mentioned that the government should give especial attention for the interoperability of the EATS, because the efficiency and inefficiency of one participant has an impact to the overall operation of other participant and the government should indoctrinate a tight follow up/ oversee for those banks who are hindering the processes.
2. For MT 202⁶ this type of message always transacted from the head office only because it is a bank to bank transactions and the transactions affect payment and settlement account of the banks. The Finance managers mentioned some of the possible transactions which includes purchase of NBE's bill, matured interest of other bank time deposit & settlement of time deposit, bank service charge,

⁵(MT 103) MessageType. This message type is used to make transfers from one Bank customers account to the other Banks customer's account.

⁶ (MT 202) This message type to make transfer from one bank payment & settlement A/C to other Domestic Banks A/C by instruction letter and or approval of Top management

international banking exchange commission, time deposit in other banks, retransfer of wrong credit transfer, purchase of currency, proceeds of telephone transfer (TT) for other banks etc.

3. For cheque, CPO the branch clerk collect the cheque and pass to the back office, the back office clerk scan the cheque capture the details and pass it to the head office through the system as well as collect the cheque prepare a summary and pass it to head office the physical cheque, if the branch has no cheque scanner it pass the cheque with summary to the head office, the head office capture the details and pass to the responsible personal to post it to the EATS. The office collects the physical cheque and prepares a summary (Form A and Form B) present it to the Addis Ababa Clearing office (AACO) at NBE.

Finally the participant banks exchange the physical cheque and present it to the head office of their corresponding banks at the same time the electronic scanned cheque processed through the EATS system; there is a duplication of effort. The finance managers mentioned that the clearing session for outward/ outgoing cheque shall be 1:00 P.M and for inward/incoming cheque branch shall make cheque rejection up to 10:00 A.M. The Head office collect returned cheque from NBE, on the settlement date of the cheque and sent it to the respective branch, and then the branch returned the cheque to the customer.

The respondents agreed that the last three years there is no progress in terms of payment clearing and settlement process, still there is a duplication of effort the exchange of cheque both physically and electronically this enforced the bank to incur additional cost for personal that collect, sort and summarize the physical cheque and the settlement process took “T+2” date this mean (the entry date of the transaction called business date and the settlement date is value date, it took almost three day for instance business date 18022014 and then the value date would be 20022014). Additionally file searching is both physically and electronically it adds additional processing time.

Moreover with respect to performance the finance people agreed that once capture the cheque details the system support batch processing and the system is user friendly, easy to follow up/ track the status of the transaction (accepted, rejected, future) as well as easy to generate reports to the accepted or rejected data and settlement reports. Most of the

respondent mentioned that NBE has been assigning a support staff that support remotely through telephone however; password reset for e-token expiration process is cumbersome and bureaucratic.

In summary with regard to telecom, power supply and policy procedures, all of the respondent mentioned that the EATS activities are mainly relay on telecom, power, the up and running of the internal as well as NBE systems, policy and procedures and skilled manpower. However, power interruption and network failure did not show any progress and continue with disturbing the overall operations and this has an impact for customer service for instance not keeping promise, customer dissatisfaction, delay on payment especially high value payment, increase the settlement period of low value payment, moreover it has an implication on the overall trade operation and financial flow of the country in general.

The respondent agreed on the commitment of leaders has an impact for the smooth, reliable and efficient operations of EATS, but the attention of the IT managers was minimal with this regards and much expected from the operational wing unfortunately without the attention of IT managers it is very difficult to come up with reliable solutions. Finally, most of the respondent mentioned that adequate legal and procedural frameworks are the determinate issue for the clearing process, on this regards there was good communication and documents but it lacks consistency and uniformity.

4.1.2. Challenges Results and Discussion

The finding results for the following tables were presented by simply calculating the average of mean and further applying the Likert scale mean formula to the response of the questions which includes the Infrastructure and business continuity, security, core banking system implementation, regulations, operational, IT strategy and leadership as a challenge (for further details please see the Annex (C.1 - C.7) and the average value are round value to the nearest digit.

4.1.2.1. Infrastructure and Business Continuity

The below table (4.1.2.1.1) depicted the infrastructure and business continuity. On average 27.1 % strongly agreed, 33.9 % agreed, 10.7 % disagreed and 3.8 % strongly disagreed and 25.3 % neither agreed nor disagreed about network connectivity, power backup, data recovery site, and well equipped personal were considered as challenges.

Table 4.1.2.1.1 Infrastructure and Business continuity

Description	Frequency					Percent				
	SA	A	N	D	SD	SA	A	N	D	SD
Infrastructure & Business Continuity										
Average	13	16	12	5	2	27.1	33.9	25.3	10.7	3.8

SA=Strongly Agree, A=Agree, N=Neutral D= Disagree, SD=Strongly Disagree

The response to question 3.1 (Infrastructure & Business Continuity) by further applying the liker scale mean formula depicted the result shown below. Mean $112/48=2.3$ this result depicts that most of the responses to infrastructure and business continuity are aligned to scale 2 (“Agree”).

Infrastructure & Business Continuity	SA	A	N	D	SD	Σ
Scale (s)	1	2	3	4	5	
Frequency (f)	13	16	12	5	2	48
$N=(s*f)$	13	33	36	21	9	112
					Mean	2.3

SA=Strongly Agree, A=Agree, N=Neutral D= Disagree, SD=Strongly Disagree, Σ = Sum

The participant banks payments, clearing and settlement activities highly dependent on the available infrastructure and business continuity plan of the bank. Under this study the researcher focused on the most crucial functions on regards to infrastructure and business continuity which includes reliable communications, written procedures for handling incidents, alternate network connectivity act as backup, business continuity and disaster recovery plan, in case of power failure UPS and generator, data recovery site, good data base management system and user manuals and well trained user support team these infrastructures should be put in place to increase the efficiency of the overall clearing activities. Furthermore these infrastructures facilitated inter-branch as well as inter-bank electronic funds transfer, data sharing platforms, large value as well as low value inter-bank transactions and increased the availability of strong communications. A disaster may

caused by nature or human activity that might lead to a business interruption, loss, event that affects a significant number of customers and banking operations.

(Nitin Khanapurkar, 2008) stated that business interruptions can occur anywhere, anytime such as network failure, power outages, and more and it is impossible to predict what may strike when. In today's 24x7x365 world, it has become mandatory to prepare for disaster scenarios. With the ever increasing dependence on banks for both electronic and traditional banking services, it has become almost mandatory for the banking industry to plan for 'Business Continuity and Disaster Recovery plan'. Moreover (NBE, 2011) mentioned that the EATS system is fully duplicated at a fallback site, so that if there is a disaster at the main site, operations can move almost instantaneously to the fallback site. To facilitate this, EATS logs every transaction to the fallback site. All transactions processed on the live system are logged and mirrored onto the fallback server.

In summary on average 61% of the respondents were approved that the current infrastructure and business continuity of the banks are good, however it is still a challenge because very difficult to predict and get prepared for some disasters, therefore the participant bank should keep the current practice and well aware and prepare more for the future.

4.1.2.2. Security

The table below (4.1.2.2.1) illustrated about security on average 27.9 % strongly agreed, 31.3 % agreed, 9.1 % disagreed and 1.1 % strongly disagreed and 30.0 % neither agreed nor disagreed on the security policy and procedures, illegal access , vulnerability test, access to EATS components and policy review were considered as security challenges.

Table 4.1.2.2.1 Security

Description	Frequency						Percent				
	SA	A	N	D	SD		SA	A	N	D	SD
Security											
Average	13	15	14	4	1		27.9	31.3	30.0	9.1	1.1

SA=Strongly Agree, A=Agree, N=Neutral D= Disagree, SD=Strongly Disagree

The response to question 3.1 (Security) by further applying the liker scale mean formula to the response of the questions, depicted the result shown below. Mean $107/48=2.2$ this

result depicts that most of the responses to security questions are aligned to scale 2 (“Agree”).

