

**St. Mary's University  
School of Graduate Studies**

**ASSESSMENT OF OPPORTUNITIES AND  
CHALLENGES OF THE NATIONAL E-PAYMENT SWITCH  
SYSTEM: THE CASE OF ETHIOPIA**

**BY: WONDIMAGEGN H/SELASSIE**

**JUNE, 2018  
ADDIS ABABA**

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partial fulfillment of the requirements for the degree of master's of  
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## ACRONYMS

ACI	Africa Capital Investment
ADC	Alternative delivery Channel
AFC	Agricultural Financial Corporation
ATM	Automated Teller Machine
BIS	Bank of Indian State
BOJ	Bank of Japan
CBE	Commercial Bank of Ethiopia
CPSS	Committee for Payment and Settlement Systems
DFCC	Domestic Foreign Currency Clearing
ECB	European Central Bank
EFT	Electronic Fund Transfer
ICDC	Investment and Commercial Development Cooperation
ICT	Information Communication Technology
IDRBT	Institute for Development and Research in Banking Technology
ITMX	Interbank Transaction Management and Exchange System
KIE	Kenya Industrial Estate
NFS	National Financial Switch
NPS	National Payment System
NPCI	National Payment Corporation of India
NIBSS	Nigeria Inter-Bank Settlement System
NCEB	National Conference of E-Business
MACSS	Mauritius Automated Payment and Settlement System
MICS	Multi Integrated Cash Service
POS	Point of Sale
PSS	Primer Switch Solution
RBI	Reserve Bank of India
RTGS	Real Time Gross Settlement
SACCOS	Saving and Credit Cooperative Societies
TTP	Time Triggered Protocol



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## ABSTRACT

*Although there are gradual and continuous increases in the use of e-payment system rather than the actual dispensation of cash in Ethiopia, the adoption of integrated national e-payment switch system is at its infancy. The introduction of an efficient e-payment system ensures speed, convenience, reducing cost, lowering payment risk and directly affects the efficiency of the circulation of goods and services and overall development of the economy. The main objective of this study is to assess the major opportunities and challenges of adopting the national e-payment switch in the case of Ethiopia. The research is designed as an assessment on the payment system through eight selected commercial banks, as case study so that the findings can give insights to other commercial banks operating in the country. Both primary and secondary data were used as source of information. Questionnaires are used as main instrument to collect primary data, while secondary data were reviewed from various publications. Regarding methodology descriptive with survey method applied. The target population for the study is about 118 and sample size of 91 was considered for the study. Data was analyzed using SPSS tools and results are presented based on statistical mean and standard deviations value. The result from the analysis shows that, the national switch address capital intensive investment of commercial banks on acquiring an independent e-payment switch system, it becomes one of the means in the creation of cashless society in the country, and facilitate financial inclusion, where the unbanked population can get the service through it, which all these refers about its opportunities. On the other hand, poor infrastructure in the country, limited customer awareness about the national switch system and its services, resistance for change, operational risks, limited awareness on how to file disputed transaction and inefficient chargeback management are identified as the key challenges. The study concluded that, the adoption of the national switch has a number of opportunities, which supports the macro economy in general and the financial sector in particular, where it requires also to combat, the basic infrastructural and inefficient operational activates of the national switch operator for its smooth operation and achieve its fretful result. Keywords: National e-payment Switch, Opportunities, Challenges, financial inclusion, infrastructure*

# Chapter 1

## INTRODUCTION

### 1.1 Background of the Study

In this time around, the importance of banking service in the society which overcome poverty and sustaining an economic growth of the country in general is getting significant attention, which backed by the emerging technologies, so as to enforce the introduction of a paperless transaction at large. In this regard, the advancement of technology has made it convenient to conduct most banking transaction from anywhere remote even without physical presence at the conventional banking center, which marked the emergence of e-banking service. Moreover, the benefit of e-banking might include, transaction cost reduction, fulfilling ever changing customer needs and improved service, retain existing customer base, attract a new one, enable commercial banks to compete in equal footing in the sector and extend their products and service beyond the restriction of time and space.

As we go through such transformation, the banking service is expected to be carried out through alternative channels, such as Automated Teller Machines (ATMs), Agent Banking, Point of Sale (POS) machines, Internet banking, Mobile banking and more recently electronic or mobile wallets. It is inevitable that, the increasing number of transactions that carried out under these channels entails safe, secure and proficient e-payment infrastructure, among which an introduction of a National e-payment system is the basic one.

A National e-Payment system is a concept of carrying out payment transaction among interconnected commercial banks in a country, with a view to enhance financial service provision. According to Tim Masela (October 2012), National e-payment is a broad concept, which includes "System, mechanisms, institutions, agreements, procedure, rules, and laws, that comes into play, while an end user is on service". According to Financial Insight (July 2016), "a country's national payment switch must balance a larger number of priorities and responsibilities: it must have scalability, must be able to accommodate all payment types, and must meet high standards of security and fraud detection".

Thus, in the wake of rising trend in use of alternative delivery channels (i.e. ATM, POS, Internet and Mobile Banking) the National Bank of Ethiopia find it necessary to ensure provision of a secure and efficient mode to facilitate e-Payments. This will ultimately boost public confidence and further promote e-commerce in the country. As a result, since May 2016, the National e-payment system is in operational in Ethiopia. All commercial Banks operating in the country, which acquired their own switch are interface their system to the National e-payment gateway, there by any transaction performed by the customer of any Bank at any ATM or POS devices routed through the center to its base Bank (Issuer Bank) in real time. In this endeavor, a number of opportunities shall be created, which benefit the society at large, those commercial banks operating under which and the macro economy in general. Needless to say, some challenges might face also, in adopting the National e-Payment switch as well.

Although, the National e-Payment system of Ethiopia is an infant in its operation, the researcher opts to assess major opportunities and challenges, for effective utilization and systematically overcome them, respectively.

## **1.2 Background of the Organization**

According to a profile of the company, EthSwitch S.C., owner and operator of the national electronic retail payments switch of Ethiopia (in short “the National Switch”), is legally established with the main purpose of providing electronic retail payment switching and clearing, card issuance and management, and related infrastructure services for a wider implementation and use of electronic retail payment services in the financial sector and the country at large. The national switch is one of the four major components of the National Payment Systems (NPS) strategy being implemented by the National Bank of Ethiopia (NBE) in which modernization of the NPS is the core.

The national payment system strategy includes the following four components:

- Real Time Gross Settlement System (RTGS)
- Automated Clearing House
- National Switch
- Central Security Depository

EthSwitch is independent of the Ethiopian central bank and is not an extension of the central bank. EthSwitch is part of the national payment system strategy. The Ethiopian central bank is the central settlement bank of all the Ethiopian Banks. For this purpose it has implemented the Real Time Gross Settlement System. The settlement is done on the account held by the central bank between the banks; on which EthSwitch sends the net settlement instructions to member banks.

In line with the above, in the year 2009 NBE issued instruction to all Banks advising them to cooperate in the establishment of a central switch system. Accordingly, the Banks through the Ethiopian Bankers Association cooperated and established EthSwitch S.C. in 2011. EthSwitch is the sole clearing house for interbank electronic retail payments in Ethiopia. On an ongoing basis, it does settlement between the banks. Whenever there is an inter-bank transaction, the transaction will come to the EthSwitch infrastructure and will be completed within its infrastructure.

The objectives of EthSwitch listed in its Memorandum of Association are: to establish a national central financial switch system and infrastructure, to provide card and retail payment switch and clearing service, to provide card production and personalization services, to establish the system and infrastructure for card payment and its management, to provide gateway service for international card payments, to provide call center service and maintain service level agreement with financial institutions, to provide research, technical support and advisory services for member financial institutions in areas related to card and retail payment systems business development, risk management, security, dispute resolutions, and standardization, and to undertake other services related to the above stated objectives subject to the approval of the National Bank of Ethiopia and other pertinent authorities.

### **Project Scope**

The scope of implementation originally covered 19 commercial banks. During the process of implementation, two banks were merged into one, and the number was reduced to 18 commercial banks. The scope of work also included the central bank and therefore the project required 19 interfaces for the switch. Out of the eighteen banks, 6 banks had their own switch; another 6 banks were connected using their core banking application; and the last 6 banks used a common

consortium shared switch. This existing situation was integrated into the platform at the time of implementation and testing.