Security	SA	A	N	D	SD	Σ
Scale (s)	1	2	3	4	5	
Frequency (f)	13	15	14	4	1	48
N=(s*f)	13	30	43	18	3	107
					Mean	2.2

SA=Strongly Agree, A=Agree, N=Neutral D= Disagree, SD=Strongly Disagree, Σ = Sum

The security management is controls who allowed using the system, when, and to what part of the system, unauthorized use of the system and number of attempt login to the system. Security management is one of the crucial activities in financial institutions because any unwanted event or exposure has a potentially negative consequence. In case of electronic data exchange minimum standards should be set for authenticity, integrity and confidentiality and access controls. Fraud or other problems in an electronic network of one bank can easily deteriorate public confidence in the whole payment infrastructure even if other banks may use a far higher level of security (NBE, 2009). In the current practice the EATS system access is protected by “access control ‘tokens’⁷ with digital certificates”⁸ and user access is established separately to each sub-system within EATS and separate logins, user profiles and sessions are required to access each sub-system and all users have one username and one token.

In summary on average 59.2% of the respondents were approved that the current security controls and management of the banks are good. Moreover (Mijndert Dijkstra , et.al, 2013) mentioned that the challenge of banks is to efficiently create solutions that balance increased security with customer and system convenience and that will do against future generations of attacks. Therefore the banks should adopt proper policies, procedures, and controls.

⁷ Tokens are used to secure point-to-point access between the EATS Central Systems and the user web stations. Users and their tokens must be present in order to log in. The NBE’s EATS Security Administrator will assign the tokens

⁸ Access to the EATS servers is controlled by way of security device (token) login. The token must be present for login to take place, and the user who has been assigned a particular token must be present to enter their PIN. The certificate from the token has to be renewed every 12 months.

4.1.2.3. Core Banking Solution Implementation

The table below (4.1.2.3.1) illustrated about core banking system implementation. On average 17.1 % strongly agreed, 34.5 % agreed, 14.8 % disagreed and 3.2 % strongly disagreed and 28.5 % neither agreed nor disagreed on lack of complete business requirements, lack of meeting scope time and budget and inappropriate methodology of system selection, functional and technical challenge etc were considered as security challenges.

Table 4.1.2.3.1 Core banking solution implementation

Description	Frequency					Percent				
	SA	A	N	D	SD	SA	A	N	D	SD
Core Banking Solution Implementation										
Average	8	17	14	7	2	17.1	34.5	28.5	14.8	3.2

SA=Strongly Agree, A=Agree, N=Neutral D= Disagree, SD=Strongly Disagree

The response to question 3.2 (core banking solution implementation) by further applying the liker scale mean formula to the response of the questions, depicted the result shown below. Mean $114/47=2.4$ this result depicts that most of the responses to core banking system implementation questions are aligned to scale 2 (“Agree”).

Core banking system implementation	SA	A	N	D	SD	Σ
Scale (s)	1	2	3	4	5	
Frequency (f)	8	17	14	7	2	47
$N=(s*f)$	8	33	41	28	3	114
					Mean	2.4

SA=Strongly Agree, A=Agree, N=Neutral D= Disagree, SD=Strongly Disagree, Σ = Sum

The change of business model and supporting the business operation with IT is an important thing for the survival and growth of banking institutions not only to reduce cost of operations, but also strengthen them to offer reliable products and services to their customers. One of the systems that facilitate the overall banking operations and boots the performance of the banking institution is core banking solutions; it is used, to the bank to deliver integrated services to their customers within the bank (inter-branch) transactions as well as inter-bank transaction like interfacing with the EATS. Core banking solution is a centralized data center and interconnected with the bank’s branch and other external systems. It is essentially the heart of all the systems operating in a bank. The NBE

interview result showed that, the NBE advised all participant banks to adopt this solution before the implementations of EATS; it is a necessary condition to interface with EATS. However information available from the NBE indicates that, limited number of participants have adopted core banking solutions and this has its own impact for the overall progress of national payment system. Moreover research revealed that core banking implementation are one of the most complex IT programs, and most of the top managers are hesitant to change legacy system to core banking solutions because of high failure rates, “changing a core system is a painful and difficult process” to mention some of the challenges scope creep and change in requirements, ignoring business process reengineering, underestimating role of a systems integrator, governance, communication and stakeholder management , implementation methodology, customization, integration and data migration etc (Infosys, 2013) .

The core issues raised for the respondent on regard to the implementations of core banking solutions were misalignment of the targeted cost, scope and, methodology adopted for the selection of the system, communication between the vendor and the bank project teams, change in banking business during the project lifecycle etc. In summary on average 51.6 % of the respondents were approved that the aforementioned are the challenges for the implementation of core banking solutions.

Generally it is very important to understand and give a proper attention for the core banking implementation process from the inception to implementation phase of the project to overcome the risk and challenges up front.

4.1.2.4. Regulations

The table below (4.1.2.4.1) depicted about the regulations on average 9.7 % strongly agreed, 25.9 % agreed, 19.1 % disagreed and 6.6 % strongly disagreed and 40.5 % neither agreed nor disagreed on point that mentioned for lack of compliance of legal and regulatory requirements , inadequate legal and regulatory framework and insufficient regulation in the area of technology, government intervention , timely communication of new rules and regulations with regard to EATS etc were considered as regulation challenges.

Table 4.1.2.4.1 Regulations

Description	Frequency					Percent				
	SA	A	N	D	SD	SA	A	N	D	SD
Regulations	5	12	19	9	3	9.7	25.9	40.5	19.1	6.6

SA=Strongly Agree, A=Agree, N=Neutral D= Disagree, SD=Strongly Disagree

The response to question 3.3 (Regulations) by further applying the liker scale mean formula to the response of the questions, depicted the result shown below. Mean $140/48=2.9$ this result depicts that most of the responses to regulations questions are aligned to scale 3 (“Neutral”).

Regulations	SA	A	N	D	SD	Σ
Scale (s)	1	2	3	4	5	
Frequency (f)	5	12	19	9	3	48
$N=(s*f)$	5	25	58	37	16	140
					Mean	2.9

SA=Strongly Agree, A=Agree, N=Neutral D= Disagree, SD=Strongly Disagree, Σ = Sum

The importance of the rules and regulations is unquestionable, it is used to regulate and ensure a secure, efficient payment system because the introduction of new rules and regulations would improve the given situation. There are various rules and regulations that participants of the system should assume. For instance, how do join the EATS? How would operate in the system? etc will be answered by the system rules and regulations. It is believed that and the finance and IT managers approved that the NBE provides rules on establishment, governance, operation, regulation and oversight of the national payment system so as to ensure its safety, security and efficiency. The NBE should give a necessary attention to the adoption of adequate regulations that accommodate the modernization process and prepare and communicate other necessary documents for the system users.

In summary of average 40.5% of the respondents were neither agreed nor disagreed about the challenges of regulation with regards to EATS. However the efficiency and soundness of rules and regulations and the compliance with the law to the legal system is mandatory and the efficiency and soundness depends on the clarity, appropriateness and clear documentation of the rules and regulations. Moreover it is essential to measure, monitor, and manage the risks. The change in regulation and technology, technological change can

create the need for regulatory change. Regulatory change can stimulate new applications of technology that foster greater efficiency and growth. At times, there is a complex interplay between changing technology and regulation. In the payments arena, regulators and rule makers need to be aware of how technology is changing the industry and, when appropriate, remove artificial barriers to innovation (Randall S. Kroszner, 2007).

4.1.2.5. Operational Challenges

The table below (4.1.2.5.1) depicted about the operational issues on average 22.1 % strongly agreed, 34.6 % agreed, 11.7 % disagreed and 8.9 % strongly disagreed and 22.4 % neither agreed nor disagreed on points that mentioned about the requirement of license to interface EATS, minimum capital requirement, operational and technical requirements, assistance and support of management, interoperability of branches etc were considered as operational challenges.