Since the commencement of its service the number of inter-bank transactions has been growing. This is expected to increase as the Ethiopian population becomes aware of the interoperability and ease of use of using cards in any bank's ATM machine.

According to the 2016 Brookings Financial and Digital Inclusion report only 22% of the adult population has financial accounts in Ethiopia. This shows there is a lot of potential for inclusion and diversification of banking products in the country.

### **Performance**

In past three years of its operation the national e-payment switch system (Ethswitch) is mainly focusing on providing ATM service, with a plan to add more service into the system. In this platform, any bank customer can be served at any commercial banks payment terminals. In the year ended, there were about a total number of 779,571 customers who have been performing EthSwitch transaction, while only 550,870 customers have achieved successful transaction. Similarly, a total number of 7.69 Million ATM transaction had been attempted at various ATM's, out of which 4.33 Million transactions were successful, at the end of June 30, 2017 (Annex 2). The number of users only in the past six months has reached at 1.15 million, of which 776,773 customers had performed successful transactions.

According to the report, in the past six months a total number of 5.54 million ATM withdrawal attempt has been made and out of which 68.5%, which is about 3.8 million transactions were successful, which resulted a withdrawal of Birr 2.55 billion. Compared to last year six months, this year similar period performance of an attempt to make withdrawal saw 58.7% increases, while the actual successful transaction increase by 88.4%.

### 1.3 Statement of the Problem

The need for commercial banks to hugely invest on innovation i.e. on e-payment channel is mainly to meet the growing demand of customers on the aforementioned banking services and in view of speeding up the whole level of operation, where the traditional banking service fails to do so. In this effort, for a customer who has maintained an account at a financial institution would get a payment through various e-payment alternative channels in real time bases, which featured with speed, value adding messaging capability and immediate availability.

However, having a closed payment system, with a single switch and bank approach, has several challenges and becomes capital intensive, which envisage the introduction of centralized payment, settlement and clearing house called payment interoperability. Establishment of an interoperable payment system in country would benefit all stakeholders i.e. end users, including consumers, merchants, governments and other types of enterprises, in order to effect payments and accept similarly. Furthermore, it becomes a source of revenue from payments in interoperable systems that could not be achieved with closed loop or non-interoperable system. Needless to say, payment interoperability can also produce cost efficiencies and enable superior risk management.

The National e-Payment system in Ethiopia was formed by all commercial banks in Ethiopia, and has the backing of the Ethiopian Bankers' Association and the National Bank of Ethiopia, which commenced its operation in May 2016. SmartVista (i.e. solution owned by National Payment System) will connect all banks to a central transaction switching platform that will provide customers with access to their money and other financial services via ATM, mobile and Internet channels, and POS devices, regardless of their home bank.

So far, the Ethiopian financial sector has not been studied to any great extent, from the perspective of provision of electronic banking service, through the national switch system. Though the national switch system service has been in operation for the last two years, a very limited research has been conducted on the challenges and opportunities associated with it. Thus, this study attempts to fill this gap and contributes to the literature on the electronic banking service in Ethiopia. Therefore, the main purpose of this study is investigating the challenges and opportunities in the implementation of national switch in Ethiopia.

## 1.4 Research Questions

The research relates to the challenges and opportunities in the national e-payment system in Ethiopia. This raises the following research questions:

- a) What are the challenges of adopting the National e-payment switch system?
- b) Does the national switch operate as per the expectation of customers in e-banking services?
- c) What are the prospects of National e-payment switch?
- d) How does it contribute for the financial inclusion?

## 1.5 Objective of the Study

### General Objective

The main objective of this research paper is clearly to assess the opportunity and challenges of adopting a National e-payment switch in the case of Ethiopia.

### Specific Objectives

- a) To identify the challenges of adopting a National e-payment switch system
- b) To evaluate the National e-payment switch, in addressing the expectation of customers on e-banking service delivery.
- c) To investigate the main prospect of National e-payment switch
- d) To draw a lesson, on how it contributes for financial inclusion

## 1.6 Significance of the Study

This study contributes to the National e-Payment system literature as it is one of the few that assess the opportunity and challenges of adopting a National e-Payment Switch in the country. It will also enable the National e-Payment center and member commercial banks to identify those opportunities for further exploitation and its utilization at full scale and drive a way out for those challenges that emanate from there.

Indeed, this research paper will thus make special contribution to the existing knowledge and provide background information to research organizations, individual researchers and scholars who will want to carry out further research in this area to identify gaps in the current research.



## **1.7 Scope of the Study**

Among all the commercial Banks operating in Ethiopia that interfaced their system to the National e-Payment system, only seven selected commercial banks will be considered in the scope of the study. Moreover, besides commercial banks, other system are also in the pipeline to interface with the National e-Payment switch, this study will cover only, opportunity and challenges of adopting the national switch with respect to commercial banks in the country.

## **1.8 Organization of the Study**

The research is organized into five chapters. The first chapter introduces the background of the study, background of the organization, the research objectives and questions, significance of the study, limitation of the study and organization of the study. The second chapter presents theoretical and empirical review of the related literatures while the third chapter deals with methodology of the study. The fourth chapter is concerned with summary of analysis as results and discussions. Finally, the fifth chapter presents the conclusion and recommendations drawn from the findings.

## Chapter 2

### RELATED LITERATURE REVIEW

The purpose of this chapter is to present a view of literature relating to national e-payment system on both theoretical and empirical grounds. Review of some of the studies carried out and suggestions extended by those authors on the subject have helped to carry out the study in line with the objective and scope.

#### 2.1 Theoretical Review

##### 2.1.1 E-payment Overview

"The transfer of fund from the payer to payee is generally understood as a payment, while electronic payment is inferred as effecting payments electronically. The European Central Bank defines e-payment as "a payment that is initiated, processed and received electronically"(ECB Monthly Bulletin May 2003)

"Payment through electronic channel has a long history, where electronic network for trade began in the early 1970's in the financial sector. Movement of money between financial institution via telecommunication network is sighted some of the first applications involved Electronic Fund Transfer (EFT). Even Automated Teller Machines (ATMs), beginning in the 1980s, are a form of electronic payment; every time the customer uses the ATM, it involves a transaction made over a computer network" (Barnes, 2001).

Increasingly, organizations are avoiding paper-based solutions because the internet and availability of software products and services make electronic payment solution more convenient and cost effective electronic payment already exist in many forms including credit cards, cards, digital cash and micropayments, most of these forms of payments occur independently as onetime events rather than as part of an ecommerce system. Increasingly however credit cards are used for payment for internet services and online purchases. "The growth of e-commerce on the internet has created new demands on electronic payments, which involving different entities such as banks, merchants, consumers and corporations. Include cash". (O.Szupeicz Bohdan, 1999).

The great advantage of e-payment could be payment efficiency, which reduces transaction cost and enabling trade in goods and services of very low value. Moreover, consumers can effect payments at their convenience that enable them to be made swiftly and remotely from various devices connected to global network.

### 2.1.2 Major E-Payment Systems

"Electronic payment systems can be divided into four general types: online credit card payments, online electronic-cash payments, electronic-check systems and smart card based electronic-cash systems"(Anderson M.M, Sept. 1998).

**Online Credit Card Payment System:**"It seeks to extend the functionality of existing credit cards for use as online shopping payment tools. This payment system has been widely accepted by consumers and merchants throughout the world, and by far the most popular methods of payments especially in the retail markets" (Laudon and Traver, 2002).

This form of payment system has several advantages, which are never available through the traditional modes of payment. Some of the most important are: "privacy, integrity, compatibility, good transaction efficiency, acceptability, convenience, mobility, low financial risk and anonymity" (Sumanjeet Singh, 2009).

**Electronic Cheque Payment System:** Electronic cheques address the electronic needs of millions of businesses, which today exchange traditional paper cheques with the other vendors, consumers and government.

"Electronic cheques are generated and exchanged online". (Juang, w.s, 2006). Electronic cheque system has many advantages: "they don't require consumers to reveal account information to other individuals when setting an auction, they don't require consumers to continually send sensitive financial information over the web, they are less expensive than credit cards and they are much faster than paper based traditional cheque. But, this system of payment also has several disadvantages includes, they relatively high fixed costs, their limited use only in virtual world and the fact that they can protect the users anonymity". (Sumanjeet Singh, 2009)

**Electronic Cash Payment System:**Electronic cash (e-cash)is a new concept in online payment system because it combines computerized convenience with security and privacy that improve on paper cash.

"Electronic cash has got some similarities with real money such as privacy, transferability and convenience, low transaction cost, good acceptability, authority, like real money, digital cash is totally anonymous. However, there is also a type of digital cash called an identified e-money, which reveals the identity of the person who first withdrew the money from the bank. But unlike real cash, digital cash cannot be instantly converted to other form of value without the involvement of a third party like bank. Privacy in digital cash is achieved using blind signature without the involvement of TTP. This is in contrast with other e-payment systems". (Tadesse and Kidan, 2005)

**Smart Cards based Electronic Payment System:**"Smart cards" are receiving renewed attention as a mode of online payment. They are essentially credit card sized plastic cards with the memory chips and in some cases, with microprocessors embedded in them so as to serve as storage devices for much greater information than credit cards with inbuilt transaction processing capability"(Chakrabarti and Kardile, (2002).

"Compared with traditional electronic cash system, smart cards based electronic payment does not need to maintain a large real time database. They also have advantages, such as anonymity, transfer payment between individual parties, and low transactional handling cost of files. Smart cards are also better protected from misuse than, say conventional credit cards, because the smart card information is encrypted. The benefit of smart card is highly dependent on the availability of smart card reader". (Sumanjeet Singh, 2009).

### **2.1.3 The Concept of National Payment System**

"National Payment Systems (NPS) refers to instruments facilitating exchange of assets and service between economic units, legal and physical infrastructure, the organizational structure, the operational procedures and the communication network, used to initiate and transmit payment information from payer to payee and to settle payment. That is, transfer of money" (Banilo, 1996).

"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" (Kippteput, 2007). If done well, the development of the national payment system can reduce overall transaction costs and expand the opportunities for commercial and financial transactions in an economy. "Introduction of a cheaper payment instrument such as electronic payments may be welfare improving" (Calladoy, Hromcováz&Utrero, 2007).

One of the prime concerns of central banks is that, the efficient operation of the national payment system. Electronic payments are typically cheaper than paper-based or cash payments, pricing this transaction should speed up the shift to electronics.

#### **2.1.4 Motives for National Payment System Reform**

In this time around, the motive behind nation's towards crafting a national payment system reform may take various forms which mainly driven by the need for development in the payment system arena and events. "These events relates to; development in the financial and non-financial sectors that presents new needs and opportunities for payment instruments and services; increased awareness about payment systems and their risks, including those related to the security of payment information, which have raised concerns about financial stability; internal and external pressure from national payment system reform in other countries, the entry of foreign banks, or a policy to comply with regional and international standards for payment and securities systems; political, economic development, such as the evolution of economic and monetary unions among countries, and the country's re-entry into global trade and financial markets" (CPSS January 2006).

"In the wake of these events, the existing system is found to be inadequate for the emerging payment needs of the economy, and reform initiative are therefore undertaken" (F Solis and J Trundle 1999)

#### **2.1.5 Trends in National Payment System Development**

National payment system development initiatives are generally strives for improvements in system wide safety and efficiency. In general, these development initiatives have been both demand driven (e.g. new instruments and services) and supply driven (e.g. new cost reducing standards or technologies).

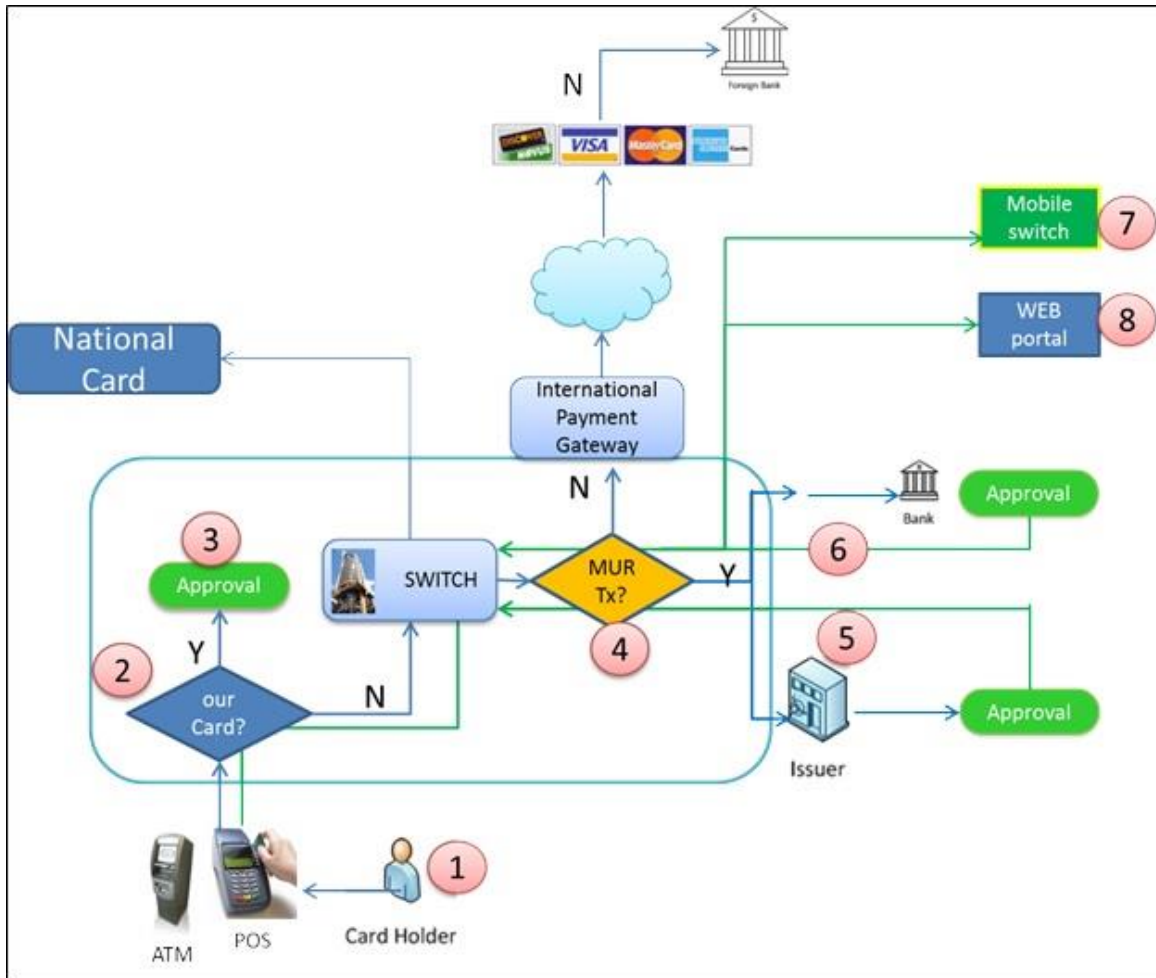
The trend of national payment system development exhibited on some of the following basic areas i.e. how convenient the payment service to the public at large, how cost effective it is, while carrying out such financial transactions, there long-term effect for financial inclusions. According to CPSS January 2006, the national payment system might focus on “the gradual emergence of a broader range of payment instruments and services, better access for financial institutions to low cost settlement credit and better liquidity saving mechanisms in payment settlement systems, the interoperability, interrelationships and resiliency of payment, securities, foreign exchange, telecommunications and the bank’s internal infrastructures to facilitate straight through processing of payments, the design of payment infrastructure arrangements to better contain legal, operational and financial risks for participants and to improve the cost efficiency of providing infrastructure services to them, the development of a suitable regulatory regime for the national payment system and an effective oversight function in the central bank, more efficient, more stable and better organized markets for delivering and pricing various payment services to the users”

#### **2.1.6 National Payment System Transaction Flow**

According to Bank of Mauritius, “the National Payment Switch will simplify the current card payment system. It will route all transactions made with locally issued cards to a central point (the Switch), for settlement at the Bank. The National Payment Switch will have a single interface with global card payment processors such as VISA, American Express, MasterCard, Diners Club”, etc.