Table 4.1.2.5.1 Operational

Description	Frequency						Percent					
	SA	A	N	D	SD		SA	A	N	D	SD	
Operational												
Average	11	17	11	5	4		22.1	34.6	22.4	11.7	8.9	

SA=Strongly Agree, A=Agree, N=Neutral D= Disagree, SD=Strongly Disagree

The response to question 3.4 (Operational issues) by further applying the liker scale mean formula to the response of the questions, depicted the result shown below. Mean $117/48=2.4$ this result depicts that most of the responses to operational questions are aligned to scale 2 (“Agree”).

Operational	SA	A	N	D	SD	Σ
Scale (s)	1	2	3	4	5	
Frequency (f)	11	17	11	5	4	48
$N=(s*f)$	11	33	32	20	21	117
					Mean	2.4

SA=Strongly Agree, A=Agree, N=Neutral D= Disagree, SD=Strongly Disagree, Σ = Sum

One of the objectives of the institutions and its competitive advantage is creating operational effectiveness and excellence then this would be achieved by product and services delivery of the institutions with acceptable time, quality and cost. How would they

operate in the system is also a crucial point of the business. If the system was not fully functional it could no longer handle its operational activities. The system may not completely interface with the EATS may have a trouble in managing the incoming and outgoing transactions from the EAST system. The system should fulfill the minimum requirement in order to maintain interfacing with EATS. On this regards the NBE interview result showed that NBE enforces banking industry participant to interface EATS, and to automate their working environment by creating a link among the head office and its branches and to interface it further with EATS so as to achieve straight-through-processing. Furthermore, the NBE communicated to the participants, and delivers an interface specification documents which basically defines the payment message standards to be used and additionally the NBE provide a risk management procedure and manual regards to EATS. Moreover, the NBE, consult all the participant banks and other stakeholders starting from the inception of the project.

The NBE believed that the national payment system creates interoperability among participant banks and created an opportunity to transact both large value and low value payments. The efficiency and inefficiency of one participant bank affect the other participant, the effort would be creating an efficient and effective payment, clearing and settlement environments. Interoperability also a features of inter-branch transactions, if a banks didn't interface its branch to the central system (core banking solution) interoperability becoming a challenge within the bank it affect the overall performance, efficiency and productiveness of a bank. Some of the IT managers mentioned that he NBE first examined by its technical team the fulfillment of the minimum technical requirement of the participant banks core banking solution, in parallel the functional team also examine wheatear the core banking solutions of the given participant bank attain the minimum functional requirement or not, after these thorough investigation the NBE give a certification to those participant banks met the requirements. The vice governor of NBE, told to capital, participants in the EATS should signed a system rule agreement that help to interface the new system.

In summary on average 56.7 % of the respondents were approved that the operational requirements are one of the challenges of the participant banks to EATS system. Therefore, this is a bottleneck for the overall operations of the bank as well as the national payment

system. Moreover, the participant bank and the NBE should work together to minimize such problem in order to keep the efficient, effective and smooth operations of national payment system.

4.1.2.6. Strategy

The table below (4.1.2.6.1) depicted about the strategy issues on average 11.9 % strongly agreed, 28.0 % agreed, 21.1 % disagreed and 4.8 % strongly disagreed and 30.7 % neither agreed nor disagreed on points that mentioned about planned IT strategy, existence of IT strategy and its usage, participatory and monitoring and evaluation, outsourcing strategy etc were considered as strategic challenges.

Table 4.1.2.6.1 Strategy

Description	Frequency					Percent				
	SA	A	N	D	SD	SA	A	N	D	SD
Strategy										
Average	6	13	15	10	2	11.9	28.0	30.7	21.1	4.8

SA=Strongly Agree, A=Agree, N=Neutral D= Disagree, SD=Strongly Disagree

The response to question 3.5 (strategy) by further applying the liker scale mean formula to the response of the questions, depicted the result shown below. Mean $129/48=2.7$ this result depicts that most of the responses to strategic questions are aligned to scale 3 (“Neutral”).

Strategy	SA	A	N	D	SD	Σ
Scale (s)	1	2	3	4	5	
Frequency (f)	6	13	15	10	2	48
$N=(s*f)$	6	27	44	41	11	129
					Mean	2.7

SA=Strongly Agree, A=Agree, N=Neutral D= Disagree, SD=Strongly Disagree, Σ = Sum

Almost all institution has strategy either it is clearly stated or not clearly stated. The alignment of business strategy with IT strategy is used as a competitive advantage, but there is a lack of coordination of technology and corporate strategy. The underutilization of IT can be considered as a problem for both business managers as well as IT managers. (Yannis Bakos, et.al 1986) and other researchers were mentioned that technology based competitive opportunity are overlooked because of 1)senior management ignorance, 2)

poor communication between the IS and the rest of the business 3)resistance to change 4) lack of focus on opportunities and lack of instruments to measure benefits.

In general on average 39.9 % the respondents were believed that strategy was a challenge for the institutions, 30.7 neither agreed nor disagreed and 29.2 % of the respondents were assumed that strategy couldn't be a challenge for the institutions. However overall observation showed that the institution faced strategy as a challenge to overcome these problems, the management should give attention to IT, establish good communication, make participatory the strategic formulation ,focus on opportunities of IT and adopt a habit of regular monitoring and evaluation practice and should understand importance of technology

4.1.2.7. Leadership

The table below (4.1.2.7.1) depicted about the leadership issues on average 11.6 % strongly agreed, 28.9 % agreed, 19.7 % disagreed and 7.0 % strongly disagreed and 28.6 % neither agreed nor disagreed on points that mentioned about lack of managerial knowledge regarding technology, willing to HR development, commitment about management, leaders initiative, leadership style etc were considered as leadership challenges.

Table 4.1.2.7.1 Leadership

Description	Frequency					Percent				
	SA	A	N	D	SD	SA	A	N	D	SD
Leadership										
Average	6	14	14	9	3	11.6	28.9	28.6	19.7	7.0

SA=Strongly Agree, A=Agree, N=Neutral D= Disagree, SD=Strongly Disagree

The response to question 3.5 (leadership) by further applying the liker scale mean formula to the response of the questions, depicted the result shown below. Mean $129/48=2.7$ this result depicts that most of the responses to leadership questions are aligned to scale 3 (“Neutral”).

Leadership	SA	A	N	D	SD	Σ
Scale (s)	1	2	3	4	5	
Frequency (f)	6	14	14	9	3	48
N=(s*f)	6	28	41	38	17	129
					Mean	2.7

SA=Strongly Agree, A=Agree, N=Neutral D= Disagree, SD=Strongly Disagree, Σ= Sum

In the banking industry some banks excel when compared to others. There are many factors that contribute to their success and hopefully leadership is one of the variables that help in achieving their objectives. The most challenging things faced by leaders are 1) increasing pace of change 2) technological development 3) changing perception and increase of expectations 4) changing workforce and environment (Dr.Carina Paine Schofield, 2008). In general on average 40.5 % of the respondents believed that leadership is one of the challenges of the institutions, 28.6 % of the respondents were neither agreed nor disagreed and 26.7 % of the respondents were assumed that leadership was not an issue for the institutions. Therefore in order to exploited leadership capacity the institutions should focus on right person that move the institution forward and able to overcome the challenges of current technological development, customer expectations, government regulation and vibrant environmental changes.

4.1.3. Opportunity Results and Discussion

The table below (4.1.3.1) depicted about the opportunity on average 31.4 % strongly agreed, 43.4 % agreed, 5.4 % disagreed and 2.7 % strongly disagreed and 13.8 % neither agreed nor disagreed on points that explained about interfacing EATS increase number of transaction handled, interfacing EATS reduced risk fraud and delay, support high value payment, productivity, profitability and performance of bank improved, creates good customer relationship, creates additional service delivery channel etc were considered as opportunity of interfacing EATS. (for further results information see Annex O.1)

Table 4.1.33.1 Opportunity

Description	Frequency						Percent				
	SA	A	N	D	SD		SA	A	N	D	SD
Opportunity											
Average	15	21	7	2	1		31.4	43.4	13.8	5.4	2.7

SA=Strongly Agree, A=Agree, N=Neutral D= Disagree, SD=Strongly Disagree,

The response to question 3.6 (opportunity) further applying the liker scale mean formula to the response of the questions, depicted the result shown below. Mean $94/48=2.0$ this result depicts that most of the responses to leadership questions are aligned to scale 2 (“Agree”).