The process flow of national switch operation looks like as follow: The holder of a card uses his card at a POS/ATM of a sub-switch. The card data and payment details are transmitted to the acquirer; The acquirer verifies whether the transaction was made by its own card or by a card issued by another institution; If the transaction was made by its own card, the authorization request is processed and transmitted immediately to the POS. Otherwise, the transaction is routed to the payment switch; On receiving a payment transaction, the payment switch will determine whether the transaction was made through a card issued locally or abroad; In case of locally issued cards, a request for authorization is sent directly to the issuing institution. Only payment instructions for internationally issued cards are routed through global card payment processors such as VISA and MasterCard; the issuing institution then sends the authorization response back

to the Switch, which will transmit it to the POS; In addition to providing the basic card based payment, the Switch will also have connections to mobile payment switches and online payment facilities.



**Figure 2. 1** National e-payment switch system transaction flow Source: (Mauritius Bank)

### 2.1.7 Challenges of National Payment System

First of all, when we look at the development process of national payment system, it is stated that, "Earlier experience of many countries points to a number of issues that need to be addressed if the development process for a national payment system is to proceed smoothly and effectively. Among the most common are: inadequate knowledge about the overall breadth of the basic elements relevant to a national payment system, resulting in ad hoc changes in the system, and limited vision, leadership and trust among the principal stakeholders, limited information about the emerging payment needs and capabilities of the developing economy and the existing

system's ability to meet them, weak support and commitment to reform from public and private stakeholder groups due largely to inadequate consultation, limited expertise and financial resources for developing and implementing reform initiatives, legal, regulatory and other public policy impediments to development that compound the natural risk aversion towards new and innovative payment arrangements" (Summers, B J 1994)

The national payment switch has a significant advantage, but there remains a challenge in understanding of what the functionality of a switch actually is, and availability of basic infrastructure i.e. power and telecom services.

The payment system of any country, though advanced and sophisticated, does face various risks, viz. bank failures, frauds, counter-party failures, etc. Such aberrations could trigger a chain-reaction that might ultimately result in disruption and distrust of the payment system. For example, if one large payment transaction cannot be settled, it disturbs other transactions leading to failure of the institutions involved in the process ultimately upsetting the entire payment system in the country. Such systematic and cascading breakdown of the payment system can hinder efficacy of monetary policy and badly impact confidence in the financial system. Minimization of systemic risk is therefore a critical challenge facing the regulators. The central bank in any country is therefore taking suitable actions to reduce systemic risks and is continuously engaged in promoting a sound and efficient payment system.

"The interoperability (National Payment System) "levels the playing field" it is extremely difficult, for example, for one bank to develop meaningful product feature that competitively differentiate a check, or direct debit, when the instrument needs to interoperate with offering from other banks" (Carol Coye Benson Scott Loftesness 2012).

In general, financial institutions face difficult challenges and opportunities when they require a complete view of each customer relationship and how to deliver, more effectively, the correct products and services to each customer. Some of the challenges are: "There is a high volume of transaction generated through various channels, each channel with its own infrastructure (credit cards, deposit accounts, commercial, eCommerce), fraud is becoming more pervasive and complex with each channel and between multiple channels consolidation, both within the industry and within individual organizations, brings with it the need to rationalize infrastructure.



Often large financial institutions have duplicate infrastructure within the single company. Current solutions provision the rationalization of duplicate infrastructure onto a single platform (for example, wholesale and retail payments), Increased regulatory intervention is driving up compliance expenses" (IBM September 2008).

In the search for any strategic advantage, the business need to focus on a complete view of the customer relationship turns rapidly to a need to consolidate the payment delivery and combine it more effectively with the fraud and risk management.

### **2.1.8 Opportunities of a National Payment System**

A country's financial and economic structure mainly constitutes the major aspects of Payment and Settlement Systems. A payment system is a system which enables payment between two entities i.e. a payer and payee and constitutes clearing, settlement or payment service (Payment Settlement Act 2007). Humphrey and Setsuya1995) "argued that there is a need to modernize the payment system and move away from paper-based to electronic mode of payment system to improve efficiency and save cost. According to the estimate of the authors, the cost of any nation's payment system may be equivalent to about 3 percent of its Gross Domestic Product (GDP)". "An efficient payment system acts as an enabler for speeding up liquidity flow in the economy, apart from ensuring proper utilization of limited resources it also eliminates systemic risks" (GOI 2007).

According to Lawrence Freeborn Mark & Robert Glover (July 2016) we can raise plenty of reasons, why national payment switch should be a priority for countries looking to digitize their economies:

**A national switch can bring about cost savings:** While a nation switch is in place, commercial banks will gain a cost advantage for their technological investment.

**The establishment of a National switch can help banks to innovate:** A shared infrastructure, for example, will allow participating banks to introduce new functionality for only a fraction of the cost compared to individual projects, and at a much faster pace. This can nurture interoperability.

**A national payment switch will stimulate growth of the cashless society:** growing card payment acceptance and card usage rapidly. This allows greater control over card payment transaction at a national level.

**Fraud monitoring:** Transactions are audited, monitored for fraud and money laundering, and sophisticated analytics on transaction data and patterns can be carried out to prevent future fraudulent activity.

**Bringing cash transaction into the electronic payment system:** means that a greater proportion of economic activity can be taxed. The direct cost of handling cash throughout the economy is reduced as its volume falls.

A national payment switch can support the move towards instant payments: bringing the payments network into line with consumer expectations.

A national payment switch will give control to the government: greater independence from external players when it comes to transaction processing. From a security stand point, data attached to processing can stay in-country

All of these benefits will produce a multiplier effect to speed a country's development. The broader tax base, the increased transparency and audit-ability, the lower fraud level and the smaller black economy are all both consequences of and catalysts for economic development.

The National Switch leverages the banking community's technology investments. It effectively multiplies any one bank's outreach points, which can significantly increase financial access for clients. According to Estelle Berger (opportunity International), "customers in Africa pay a transaction fee when they use another bank's ATMs, just as in developed economies. However, the cost is presumably offset by increased convenience and reduced travel time and expense. In addition, a network bank receives revenue whenever customers from other banks use its ATMs".

"A robust environment of interoperability in payments systems benefits all participants in the payments ecosystem, gain revenue from payments in interoperable systems that they may not be able to achieve with closed loop (or non-interoperable) systems. Interoperability in payments systems can also produce cost efficiencies and enable superior risk management"(Carol Coye Benson Scott Loftesness 2012).

Each payment reform has provided opportunities to develop new products. Financial Institutions and service providers should take advantage of the available platforms, reduce transaction cost to customers and enhance access to finance. Banks and primary dealers should market their new products in conformity with the rules and regulations set up these systems rather than looking ways and means to operate outside rules and regulations.

In general, safe and efficient national payment system supports a smooth flow of money in an economy to help create new opportunities for commercial and financial transactions that would not otherwise exist and lower the real and the financial costs of all transactions.

### **2.1.9 National Payment System for Financial Inclusion**

In the late twentieth century, "inequality has often been explored through the concept of social exclusion "(Byrne,1999). An important aspect of social exclusion that was often ignored is exclusion from the mainstream economy (Hillset al.,2002; Littlewoodet al.,1999). "Based on the assumption that exclusion from access to banking services perpetuates poverty, proponents of financial inclusion are advocating for every person to have, at a minimum, a no-frills bank account "(Conroy,2008).

Financial inclusion is poised to become the new panacea for poverty alleviation, in a manner similar to that of micro-credit and micro-finance some ten to fifteen years ago. "Regardless of the early promise of micro-credit and micro-enterprise, it did not lift the very poor out of poverty" (Cooney and Shanks,2010).

Broadly speaking," financial inclusion means access to finance and financial services for all in a fair, transparent and equitable manner at an affordable cost" (Sarma,2008; Solo,2008). "Financial inclusion aims at drawing the "unbanked" population into the formal financial system so that they have the opportunity to access financial services ranging from savings, payments, and transfers to credit and insurance." (Hannig and Jansen 2010).

Fuller and Mellor (2008)" noted that financial inclusion is the desire to develop 'alternative', welfare-oriented (rather than profit-driven), reliable, affordable and accessible financial services for all sections of the population". Others, however, "view inclusion as a market- driven solution for poverty alleviation" (Alpana,2007). Financial inclusion is a desired outcome regardless of the

motivation behind it as it can help poor people access financial services at a lower cost and reduce the consequences of poverty.

"Bank branches and service points also have to be at strategic points for individuals to be able to locate them. According to the World Bank financial access" (2009), one of the main issues of financial inclusion policies is the distance the individuals have to travel to be able to access these facilities. Nwachukwu and Odigie(2009) "noted that people would save more if saving institutions were nearer to them than if they were far".

Technological means like ATMs, Internet banking, debit cards and mobile banking facilities that allow bank customers to easily reach and utilize banking services can also be in place to help and encourage people of the benefits of banking system.

"An exclusive focus on technology would still lead to a somewhat short-sighted regulation. Both efficiency and safety of payments, on the one side, and financial inclusion, on the other, need a much more articulated consideration. Focus must also be put on the structure of the market and the role of various stakeholders, putting innovative instruments within the wider context of retail payments as a whole, or the even wider context of the national payment system" (Maria Chiara 2015).

"Financial inclusion is an objective of rising importance in many places and payment regulators need to consider how to make their payments systems more inclusive. An increasing number of other regulatory agencies, such as competition authorities, are also showing interest in the functioning of the national payment system " (Brian and David, 2013).

#### **2.1.10 The Intermediary Role of National Payment System**

"As developments in information technology and deregulation and depending of financial markets tend to reduce transaction cost and informational asymmetries" (Fama,1980). Gurley and Shaw (1960) and many other authors have stressed the role of transaction costs.

The role of commercial banks and central banks in the National Payment system is to reduce the transaction cost of both in terms of time taken to complete transactions and also to reduce distance that one would have to otherwise been required to have travel to access the required funds. National payment system has greatly achieved this important role which means that the

costs that would have otherwise been used in this direction are saved and invested to other important activities that enhances the economic growth of the parties involved.

Among the various roles, one of the major roles played by central bank is being a provider of liquidity and overseer of the payment system. With this, that National payment system has play a key role in providing the key factors that are used to control the money supply and other factors necessary to economic growth of a country.

"National Payment system has enacted several means of electronic payments such as EFT's and RTGS instead of using of real currency. Electronic payments are an integral part of e-commerce and are one of its most critical aspects. An e-commerce electronic payment is a financial exchange that takes place in an online environment", (Kalakota&Whinston, 1997). Transactions are debited to the payer and the credited to the receiver. This means of payment has largely controlled the actual printing of currency in a country and has controlled the excess supply of such currency. This has in turn helped the government to control the inflation of the country and hence improve on the real GDP, which is the biggest role of the National payment system.

Regarding quality of transaction, the National Payment system focused with the efficient payment system within the country. It aims at making the increasing volumes and value of transaction not only efficient but also reliable to conduct the daily business transactions. This volumes transaction and value of money results to income velocity that will eventually may determine the price level.

National payment systems involve the use of payment system that has been designed by the central bank. There is continued designation of payment systems that involves the creation of payment instruments such as payment cards, RTGS, EFT'S, credit transfers, direct debits, cheque and cash. Migration from one system would result to decrease in one and an increase in the other. Any increase in consumption arising from any payment system drives corresponding increases in GDP.

High value transactions are usually in the form of RTGS, EFTS, and DFCC. RTGS are specialist funds transfer systems where transfer of money or securities takes place from one bank to another on a real time and on gross basis. The transactions are settled as soon as they are processed and payments are final and irrevocable." EFT is a system of transferring money from

one bank account directly to another without any paper money changing hands and is mainly used for high volume of transactions but usually small value such as payroll system where you would have a company paying thousands of employees within one EFT transaction. Reducing the transactions costs involved in digital payment systems is via de-coupling the various tasks that characterize the exchange of goods and money thereby making the system more suitable for low value transactions" (Baddeley, 2004). Domestic Foreign Currency Clearing (DFCC) is a System where 19 the commercial banks are able to clear cheques' drawn in foreign currencies such as the US Dollar (USD), Great Britain pound (GBP) and European currency (EUR).

#### **2.1.11 Significance of Effective National Payment System**

"Payment Systems are critical to the effective functioning of the financial system. They are the means by which funds are transferred among banks. Robust payment systems are key requirements in maintaining and promoting financial stability and supporting the effectiveness of financial markets" BIS (2001). The public depends on it to transfer funds among themselves.

According to Sheppard (1996), "Payment systems are crucial for the economy, and their safety and efficiency should be part of objectives of public policy. They are vital elements in the financial infrastructure of the economy acting as a necessary channel for effective economic management particularly through monetary policy and a means of promoting economic efficiency". Effective and efficient payment systems are vital for the economic development of emerging economies. World Bank Policy Research paper number 1336. VISA (2004), cites Paul Acquah of Bank of Ghana statement that "An efficient payment system enhances savings mobilization and financial intermediation". If a payment system is inefficient and unreliable, it may take weeks rather than days for a payment instruction to move from the payer's bank and for the final recipient's account to be credited. This process may also be uncertain causing money to be tied up in the payment system and making it unavailable for other productive purposes. BIS CPSS (2001) "identified aspects of Inefficiencies in Payment systems to include Poor operational performance viz: system cannot cope with the level of demand, has technical or organizational problems, high levels of returned payments, High costs possibly reflected in charges compared to systems with similar services elsewhere and excessively high set up or operational costs when a participation joins or leaves the system". The importance of payment systems for financial sector stability arises from the possibility that problems in the payment systems, affecting only one

participant, run the risk of becoming systemic. Masha (2002). "Modern and efficient payment systems promote efficiency of financial intermediation and are likely to build support for the operations of the free market institutions".

#### **2.1.12 The Future of Payment Systems**

Future Payment systems will be designed to internationally compatible, open-system, platform independent payment standards, to keep the full advantage of their existing client base, while benefiting from the new more efficient, low cost service capabilities. "Banks will be able to ensure that their own transition from the old to the new standards can be preformed cheaply, and on their own timing. This may be facilitated by the mobile phone and payment smart cards whose potential can shape the future of payment systems. Singapore for instance has fully implemented smart card system that enable people to make payments directly on the internet and the cards can be recharged by internet or by phone. The stated objective of the government in Singapore is to eliminate all conventional non-electronic payments by 2008". Lietaer (2002).

### **2.2 Framework of the Literature**

Different literature tried to confirm that, having a national switch in a certain country would create a significant opportunity, which broadly includes financial stability, financial inclusion, cost saving, convenient customer service, while there are also challenges, with regard to infrastructure, customer awareness and fraud, which categorized as operational risks.

In nutshell, safe and efficient national payment system supports a smooth flow of money in an economy to help create new opportunities for commercial and financial transactions that would not otherwise exist and lower the real and the financial costs of all transactions.

### **2.3 Empirical Review**

Despite there is a challenge to come up with empirical studies about the subject matter, in this part of the paper I tried to look at the practical initiatives and formulations of various countries in adoption a National payment system.

## **Central Bank of Kenya**

Reforms in payment systems are broadly based on overall objective of attaining safety, efficiency and reliability. This may be achieved through provision of "an environment in which payment system may function effectively and efficiently and removal of barriers as appropriate, to foster risk reducing payment systems initiatives" (Federal Reserve Bank Board, 2003)

According to Central Bank of Kenya (2004), National Payment System Framework and Strategy, Payments system in Kenya comprises institutions, laws, service providers and instruments. The major institutions that provide payment services include: The Central Bank, Commercial Banks, and Non-Bank Financial Institutions (Insurance companies, hire purchase companies, among others), Post Office Savings Bank, Postal Corporation of Kenya, Specialized Financial Institutions (ADC, AFC, ICDC and KIE), SACCOS, Building Societies, Pension Schemes and Mortgage Finance companies.