Opportunity	SA	A	N	D	SD	∑
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Scale (s)	1	2	3	4	5	
Frequency (f)	15	21	7	2	1	48
N=(s*f)	15	42	22	9	6	94
					Mean	2.0

SA=Strongly Agree, A=Agree, N=Neutral D= Disagree, SD=Strongly Disagree, Σ= Sum

The general guidance for payment system define national payment system as “the entire matrix of institutional and infrastructure arrangements and processes in a country for initiating and transferring monetary claims in the form of commercial bank and central bank liabilities.” This means that in a national payment system there are two parties central bank and participant bank additionally there is infrastructures that enable them to interact to each other. Furthermore, it gives the opportunity for an institution to use the services of a particular payment system to settle payments on its own account or for customers. For instance high value payment transactions, low value payment (ACH), MT 202 etc. In our country current practice the participant bank user access is established separately to each sub-system within EATS (ATS and PO). The PO users are those banks which are not yet interfacing their core banking solutions to the EATS.

One can observe from Annex O.1 that 37.5 % of the respondents were agreed, 52.1 % of respondents were strongly agreed totally 89.6 % of the respondents believed that interfacing with EATS increase number of transactions handled. 43.8 % of the respondents were agreed, 27.1 % of the respondents were strongly agreed totally 70.9 % of the respondents assumed that EATS is an easy mechanism for payment, clearing and settlement. 52.1 % of the respondents were agreed and 35.4 % of the respondents were strongly agreed totally 87.5 % of the respondents believed that EATS give a chance to transact high value payment (RTGS), and 45.8 % of the respondents agreed, 35.4 % of the respondents were strongly agreed totally 81.2 % of the respondents approved the system has a facility to transact a straight trough processing.

The NBE respondent revealed that the major gain from EATS are it is an interbank payment system which helps to process, clear and settle payments among participant financial institutions and it handles both large value time critical and low value bulk payments. Netting as explained by the guidance for payment system is an agreed off setting of positions or obligations by participants. The respondents also support this, 39.6 % were agreed and 31.3 % were strongly agreed totally 70.9 % of the respondents believed that the system ease net balance and settlement calculation as well as reduces cheque

clearing risk, error and fraud. The payment system must assure confidentiality and security of payment information and effective fraud prevention and detection measures. 43.8 % were agreed, 29.2 were strongly agreed totally 73 % of the respondents believed that the system simplifies the activity of workers to deliver the services more quickly and easily additionally 52.1 % were agreed , 29.2 % were strongly agreed totally 81.2 % of the respondents assumed that the system created better relationship among banks and clients, the NBE respondents approved that they system creates interoperability among participant banks and created an opportunity to transact both large value and low value payments.

Moreover the guidance for payment and settlement elaborate interoperability a situation in which payment instruments belonging to a given scheme may be used in systems installed by other schemes. 22.9 % of the respondents were agreed, 18.8 % were strongly agreed and totally 41.7 % of the respondents believed that payment instrument utilization increased after the implementation of EATS and it is also supported by Table 4.8 the payment instrument transaction increased yearly by 83 % whereas the refusal of the instrument with different reasons decreased by 17 % yearly this showed and one can say that the utilization of the instruments were increased after the implementation of the EATS. 50 % of the respondents were agreed, 20.8 % were strongly agreed totally 70.8 % of the respondents assumed that interfacing EATS enhance the competitiveness of banks as well as the employees in regard to payment, clearing and settlement process. One can see from the Table 4.5 that the direct credit and direct debit (EFT) number of transactions from the year 2011 to 2013 was zero, this means that EATS system and participant banks are ready to implement such functionality. Moreover, 43.8 % of the respondents were agreed, 33.3 were strongly agreed totally 77.1 % of the respondents were believed the ease of the implementation of electronic fund transfer (EFT). In general on average 74.8 % of the respondents had a positive opinion and approved that EATS provide an opportunity.

4.1.4. In-depth Interview Result

There were fifteen questions under the interview of NBE. The main focus area of the questions were identifying the progress of national payment system and future plan of NBE, the challenges faced by NBE and the overall benefits of the implementation of EATS.

For all the questions the respondent gave their opinion. On regards to the adoption of EATS, the respondent mentioned that the main reasons of adopting/ introducing EATS was to ensure safety and efficiency of the payment system as well as it is one leg of all economic transactions and the introduction of such system bring efficiency thereby facilitating trade and economic growth, moreover it will serve as a means to channel monetary policies effectively. The benefits of implementing EATS and explained that major gain from EATS are it is an interbank payment system which helps to process, clear and settle payments among participant financial institutions and it handles both large value time critical and low value bulk payments. The NBE enforces banks to automate their working environment by creating a link among the head office and its branches and to interface it further with EATS so as to achieve straight-through-processing.

The NBE gave an interface specification document to all participant banks which basically define the payment message standards to be used and the NBE developed the risk management documents with regard to EATS. The NBE participate all stakeholders starting from the inception of the project, especially banks. The respondent mentioned that during the EATS implementation the major challenges were the banks readiness in implementing and interfacing their core banking system with the EATS and availability of telecom connectivity service. The EATS systems go-live with 15 banks and ECX, however except some, not all banks implementing CBS. Currently eleven participants have interfaced their CBS with the EATS and the remaining is working on it. The major challenges were timely implementation of CBS by participants. The EATS system creates interoperability among participant banks and created an opportunity to transact both large value and low value payments. In terms of efficiency, effectiveness and performance (cost, time, accuracy, productivity), the communication among system participants is in real-time, despite the absence of formal study, one can say that there is an improvement in payment processing efficiency additionally with the completion of banks automation and interfacing EATS, many changes will expected. In terms of payment instruments, simply mentioned the capacity of the system for the introduction of electronic payment instruments. In terms of geographical coverage, through the interface the system can be accessed from any bank branches around the country, however the clearing activity only entertained the city branches of the Banks. Other financial institutions don't have any

participation with EATS; however ECX, MoFED and ERCA are participants in the system. The NBE regularly follows and provides support towards the implementation of banks core banking solution and its interface with the EATS. The only institutions that govern and oversight the overall activities of EATS is NBE. There were regular discussions on regard to EATS among the participant banks. Finally, the NBE implementing a core banking solutions before 15 years and recently changed to another core banking solutions (went live Nov, 2013) and it is interfaced with the EATS.

One can observe that from the above interview result, the NBE participate all the participant banks from the very beginning, communicating well and also provide all the necessary materials on regards to EATS. Furthermore, as per the result, the major challenges during the EATS implementation were the banks lack readiness in implementing and interfacing the core banking solutions and network connectivity, moreover the benefits of interfacing the EATS creates interoperability that enable all participant to process payment, clearing and settlement both high value as well as low value payments. Generally the future plane of NBE would be standardization of cheque and CPO throughout the country and allowing the inter-bank transactions nationwide with full truncation and reduce the settlement date from “T+2” to “T+0”.

Banks interview result

Progress

Most of the respondents mentioned that they were working in the banking industry 10 years and above, additionally they mentioned that some banks interfacing with EATS at the first time 2011, some other joined in 2012 and others are still not joining the EATS with their core banking solutions. The banks they already have core banking solutions were ready to interfacing the EATS, it took 3-5 months for implementation.

Most of the respondent mentioned that with regard to the progress of EATS

1. RTGS transactions due to the value of the transaction it is real time and settled automatically whereas in cheque clearing process the settlement took “T+2” days and file searching is both physically and electronically it add additional processing time .

2. In terms of cost there is duplication of efforts there is manual work as well as automation so it required additional personal that collect sort and summarize the cheque therefore, it add cost to the company,
3. In terms of accuracy it increased the quality and validity of transacted data,
4. In terms of performance it enhance the performance of data clerk once capture the cheque details the system support batch processing whereas still there is duplication effort in the checker side they need to verify the encoded data and the manual summary of the daily cheque transactions, most agreed that all in all it enhanced the performance of the clearing process
5. The respondents mentioned that the system is user friendly, easy to follow up/ track the status of the transaction (accepted, rejected) easy to generate reports on regards to the accepted or rejected data and settlement reports and the system assist them to modify the given report as they want by exporting to excel
6. The respondents mentioned that NBE has been assign a support staff that support remotely through telephone but there is no user manual that guide them.
7. The respondents agreed that the last three years there is no progress in terms of payment clearing and settlement process, still there is a duplication of effort the exchange of cheque both physically and electronically and the settlement process is as it is “T+2”, but the NBE has trying to standardize cheque throughout the country and it is not yet implemented.
8. The finance teams mentioned that the EATS activities are relay on telecom, power and up running of the internal as well as NBE systems, moreover it also depends on policy and procedures as well as skilled manpower, and power interruption and network failure has no improvement and continue with obstacle the overall operations. The major challenge was not keeping promise, customer dissatisfaction, delay of payment especially high value payment, increase the settlement period of low value payment, it has an implication on the overall trade operation and financial flow of the country in general.
9. The finance teams mentioned that the leaders commitment on regards to EATS operation is very high, close follow up and intervention has been observed on the other hand the some of IT managers mentioned that even if the attention of automating the banking operations was mandatory but on regards to EATS they

have little attention on it beyond availing the resources (system and support staff) let the rest to the operational team.

10. The finance and IT managers agreed that the banking industry highly rely on technological innovations and it is very vibrant the customer need more alternate channels that facilitate and speed up their payment, clearing and settlement process, they mentioned that we are using only cheque and CPO as low and government payment instruments and RTGS for high value payment instruments, whereas the customer demands on for instance bill payments, payroll facility and other electronic fund transfer instrument but there was no progress on this regards, moreover the customer want of effect payment using its card still this area also not touched yet.
11. The finance supervisors approved that one of the advantages of having national payment system is to cover all areas of the country in process of payment, clearing and settlement process, moreover the IT managers agreed on of the advantage of the implementation of core banking solution is to facilitate inter branches operations as well as interbank operations and giving equal opportunity to all customers throughout the country whereas the payment, clearing and settlement coverage of NBE is only city branches the clearing houses also facilitates the city branches cheques only and the geographical coverage has no progress in general, however the NBE working on cheque standardization overcome such obstacles this is still in progress not yet implemented.
12. The finance team respondents agreed that adequate legal and procedural frameworks are the determinate issue for the clearing process, on this regards there was good communication and documents but it lacks consistency and uniformity.

Challenges

From the IT and Finance management side, their views were collated, most of them mentioned that security risk, inadequate IT strategy, inadequate IT infrastructure, requirement gap between their CBS and the interfacing system and lack of regulations and procedures considers as the barriers for the interfacing of EATS. All banks approved that the NBE provided the standardization document regarding EATS but, the standardization document was not comprehensive and didn't explained too much for the cheque clearing

and RTGS activities as well as it had a problem of clarity to easily understand by the CBS vendor of the banks.

The respondents agreed that there is no particular risk management procedure regarding the transaction and overall activities of EATS whereas they have a risk management procedure in general and they took it as a challenge and they asserted that it would create a room for theft and fraudulent. Almost all accepted that adopting the new technology by itself was a challenge in terms of availing resources, getting trained manpower and adequate support from the other end, frustration and taking a risk. The respondents agreed that leadership can be considered as a challenge if it lacks cooperation, resist change, discouraging team work and lacks proactive thinking even if a leader play a vital role for the implementation of technology.

The financial team agreed that the limited geographical coverage for the process of payment, clearing and settlement has an impact for the overall financial flow, control and performance of banks activity. Most of the respondent agreed that the government policy has a great impact for the adoption of EATS, for instance the EATS activity highly dependent on telecom and power the government policy on this regards a determinant factor for strength and implementation of such system, moreover one of the government target is creating a cash less society and it is highly determined by the availability of reliable national payment system so the absence of good government policy factor for the operations of the EATS.

Opportunities

Most of the respondents agreed that having IT strategy that aligned with the overall business strategy as a benefit whereas some of them had doubt about the follow up and readiness for the usage of the existing strategy and didn't exploited it. Almost all agreed that interfacing EATS creates

1. Easy bank to bank transactions
2. high value payment and time critical transactions
3. Effective and efficient clearing processing
4. Customer satisfaction, retention as well as attractions

5. Simplicity of system (User friendliness) boost the productivity and performance of employee and encourage team works
6. Used as alternate channels

Most of the responded agreed that taking the government policy as competitive advantage in the market if proactive and ready policy that absorbs the opportunities are in places, moreover the adoption EATS would enable the banks to get more customers that helps to increase the customer base and encourage the existing once, all in all it has a great impact for the good will of the company.

In general the respondent mentioned that the government should give especial attention for the interoperability of the EATS, because the efficiency and inefficiency of one participant has an impact to the overall operation of other participant and the government should indoctrinate a tight follow up/ oversee for those banks which are not interfacing with their CBS, additionally the government should produce a policy and procedure that encourages e-commerce that facilitate the overall operations of payment, clearing and settlement, organize workshop, seminar, regular dialog meeting, clear requirement documents and always give insight the banks to review their system as well as strategy towards the upcoming changes/ government policies.

CHAPTER FIVE

5. CONCLUSIONS AND RECOMMENDATIONS

5.1. Conclusions

We are living in a quick innovation and changing environment, payments system is also part of this change. Like any other countries Ethiopia starting to practice safe, efficient, and reliable systems for making payments. The objective of the adoption of this innovation was to serve the needs of participant banks, businesses as well as the country. This study intends to explore the progress, challenges and opportunity of interfacing EATS. During the process mixed research approach was adopted. On regards to progress some of the discussion points were physical cheque exchange, interfacing with EATS, implementing core banking solutions, interoperability, geographical coverage, payment instruments etc.

The exchange of physical cheques among the participant banks still continued because all banks weren't interfacing the EATS and the cheque weren't standardized, these two things are a prerequisite to fully replacing the physical exchange by truncation. All banks weren't interfacing EATS this is due to the capacity of their core banking solutions, lack of commitment from top management and lack of strict follow up from the NBE. Result of the study also show that improper selection of core banking solution, lack of coordination and communication between the vendor and the bank, not fulfilling the minimum technical and functional requirement, limited payment instruments were some of the challenges of participant banks. The geographical coverage of the cheque clearing processes limited in the city branches, even if the banks expand their branch nationwide, one of the benefit of such system is giving opportunity to all in order to facilitate the payment, clearing and settlement process, therefore the NBE should strive to cover the service of EATS all over the country

In order to enhance efficiency, reduce costs, avoid risk and speed up the payment, clearing and settlement systems, communication between the system provider (NBE) and the

participants in the system should be based on electronic data interchange like EATS in standardized format and cheque.

In general, the results of this study put forward additional insights, understanding and knowledge in the area of national payment system. Moreover, the understanding of the challenges of interfacing EATS explained in this study may help to identify the alternate course of action. It will also be valuable to all banks not interface or join the industry to increase their awareness and understanding of national payment system/ EATS. Furthermore, both the NBE and participant banks have to contribute to the development of the national payment system and both will have a significant role to play in the future.

5.2. Recommendations

Payment system is all about outreaching to all over the country, the largest the network is the largest the benefits, not only this but also the payment instrument involved the transaction has an impact for the payment systems. The national payment system is new for Ethiopia; however it is an essential issue because it has a great impact for the whole economy. It needs a lot of effort to be accepted and fully utilized by all participants; therefore it needs close follow up and monitoring and regular dialogue session among the stakeholders. The researcher recommends the following points.

- For successful utilizing of the national payment system/ EATS, the NBE needs to establish a clear set of frame works on the use of technological innovation in banking sector. The NBE should enforce all banks to join the EATS in order to exploit the most out of it. The World Bank group (WBG) suggests that regulatory frameworks that establish trust in ICT use are important. Legal and regulatory frameworks for secure electronic transactions are essential to foster trust and enhance the use of ICTs in business.
- The EATS highly dependent on infrastructures, in order to provide uninterrupted, delighted service, telecom and power are the major prerequisite; hence the government should support the banking industry by investing on the infrastructure development. (Haag, 1998) stated that change in technology would change the way we organize and manage information. However this would be a dream with the

absence of good network infrastructure, and suitable application software that would support centralized operations.