## **Central Bank of Nigeria**

The implementation of the central switch using will create a more efficient national payment infrastructure by electronically switching retail payment transactions between commercial banks. The Nigeria Inter-Bank Settlement System (NIBSS), established by the Nigerian Bankers Committee, will operate the central switch that will also be used for switching transactions between other third-party processors. They system will allow for greater efficiency to support the increase in citizens entering the banking system and the anticipated growth in domestic card payment volumes. Paul Lawal, "The successful deployment of the Nigeria Central Switch is of national importance, as a successful national payments infrastructure has been proven to be crucial to the economic development and GDP growth of a country. It was essential to select the right software partner to assist us in our objective. ACI's extensive track record combined with the depth of functionality in its solution, the high standard of its professional services staff and its strong regional presence led us to select them as our software partner" central bank of Nigeria (2014)

As the Nigeria Central Switch, NIBSS is responsible for the interoperability between the various players in the financial system. Interoperability involves the ability of the various players Banks, Mobile Payment Operators, Non-Banking Financial Institutions, Payment Terminal Providers,



Card Acquirers, Government Institutions etc., and their customers to send, receive and process funds, documents and other instruments electronically through a common channel – NIBSS. NIBSS also ensures that the central switch facilitates the entry of new players into the financial industry to seamlessly plug into the financial services sector for easy operations thus creating a level playing field for all financial institutions and their customers, central bank of Nigeria (2014)

### **Bank of Mauritius**

The Bank of Mauritius (Bank) is empowered under the Bank of Mauritius Act to safeguard the safety, soundness and efficiency of payment, clearing and settlement systems as well as protect the interest of consumers. In the discharge of its responsibility, the Bank started modernizing payment systems in the country in late nineties with the introduction of a real time large value payment and settlement system, the Mauritius Automated Payment and Settlement System (MACSS), as a landmark in 2000. The total value of payments made at points of sale (POS) in Mauritius approximated Rs146 billion in 2015 with an estimated amount of Rs3.6 billion shared as fees among payment systems operators. As part of its mandate to ensure financial stability, the Bank sees the necessity to implement a National Payment Switch with a view to promoting a cost-effective payment system which will ensure the protection of consumers and enable all players to operate on a level playing field.

### **Reserve Bank of India**

According to (Amit Bhatnagar, 2014) "The Institute for Development and Research in Banking Technology (IDRBT), established by Reserve Bank of India in 1996 launched the National Financial Switch (NFS), to provide a congenial platform for growth and development of the ATM delivery channel. National Payments Corporation of India (NPCI), on authorization by Reserve Bank of India, took over the operations of National Financial Switch (NFS) from IDRBT from December 2009. NFS is a shared ATM network that interconnects NFS members and ATM switches". "The main objective in creating NFS was to make ATM deployment economical and viable to members by pooling resources and thus, increase the use of ATM technology across the country. The NFS network will facilitate ATM transaction services among all members participating in this network. The transactions will include card transactions at ATMs of members and settlement of transactions that NPCI executes" (Abhay Parekh 2016)

NFS covers 596-member banks with about 215,000 ATMs as of December 2015. NFS approved transaction volume for Dec 2015 was 327 million (RBI 1998). Under the RuPay domestic card payment scheme in 2011-12, NPCI was granted approval under the PSS Act, 2007 to issue RuPay cards through banks in India. The objective behind introducing a domestic card scheme is to ensure a healthy competition with other international card payment networks and efficient price discovery (RBI, Annual Report 2011-12).

### **Bank of Japan**

The Bank of Japan (BOJ) has established and operated the Bank of Japan Financial Network System (BOJ-NET) since October 1988 in order to promote the efficiency of banking operations as well as stability of the industry's payment system

"Interbank alliances concerning cash card transactions in Japan have been built through joint networks of each industry since 1990. Furthermore, the "MICS" network that links each joint network was established and cross industry alliances were commenced from February 1990. Later, the MICS network and some joint networks were moved to the integrated ATM Switching Service which started operation in January 2004. The Switching Service provides services to financial institutions other than participants of MICS, thus realizing a broader CD and ATM network scheme" Japanese Bankers Association (2012).

### **Bank of Thailand**

"Payment 2004, a road map for Thai Payments System was proposed in 2001 as a co-operative effort on part of the central bank and the market to review the current payment infrastructure and to chart a strategic map to lay down strong future foundations for the country's payment systems" (NCEB 2002). With this, the country moves to the development of national payment platform as a collaborative effort by the Bank of Thailand and representatives from Thai's Banker Association, national research institutes and academy.

The purpose of the ITMX (Interbank Transaction Management and Exchange System) is to develop a common payment platform based on an appropriate interoperable standard to reduce duplicative payment infrastructure investments and to support the growth of e-commerce.

For a payment provider, ITMX is the central infrastructure and system for message and transaction exchange among the payment gateways and/or the commercial banks. ITMX also manages and processes the payment transactions among several banks. "ITMX is the core infrastructure that provides the standard for interoperable with these following key features: 1) to be based on an open platform for cross platform connectivity. 2) to provide the message standard specification for interbank payment transactions. 3) to support the need to develop common standards for electronic bill presentment and payment, Internet banking and mobile banking as the online transaction processing. 4) to provide the secure and reliable system" (SomnukKeretho, WisitWongwilai,ChutimaPaiboonapibal)

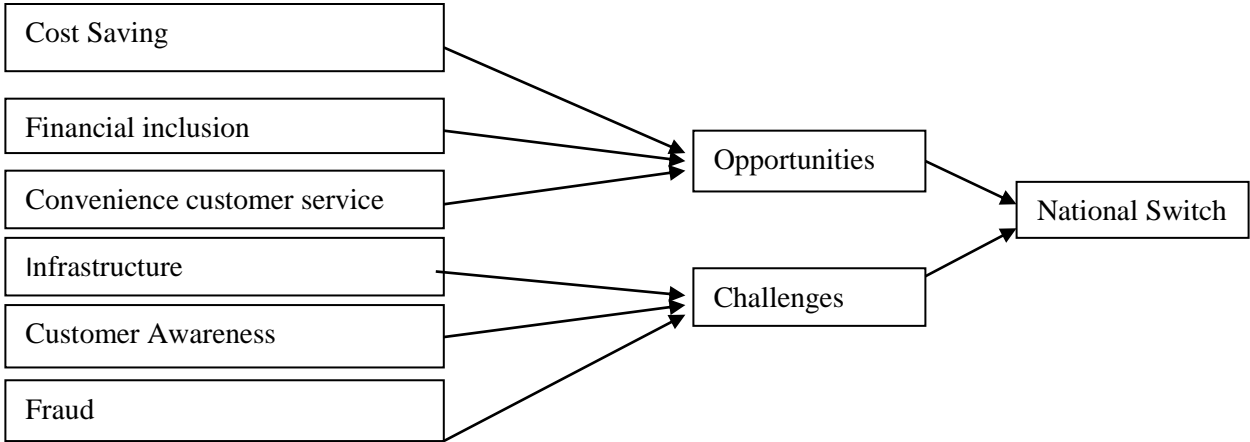
According to Roberts N. Arrowsmith (1986), "meeting the challenges for effective development of the national payment system has not been equally successful for all countries undertaking the reforms. The fundamental challenges, however, are often aggravated by a "narrow vision" of the system's complexity, limited knowledge on development, information sharing and inadequate planning by key stakeholders in the national payment system. Another problem is that too often, national payment reforms foci are limited to installments, technologies and infrastructure-the supply side structure of the payment transfers-with little attention paid to the institutional changes necessary to the support of these reforms and the conditions influencing the demands for new instruments and services".

The presumable empirical review that I tried to come up so far, which presented in this paper or not, show or emphasize strategic framework of various countries in adopting the national payment system. To the extent of my reviews of related research materials, did not find any general or specific study that made on the assessment of national payment system opportunity and challenges. This is therefore why, the researcher belief that it is appropriate to carry on the research on the established topic.

Therefore, following other countries foot step who have sound financial system and pioneer in adopting the national e-payment system, our country is in operation in the last couple of years. The researcher tries to assess on this paper, what real opportunity has brought the national e-payment system and the challenges in this regard.

## 2.4 Conceptual framework

The national switch system will have independent variables which includes infrastructure, customer awareness and fraud as a challenge are, while cost saving, financial inclusion and convenient customer service are opportunity which presented as a conceptual framework below.



## **Chapter 3**

### **RESEARCH METHODOLOGY**

This part of the paper deals about the methodology of the study whereby the research design, sampling, data collection instruments, data collection procedures and the methods of data analysis will be discussed.