- The implementation of EATS creates an opportunity for the banking industry a technology lead competitive environment which may bring cost reduction, customer satisfaction, branding, credibility, ease of use and an arrangement of alternate products and services, hence the banking industry should give a priority and especial attention for such environment. Technology is a resource used as a competitive advantage for many organizations, (Laudon, K. and Laudon, J. 2006) and (Noel Gordon and Peter Lacy, 2011) explained that the highest performing banks are starting to use new technologies in bold, innovative ways as a source of competitive advantage across their whole business..
- The payment instruments are very limited; therefore, the NBE should work to include other payment instruments like electronic fund transfer (direct debit, and direct credit) that support the financial transaction of bill payment, payroll, pension and other services. Moreover, the NBE should extend the service on ATM, POS, Internet and Mobile. On the other hand the NBE should incorporate the international cards banking transactions in the EATS system, because it makes it easier for tourists to spend money and this increases the benefits of the participants as well as the country.
- Most transactions are passed through the head office of the banks to EATS system, direct branch to branch transactions weren't performed so far, hence this violated straight through processing (STP) concept, NBE should follow the current trend and take the appropriate measure in order to gain the benefit of STP and other benefits.
- The geographical coverage is limited; the expansion of branches increases, the NBE should work hard to address all the country in regards clearing process.
- The current trend showed that cross border payments would be a must for the neighboring countries; hence in order to exploit the opportunity for trade and business activities the government should strengthen the current payment system.

- The NBE should communicate early the participant banks in the area of EATS while changing its rules and procedures and should set up a regular discussion panel.
- The participant banks should give prior attention to the alignment of IT strategy with the overall business strategy. (R.M. Riecket.al, 1993) stated that “Technology strategy is the process by which firms utilize their technological resources to achieve corporate objectives.”
- Leadership also the determinant factor for the success and failure of institutions. (Syed AtifEjaz, 2012) in his study come up with a conclusion that even though technology has a vital role for the success of a company and enhancing performance it would fails to provide sustainable competitive edge with the absence of effective leader and no single leadership style yields desired results in most of the situations whereas a combination of different style is desired. Hence the participant banks should give attention on these regard too.
- For further uninterrupted settlement of the cheque, the national bank shall introduce the intraday loan facility. In the current practice the NBE hold the insufficient transaction of the participant banks.

In general the efficient and effective payment and settlement system may attract investors and boost the country’s economy; therefore all stakeholders should contribute their best.

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APPENDIX

SURVEY QUESTIONNAIRE ON PROGRESS, OPPORTUNITY AND CHALLENGES OF ETHIOPIA AUTOMATED TRANSFER SYSTEM (EATS) INTERFACING WITH BANKS

This survey is anonymous and your response will be kept highly confidential and used only for the intended purpose.

Please note that your name is not important for this questionnaire, rather your feedback is very important.

I thank you very much in advance for your willingness to respond to this questionnaire. I have developed the following questionnaire to evaluate the progress, opportunity and challenges of EATS interfacing with banks as a partial fulfillment of the MBA Thesis

Addis Ababa

SURVEY QUESTIONNAIRE

General Instruction

This questionnaire contains four sections and seven pages that will be expected to take approximately 20 to 30 minutes to complete. Please provide your responses to the questions based on the instructions under each section.

Section I: -Personal Profile

Please indicate your choice by circling ():

1. Sex

- a) Male b) Female

2. Age _____

3. Educational level

- a) High school b) Diploma c) Degree d) Masters and above e) Others

4. How long have you been worked?

- a) < 1 year b) Between 1 and 3 years c) Between 3 and 6 years
d) Between 6 and 10 years e) Above 10 years

5. Which category best describe your position?

- a) Top management b) Middle management c) Supervisory
d) Line staff e) Others

Section II: - IT Questions

1. Do have a core banking solutions?

- a) Yes b) No

2. Which Core Banking System do you use? _____

3. How many branches do you have? _____

4. How many of them connected to CBS? _____

5. Are you interfacing EATS with your core banking solutions?

- a) Yes b) No

6. How many branches directly access EATS? _____

7. Year of establishment of the bank _____

Section III:

Instruction: Below are lists of statements relevant to progress, opportunity and challenges of EATS interfacing with banks. Please put tick-mark (√) on the spaces that indicates your choices whether you agree or disagree with each statement. The options are range from “strongly agree” to “strongly disagree” each choice identified by numbers ranged from 1 to 5.

SA- Strongly Agree, A- Agree, N- Neutral , DA- Disagree , SD- Strongly Disagree						
No	Descriptions	Choice				
I.	Infrastructure, business continuity and security issues considered as challenges	SA	A	N	DA	SD
	<i>Infrastructure and Business Continuity</i>					
1	The bank have a written procedure for handling incidents					
2	There is alternate network connectivity to the data center that if one fails; other can act as fall-back mechanism					
3	The bank has business continuity and disaster recovery plan					
4	The EATS process are supported by UPS and generator					
5	The bank has a fallback site for its current operations (data recovery site)					
6	Sensitive data’s are stored within database management system is encrypted					
7	The operations are supported by user manual, on-line support and support team					
	<i>Security</i>					
8	Access to critical EATS component is secured and only authorized personnel are permitted					
9	The EATS user account get locked out after a fixed number of failed login attempts,					
10	The security policy and procedures reviewed on a regular interval					
11	Access to the server room restricted to authorized users only					
12	The security policy and procedures access controls are enforced and actions are taken in case of access violations					
13	The security policy and procedures cover security procedures for all the access points namely (user system and front end applications, router, switch, firewall, web and application server, local area network and internet infrastructure)					
14	Automated tools are in use to highlight log entries that suggest an attempt to penetrate the network (such as Intrusion detection system (IDS)					
15	Vulnerabilities identified in the penetration test have been evaluated and appropriate corrective action taken					
II.	Core banking solutions implementation					

	challenges					
1	Lack of Met the targeted costs, scope and times					
2	Lack of appropriate methodology for selection and implementation of the core banking solutions					
3	Lack of complete business requirements					
4	Lack of coordination and communication between the vendor and the bank project management teams					
5	Change in banking business during the project lifecycle, enforce to scope change.					
6	The banking staff's preference for existing processes and reluctance to adopt newer, out-of-the-box functionality/processes from new solutions					
7	Functional and technical challenges during interfacing to EATS and implementation group's limited capacity					
8	The vendor's inability to deliver the system					
9	Lack of support and regular follow-up from top management, frequent change in the project management and lack of communications					
III.	Regulations Challenges					
1	Banks lack compliance of legal and regulatory requirements					
2	Inadequate regulatory and legal frameworks					
3	Lack of adequate regulations in the area of technological transactions					
4	Government intervention/ unexpected interference					
5	Lack of monitoring and evaluation of regulatory frameworks and continuous policy dialogue/meeting					
6	Lack of Harmonization of Financial Laws and Regulations					
7	Lack of timely communications of new rules and regulations for participants with regard to EATS					
IV.	IT strategy and Leadership challenges					
	<i>Strategy</i>					
1	Having a planned IT strategy					
2	Having a process for IT strategic planning					
3	Having IT strategic planning, but not using it					
4	Lack of middle management and line staff participation for strategic design and implementation					
5	Lack of strategic monitoring and evaluation					
6	Less attention for the adaptation of IT and not taking as a competitive weapon					
7	Organization has outside vendors for IT functions support					
	<i>Leadership</i>					
8	Lack of technical and managerial skills on the use technological innovation					
9	There is training courses when introducing new systems/ services					
10	Lack of commitment from top management to develops a strategic guideline					

11	Inefficient leaders initiatives commands for strategic direction					
12	Misalignment of IT strategy and business strategy (Change or Redesign of the business model)					
13	Lack of incorporating strategic risks within strategic planning process					
14	Leadership styles (visionary, situational, principle-centered)					
V.	Operational Challenges					
1	Banks are required to obtain specific license from the regulatory authority to interface with EATS					
2	Minimum capital requirement is required to interface EATS					
3	Minimum operational and technical requirements are required to interface EATS					
4	Need to comply with messaging and interface standards					
5	Lack of support from management					
6	High dependence on infrastructure					
7	Inadequate operational and procedural manuals and NBE support					
8	Interoperability of branches (inter-branches connectivity)					
VI.	Opportunity of Interfacing EATS					
1	Interfacing with EATS increase number of transactions handled					
2	Interfacing EATS increase accuracy and timeliness of services					
3	It is easy mechanism for payment, clearing and settlement					
4	Interfacing EATS provide additional alternate channels for delivering services					
5	Support and speed up cheque clearing process					
6	Support high value payments /Real time gross settlement (RTGS)					
7	It support Straight Trough Process					
	Increase operational efficiency, reduce cost and time					
8	Ease net balance calculation and settlement, and reduces cheque clearing risk , errors and fraud					
9	Easy processing of Automated Clearing House and reduces refusal					
10	It simplifies the activity of workers to deliver the services more quickly and easily					
11	It increase the productivity, profitability and performance of bank					
12	Create better relationship among banks and clients					
13	Interfacing EATS Increase reliability and accessibility of services					
14	Payment instrument utilization increased after the implementation of EATS					
15	Interfacing EATS improve the performance of bank as well as the employees in regard to payment, clearing and settlement process					

16	Easy to electronic funds transfer (EFT) and other service implementation					
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Section IV: Statistical information (clearing and settlement section)

Please provide the following statistical data (2011-2013)

	2011	2012	2013
Total number of transactions	No of transactions	No of transactions	No of Transactions
i. Cheque			
ii. CPO			
iii. RTGS			
iv. Direct Credit			
v. Direct Debit			
vi. Others			
Total settled transactions			
i. Cheque			
ii. CPO			
iii. RTGS			
iv. Direct Credit			
v. Direct Debit			
vi. Others			

Section I: -Interview questionnaires designed for Banks, to examine the progress, opportunity and challenges of Ethiopia Automated Transfer System (EATS) interfacing with Banks.

1. When did you join the banking industry?
2. When did you implement CBS?
3. When did you join EATS?
4. How long did it take to interfacing EATS with your Banking solutions?
5. Is the following factors considered in your institution as barriers for the implementation of EATS?
 - a. Security risk
 - b. Inadequate IT strategy
 - c. Inadequate ICT infrastructure
 - d. Requirements gap in Core Banking Solutions
 - e. Lack of appropriate regulations and procedural framework
6. Is there any standard enforced by NBE, regarding the implementation of EATS?
7. Is there a risk management procedure and manual regard to EATS in your bank side?
8. What are the basic challenges of adopting new technological innovations like CBS/EATS?
9. Do you have a planned strategy? Does it aligned with IT strategy?
10. What are the benefits/opportunities gained by interfacing EATS?
11. As your opinion does the leadership has an impact for the success and failure of IT implementation how?
12. Does the electronic inter-bank transactions well fitted in your long term strategy?
13. In your bank side is the security always updated to protect any theft or fraudulent?
14. How do you evaluate the progress of EATS, in terms of
 - a. Services
 - i. time, cost, accuracy, accessibility, performance, profitability, channels and productivity
 - b. Overall simplicity/difficulty
 - c. Security
 - d. Support from NBE
 - e. Payment, Clearing and settlement processing
 - f. Dependence on infrastructure
 - i. Power ,Telecom, Policy, Skill and knowledge
 - g. Leadership commitment
 - h. Business change (Dynamics Environment)
 - i. Geographical coverage
 - j. Legal and procedural frameworks
15. What sort of support would you expect from the government in relation to the EATS improvement?

Section I: - Interview questionnaires designed for the NBE, to examine the progress, opportunity and challenges of EATS interfacing with Banks.

1. What are the drivers of adopting new technological innovation (EATS)?
2. What is the benefits/opportunity of implementing EATS?
3. Are there any legal frameworks at NBE to enforce banking industries to Interface EATS?
4. Are there any standards that guide banking industry in implementation EATS?
 - a. Is it communicated to the Participants?
5. Is there a risk management procedure and manual regard to EATS?
6. Did the NBE consult all the stakeholders before EATS implementation?
 - a. When?
7. What are the challenges of adopting new technological innovation like EATS?
8. With how many banks the system went live?
9. How many banks are already interfacing the EATS with their CBS?
10. What are the challenges so far?
11. In your opinion, what can you say about the status of EATS after the implementation (2011-2013)
 - a. In terms of interoperability
 - b. In terms of efficiency, effectiveness and performance (cost, time, accuracy, productivity)
 - c. In terms of payment instruments
 - d. In terms of geographical coverage
 - e. In terms of institution (other than commercial banks)
 - f. In terms of reduction in errors and fraud
12. Is there audit/ supervision service of the participant banks progress towards CBS implementation and interfacing EATS?
13. Does any other authority that is legally empowered to supervise or oversee payment and settlement systems?
14. Does the NBE holds regular meetings with stakeholders at a senior level to discuss strategic issues for the payment system.
15. Did you implement CBS?
 - a. When did you implement the CBS?
 - b. Is it interfacing with EATS?

ANNEX

Statistical Analysis Result

Challenges (C1-C7)

C.1. Infrastructure and Business Continuity

Description	Frequency					% of Choice				
	SA	A	N	D	SD	SA	A	N	D	SD
The bank have a written procedure for handling incidents	10	14	16	7	1	20.8	29.2	33.3	14.6	2.1
There is alternate network connectivity to the data center that if one fails; other can act as fall-back mechanism	15	11	11	7	4	31.3	22.9	22.9	14.6	8.3
The bank has business continuity and disaster recovery plan	10	22	9	4	2	20.8	45.8	18.8	8.3	4.2
The EATS process is supported by UPS and generator	18	17	7	5	1	37.5	35.4	14.6	10.4	2.1
The bank has a fallback site for its current operations (data recovery site)	14	15	13	6		29.2	31.3	27.1	12.5	
Sensitive data's are stored within database management system is encrypted	12	16	19	1		25.0	33.3	39.6	2.1	
The operations are supported by user manual, on-line support and support team	12	19	10	6	1	25.0	39.6	20.8	12.5	2.1
Average	13	16	12	5	2	27.1	33.9	25.3	10.7	3.8

C.2 Security

Description	Frequency					% of Choice				
	SA	A	N	D	SD	SA	A	N	D	SD
Access to critical EATS component is secured and only authorized personnel are permitted	16	25	4	3	0	33.3	52.1	8.3	6.3	0.0
The EATS user account get locked out after a fixed number of failed login attempts	33	10	3	1		68.8	20.8	6.3	2.1	
The security policy and procedures reviewed on a regular interval	5	16	20	6	1	10.4	33.3	41.7	12.5	2.1
Access to the server room restricted to authorized users only	28	14	4	2		58.3	29.2	8.3	4.2	
The security policy and procedures access controls are enforced and actions are taken in case of access violations	6	15	21	5		12.50	31.3	43.8	10.4	

The security policy and procedures cover security procedures for all the access points namely (user system and front end applications, router, switch, firewall, web and application server, local area network and internet infrastructure)	12	11	18	7			25.00	22.9	37.5	14.6	
Automated tools are in use to highlight log entries that suggest an attempt to penetrate the network (such as Intrusion detection system (IDS))	5	12	24	4			10.40	25.0	50.0	8.3	
Vulnerabilities identified in the penetration test have been evaluated and appropriate corrective action has taken	2	17	21	7			4.2	35.4	43.8	14.6	
Average	13	15	14	4	1		27.9	31.3	30.0	9.1	1.1