#### **3.1 Research Design**

Research design is blue print of conducting the research or the overall strategy that we choose to integrate the different components of the study in a coherent and logical way. For the purpose of this specific research paper, descriptive research based on survey method is applied. Since the assessment is carried out on the national e-payment switch, survey method enables the researcher to have an organized data for the study. Descriptive research is basically used to ascertain and describe the characteristics of variables of interest in some situation and subject of study. It enables the researcher to describe the phenomenon of interest from individual or organizational perspectives. Moreover, this study is fundamental to add knowledge about a subject by describing a shape or nature of a phenomenon by answering vital research questions like "what is going on, by whom and where" about a situation. Thus, the researcher has found this research design appropriate to collect data from sources and further analyzes so as to assess and describe the opportunity and challenges of national e-payment switch system in the case of Ethiopia.

#### **3.2 Study Area**

This research paper emphasizes on the national e-payment system of Ethiopia (EthSwitch / Ethiopay) to assess the opportunity and challenges associated with the adoption of such service in the country. The study focuses on; the major e-payment channels i.e. ATM, POS, Mobile and other, where all member commercial banks of the national switch are represented by selected commercial banks from Switched member, PSS member and hosted member commercial banks, as explained in the sampling procedure of this paper.

### **3.3 Participant of the Study**

E-banking employees from eight commercial banks, which categorized under three major groups as Switched, PSS and hosted member are considered. Therefore, employees at CBE, Dashen Bank, Bank of Abyssinia, Awash Bank, United Bank, NIB Bank, Oromia International Bank and Buna International Bank at their head office, who are professionals on the service are considered in the study. In line with various commercial banks e-banking departmental arrangement, card operations unit, merchant management unit, mobile banking and internet banking management unit, dispute and chargeback management unit, account settlement management unit, system administration units of the banks are considered.

### **3.4 Sampling Procedure**

The total population for this study is about 118 employees from eight selected commercial banks, were these representative commercial banks are chosen based on their system interfacing to the national payment system i.e. as Switched member, PSS member Banks and Hosted member Banks. Switched member commercial banks refers about those commercial banks that has their own private switch, which directly connected to the national payment system; and for the purpose of this study CBE, Dashen Bank and Bank of Abyssinia selected as representative. PSS member banks encompasses, those commercial banks which share single switch among themselves and also connected with the national payment system, accordingly. Since Awash Bank, United Bank and NIB bank are the pioneer for establishing PSS and also have strong market share compared to other member banks, they are selected as representative of this category of the study. Finally, Hosted member banks are small in number and they are directly using the national payment system, which represented by Oromia International Bank and Bunna International Bank. Hence, considering the number of years they are in service and also depending on their departmental arrangement and size of employees, the sample size from each commercial bank varies. The researcher applies stratified random sampling technique, professional employees working at electronic banking departments of selected privet commercial banks, that their system is interfaced with National e-payment switch are considered. In this regard, non-clerical employees, hardware maintenance and other technical staff of e-banking department of each selected commercial bank are excluded from the total population, were it

focus only professionals in the operation area. Therefore, this enables the researcher to incorporate all member commercial banks but also make the finding more concrete.

**Table 3. 1 Commercial banks and sample size**

S.N	Commercial Banks	E-banking Employees
1	CBE	30
2	Dashen Bank	25
3	Bank of Abyssinia	18
4	Awash Bank	15
5	United Bank	12
6	NIB International Bank	10
7	Oromia International	5
8	Bunna International Bank	3
Total E-Banking Employees		118

*Source: Respective Commercial Banks*

Therefore, from different methods of sample size determining, a simplified formula by Taro Yemane (1967) sample size determination were used to calculate the sample. Accordingly, the sample size for the research was calculated using 0.05 sampling error and 95% confidence level.

Taro Yemane formula for sample size determination:

$$n = N / (1 + N(e)^2)$$

Where n = Sample Size

N = Total Population

e = Sampling error (usually .10, .05 and .01 acceptance level, the researcher will use 0.05 sampling error and 95% confidence level)

$$n = 118 / (1 + 118(0.05)^2)$$

$$n = 118 / 1.295$$

$$n = 91$$

### **3.5 Data Collection Instruments**

In the process of conducting the research, primary data are also used, where these data are collected using structured questionnaires which intended to collect participants opinion on the statement which stated to assess what opportunity does the national e-payment system has brought to the society at large and country in general and the challenges from there off.

Questionnaires was designed and arranged based on the relationships of the specific assessment questions and in the way that enable respondents to answer questions accordingly. Therefore, the first section of the questioner shall contain questions to collect background information of the participant. The second part of the questionnaire emphasizes those opportunities in relation to the national payment system, while the third and the final part of the questionnaire would be challenges on the subject matter.

### **3.6 Data Collection Procedure**

The primary data is collected using self-administered questionnaires which are to be drop and pick method to and from the head office of each selected commercial banks by the researcher.

### **3.7 Data Analysis**

Both qualitative and quantitative analyses employed so as to assess the opportunity and challenges of the national payment system. Since survey is designed, data collected from survey questionnaire are analyzed by using the statistical package for social science (SPSS). This software has been widely used by researchers as a data analysis technique.

To interpret the questionnaire, mean score and standard deviations are used from the measure of central tendencies. In order to measure the average opinion that the respondents given on the subject provided by the questioner we can use mean and SD is also used to show how the value obtained by the participants opinion dispersed from the above mean. These methods are widely used measurements of population opinion on survey provided by Liker scale.



## 3.8 Validity and Reliability of the Study

### 3.8.1 Validity

In order to make sure content validity for the descriptive studies, source of evidence, chain of evidence and having key informants reviewing draft of the study report is vital Leedy et al (2005). In this respect so as to make sure the validity the target groups included were those who knows better about the issue being raised. Moreover, the questioner has carefully designed and tested with a few members of participants for further improvement. In light of this, feedback has gathered about clarity of a sentence, correctness of a language and grammar, and also whether the designed instrument can fully assess the research topics prior to distributing the questioner.

### 3.8.1 Reliability

Reliability of a measurement is the extent to which it yields consistent results when the characteristics being measured has not been changed, Leedy and Omrod (2005). In this regard the researcher believed that this study is reliable since the respondent where selected based on their experience on electronic banking in general and their specific exposure on national e-payment system, while their answer expected to be credible. Given the credibility of selected respondent, the same answers would probably be given to another independent researcher. Given all the above facts, the researcher has conducted reliability analysis using Cronbach's coefficient alpha for the entire set of statements and found to be 0.804, which is higher than the acceptable threshold value 0.700. The reliability result for the research topic is presented below which confirms the scale is considered to be reliable

**Table 3. 2 Reliability result**

General Research Topics	Number of Items	Cronbach's Alpha
Opportunities	11	0.834
Challenges	9	0.720
Aggregate Cronbach's Alpha	20	0.804

*Source: SPSS Result*

### **3.9 Ethical Consideration**

Exert has been made to obtain consent from each participant about their participation in the study in the first place, and it is absolutely conducted on voluntary basis. The researcher has given due attention to respect participants right and privacy. Hence, the finding of the research presented without any deviation from the outcome of the research. Moreover, there researcher gave full acknowledgements to all the reference materials used in the study.

## Chapter 4

### RESULT AND DISCUSSION

This chapter presents result and discussion part of the paper. As explained in the earlier chapters, this study aimed at assessing the opportunities and challenges that emanate from the adoption of national e-payment switch, in the case of Ethiopia. Therefore, this part of the paper tries to analyzes, summarizes and presents the result of the collected data from e-banking employees of eight selected commercial banks operating in the country.

Accordingly, the first section of this chapter presents; respondents profile in accordance with their gender, age group, educational qualification, experience in the bank and the commercial bank which they are working in. The second section explains the opinion of respondents with respect to opportunities and challenges in the adoption of national e-payment switch in the country with the summary of tables along with their description.

#### 4.1 Survey Result

The questionnaire of this study was distributed to all e-banking employees who have direct operational relation with the national e-payment. The questioner was physically distributed to all e-banking managers.

**Table 4. 1 Response rate**

Number of Questionnaires Distributed	91
Completed and Returned Questionnaires	86
Response Rate	94.5%

*Source: Survey Outcome and Own Computation*

As we can see from the above table, a total number of 91 questionnaires were distributed, with a proportion of 77% for each selected commercial banks, and out of which 86 questionnaires were completed and collected. As a result the response rate is about 94.5%.