C.3 Core banking system implementation

Description	Frequency					% of Choice				
	SA	A	N	D	SD	SA	A	N	D	SD
Lack of met the targeted costs, scope and times	10	20	6	10	1	20.8	41.7	12.5	20.8	2.1
Lack of appropriate methodology for the selection and implementation of the core banking system	13	15	13	6		27.1	31.3	27.1	12.5	
Lack of a complete business requirements	5	14	15	10	2	10.4	29.2	31.3	20.8	4.2
Lack of coordination and communication between the vendor and the bank project management teams	7	20	13	6	1	14.6	41.7	27.1	12.5	2.1
Change in banking business during the project lifecycle, enforce to scope change	5	17	19	5	1	10.4	35.4	39.6	10.4	2.1
The banking staff's preference for existing processes and reluctance to adopt newer, out-of-the-box functionality/processes from new solutions	10	19	12	5	1	20.8	39.6	25.0	10.4	2.1
Functional and technical challenges during interfacing to EATS and the implementation group's limited capability	15	18	12	1		31.3	37.5	25.0	2.1	
The vendor's inability to deliver the system	4	13	19	10		8.3	27.1	39.6	20.8	

Lack of support and regular follow-up from top management , frequent change in the project management and lack of communications	5	13	14	11	3		10.4	27.1	29.2	22.9	6.3
Average	8.2	17	14	7.1	2		17.1	34.5	28.5	14.8	3.2

C.4 Regulations

Description	Frequency					% of Choice				
	SA	A	N	D	SD	SA	A	N	D	SD
Banks lack compliance of legal and regulatory requirements	5	6	13	19	5	10	12.5	27.1	39.6	10.4
Inadequate regulatory and legal frameworks	6	12	13	13	4	13	25	27.1	27.1	8.3
Lack of adequate regulations in the area of technological transactions	7	14	21	4	2	15	29.2	43.8	8.3	4.2
Government intervention/ unexpected interference	2	12	25	5	3	4.2	25	52.1	10.4	6.3
Lack of monitoring and evaluation of regulatory frameworks and continuous policy dialogue/ meeting		14	23	9	2		29.2	47.9	18.8	4.2
Lack of Harmonization of financial laws and regulations	3	17	19	6	3	6.3	35.4	39.6	12.5	6.3
Lack of timely communication of new rules and regulations for participants with regard to EATS	5	12	22	8		10	25	45.8	16.7	
Average	5	12	19	9	3	9.7	25.9	40.5	19.1	6.62

C.5 Operational

Description	Frequency of Choice					% of Choice				
	SA	A	N	D	SD	SA	A	N	D	SD
Banks are required to obtain specific license from the regulatory authority to interface with EATS	21	16	9	2		43.8	33.3	18.8	4.2	
Minimum capital requirement is required to interface EATS	6	15	12	8	4	12.5	31.3	25.0	16.7	8.3
Minimum operational and technical requirements are	12	18	10	5		25.0	37.5	20.8	10.4	

required to interface EATS											
Need to comply with messaging and interface standards	12	21	10	1			25	43.8	20.8	2.1	
Lack of support from management	4	12	10	16	4		8.3	25	20.8	33.3	8.3
High dependence on infrastructure	18	16	9	3			37.5	33.3	18.8	6.3	
Inadequate operational and procedural manuals and NBE support	5	19	16	5	2		10.4	39.6	33.3	10.4	4.2
Interoperability of branches (inter-branches connectivity)	7	16	10	5	7		14.6	33.3	20.8	10.4	14.6
Average	11	17	11	5	4		22.1	34.6	22.4	11.7	8.85

C.6 strategy

Description	Frequency					% of Choice				
	SA	A	N	D	SD	SA	A	N	D	SD
Having a planned IT strategy	10	16	12	7	2	20.8	33.3	25.0	14.6	4.2
Having a process for IT Strategic Planning	9	19	15	3	1	18.8	39.6	31.3	6.3	2.1
Having IT strategic planning, but not using it	4	12	18	11	2	8.3	25	37.5	22.9	4.2
Lack of middle management and line staff participation for strategic design and implementation	2	17	13	13	2	4.2	35.4	27.1	27.1	4.2
Lack of strategic monitoring and evaluation	3	11	14	13	5	6.3	22.9	29.2	27.1	10.4
Less attention for the adaptation of IT and not taking as a competitive weapon	7	11	13	12	2	14.6	22.9	27.1	25	4.2
Organization has outside vendors for IT functions support	5	8	18	12	2	10.4	16.7	37.5	25	4.2
Average	6	13	15	10	2	11.9	28.0	30.7	21.1	4.8

C.7 Leadership

Description	Frequency					% of Choice				
	SA	A	N	D	SD	SA	A	N	D	SD
Lack of technical and managerial skills on the use technological innovation	4	13	17	11	2	8.3	27.1	35.4	22.9	4.2
There is training courses when introducing new systems/ services	11	25	7	3	1	22.9	52.1	14.6	6.3	2.1

Lack of commitment from top management to develops a strategic guideline	4	8	16	12	7		8.3	16.7	33.3	25	14.6
Inefficient leaders initiatives for strategic direction	2	10	15	13	7		4.2	20.8	31.3	27.1	14.6
Misalignment of IT strategy and business strategy (Change or Redesign of the business model)	4	12	18	9	2		8.3	25	37.5	18.8	4.2
Lack of incorporating strategic risks within strategic planning process	4	11	16	12	1		8.3	22.9	33.3	25	2.1
Leadership styles (visionary, situational, principle-centered)	10	18	7	6			20.8	37.5	14.6	12.5	
Average	6	14	14	9	3		11.6	28.9	28.6	19.7	7.0

O.1 Opportunity

Description	Frequency					% of Choice				
	SA	A	N	D	SD	SA	A	N	D	SD
Interfacing with EATS increase number of transactions handled	25	18	2	1		52.1	37.5	4.2	2.1	
Interfacing with EATS increase accuracy and timeliness of services	20	21	4	1		41.7	43.8	8.3	2.1	
It is an easy mechanism for payment, clearing and settlement	13	21	6	5	1	27.1	43.8	12.5	10.4	2.1
Provide additional alternate channels for delivering services	19	22	2	2	1	39.6	45.8	4.2	4.2	2.1
Support and speed up cheque clearing process	17	22	2	5		35.4	45.8	4.2	10.4	
Support Real time gross settlement or high value payments	17	25	3	1		35.4	52.1	6.3	2.1	
It support Straight Trough Process	17	22	7			35.4	45.8	14.6		
Increase operational efficiency ,reduce cost and time	19	18	8	1		39.6	37.5	16.7	2.1	
Ease net balance and settlement calculation as well as reduces cheque clearing risk, error and fraud	15	19	10	2		31.3	39.6	20.8	4.2	
Easy processing of Automated Clearing House and reduces refusal	8	15	17	4	1	16.7	31.3	5.4	8.3	2.1
It simplifies the activity of workers to deliver the services more quickly and easily	14	21	10	1		29.2	43.8	20.8	2.1	
It increase the productivity, profitability and performance of bank	10	24	9	1	2	20.8	50	18.8	2.1	4.2
Create better relationship among banks and clients	14	25	6	1		29.2	52.1	12.5	12.5	

Interfacing EATS increase reliability and accessibility of services	13	25	5	1			27.1	52.1	10.4	2.1	
Payment instrument utilization increased after the implementation of EATS	9	11	17	6	2		18.8	22.9	35.4	12.5	4.2
Interfacing EATS boosts the competitiveness of banks as well as the employees in regard to payment, clearing and settlement process	10	24	10	1	1		20.8	50	20.8	2.1	2.1
Easy to electronic funds transfer (EFT) and other service implementation	16	21	5	3	1		33.3	43.8	10.4	6.3	2.1
Average	15	21	7	2.3	1		31.4	43.4	13.8	5.35	2.7

DECLARATION

I, the undersigned, declare that this thesis is my original work, prepared under the guidance of _____. All sources of materials used for the thesis have been duly acknowledged. I 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.

Name

Signature & Date

ENDORSEMENT

This thesis has been submitted to St. Mary's University, School of Graduate Studies for examination with my approval as a university advisor.

Advisor

Signature & Date