## 4.2 Respondents Profile

This section presents the profile of respondents, which relates with their gender, age group, educational level, service year and commercial banks they are representing.

**Table 4. 2 Gender composition of respondents**

<b>Gender</b>	<b>Frequency</b>	<b>Percent</b>
Female	36	41.9
Male	50	58.1
Total	86	100

*Source: Own Computation*

In this regard, as the table above depicts, male respondent constitutes the largest portions of respondents, which is about 58% of the sample size, while female respondents covers 42% of the total.

**Table 4. 3 Age category of respondents**

<b>Age category</b>	<b>Frequency</b>	<b>Percent</b>
20-30	48	55.8
31-40	31	36.0
41-50	6	7.0
Above 50	1	1.2
Total	86	100

*Source: Own Computation*

With regard to age category, the largest number of respondents falls within the range of Age 20-30, which constitutes 56% of the sample, while the second largest portion of respondent's age range belongs to 31-40, which is about 36%.

**Table 4. 4 Academic background of respondents**

<b>Education Level</b>	<b>Frequency</b>	<b>Percent</b>
Diploma	0	0
First Degree	71	82.6
Second Degree	15	17.4
PHD	0	0.0
Total	86	100

*Source: Own Computation*

Table 4.4 above represents academic qualification of respondents, where first degree and second-degree holders took the lion's share, which accounts 83% and 17%, respectively. This refers, majority of the respondents are first degree holder while, proportional to that, second degree holder.

**Table 4. 5 Respondent experience in the bank**

<b>Years of Service in the Bank</b>	<b>Frequency</b>	<b>Percent</b>
1 to 5 years	56	65
6 to 10 years	22	26
11 to 15	5	6
Above 15	3	3
Total	86	100

*Source: Own Computation*

Concerning respondents' years of service in the bank, around 65% of them have less than five years' experience, which have direct relevance to the research topic, and the remaining 35% of respondents have 6-18 years' work experience in the Banking sector.

The commercial banks covered in the study are eight, which are categorized as switched, PSS and hosted member banks. Table 4.6 below presents respective these commercial banks and corresponding respondents from each bank.

**Table 4. 6 Commercial banks covered in the study and number of respondents**

<b>Mode of Integration</b>	<b>Commercial Banks</b>	<b>Frequency</b>	<b>Percent</b>
Switched Members	Commercial Bank of Ethiopia	24	27.9
	Dashen Bank	17	19.8
	Bank of Abyssinia	12	14.0
PSS Members	Awash Bank	10	11.6
	United Bank	7	8.1
	Nib International Bank	10	11.6
Hosted Members	Oromia International Bank	4	4.7
	Bunna International Bank	2	2.3
	<b>Total</b>	<b>86</b>	<b>100</b>

*Source: Own computation*

Switched member commercial banks representing the largest portion of customer base and years of work experience, constitutes 62% of the sample size, while PSS and hosted member commercial banks represent 31% and 7% of the total, respectively.

### **4.3 Assessing the national e-payment switch opportunity and challenges**

The main objective of this study is to assess the opportunity and challenges in association with the adoption of the national e-payment switch in Ethiopia. Irrespective of its infant operation in the country and long period of time which has taken for its implementation, the researcher has used different variables as evaluating statements to assess its prospect and challenge in general.

#### **4.3.1 Assessment of the national e-payment switch opportunities**

Under this sub-section of the study, respondent opinions about the overall opportunities regarding the national e-payment switch are reviewed. In light of this, results are considered using a likert scale.

According to S. Rick Fernandez., (2013: 103-121) the interpretation of mean scores of each variable shall be represented accordingly. Scale 5 of the likert scale used to represent "strongly agree", 4 "Agree", 3 "Neutral", 2 "Disagree" and 1 "Strongly disagree". The score "Strongly disagree" was taken to be equivalent to mean score ranging from 1 to 1.80, "Disagree" represented mean score ranging from 1.81 to 2.60, "Neutral" represented mean score ranging from 2.61 to 3.40, "Agree" mean score ranging from 3.41 to 4.20 and "strongly agree"

represented mean score of 4.21 to 5. Moreover, standard deviation of greater than one (>1) represent a significant difference (dispersion) in the response given.

**Table 4. 7**Assessment of opportunities

Evaluating Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	Standard Deviation
National switch service is more accessible than visiting a bank branch	4	10	14	40	18	3.6744	1.163
The acquiring of an independent switch system is capital intensive, which can be addressed through national switch	2	5	12	49	18	3.8837	0.786
National switch service can be delivered throughout the country.	2	7	7	39	31	4.0465	0.986
Easy to introduce new functionalities through the national switch system	2	6	11	46	21	3.9070	0.862
The national switch stimulates the growth of cashless society	2	4	7	34	39	4.2093	0.897
Cash payments into electronic payment systems can be achieved through the national switch	3	2	5	36	40	4.2558	0.875
Available platform allows, reduced transaction cost to customers and enhance access to finance	4	3	14	46	19	3.8488	0.930
Member commercial banks can benefit from national payment system interchange fees.	1	4	21	40	20	3.8605	0.757
National switch becomes the means to facilitates financial inclusion	0	5	12	49	20	3.9767	0.611
As a tool to create a paperless transaction, it would help to utilize the countries resources efficiently.	2	1	8	44	31	4.1744	0.687
Service delivery thought the national switch meets the expectation of customers for e banking services	8	11	19	35	13	3.3953	1.371
	<b>Average Mean</b>					<b>3.9302</b>	

Source: Own computation

***Q1. National switch service is more accessible than visiting a bank branch***

As it is indicated on table 4.7 above, easy access to financial service is one of the opportunities for adopting the national e-payment system, as per the respondent reveal scale of agree, with mean score value of 3.67 and SD of 1.16, which the later implies dispersed opinion on the matter.

***Q2. The acquiring of an independent switch system is capital intensive, which can be addressed through national switch***

The national e-payment system alleviate intensive capital investment, similarly rated by respondent as agree, with score value of mean 3.88 and SD 0.76, where respondent believes on acquiring an independent switch, demands huge investment in the sector.

***Q3. National switch service can be delivered throughout the country.***

Respondents has also given their support, with regard to serving customers at any time anywhere, with response scale agree, evidenced by value of mean and SD, 4.04 and 0.98, respectively.

***Q4. Easy to introduce new functionalities through the national switch system***

Allowing the introduction of new payment functionalities, rated by respondent still with scale of agree, where mean value of 3.90 and SD of 0.86 have been registered. This implies the importance of having a share infrastructure as well in adopting additional features.

***Q5. The national switch stimulates the growth of cashless society***

Regarding the creation and growth of cashless society, respondent rated this opportunity in the average scale range of almost strongly agree, with mean value of 4.20 which is the second highest and dispersion score of 0.89. This strongly indicates on how it supports the view to create cashless society in the country, which is predominantly engaged in the traditional cash transaction.

***Q6. Cash payments into electronic payment systems can be achieved through the national switch***



In relation to bringing cash payments into electronic payments system, it received the highest mean score of 4.25; with strongly agree measurement scale and SD of 0.87. This resembles, the opportunity that would be created through cashless society, which brings the cash circulating in the market into e-systems.

***Q7. Available platform allows, reduced transaction cost to customers and enhance access to finance***

Reducing transaction cost and enhancing access to finance was rated by respondent with scale of agree, where its mean and SD stood at 3.84 and 0.93, respectively.

***Q8. Member commercial banks can benefit from national payment system interchange fees***

Interchange fee that benefits members of the national e-payment system has received scale of agree by the respondents, as evidenced by mean score of 3.86 and SD of 0.75. This implies that, the introduction of such system has become the source of additional income for transaction routing member banks.

***Q9. National switch becomes the means to facilitates financial inclusion***

Concerning financial inclusion also respondents believed that it is an opportunity and this view was supported with scale of agree; with mean score value of 3.97 and SD of 0.61 in which the later exhibited minimal dispersion. Such financial inclusion can have positive contribution toward overcoming the financial needs of the largest population residing in rural parts of the country, where the basic financial services are very limited.

***Q10. As a tool to create a paperless transaction, it would help to utilize the countries resources efficiently***

In respect to efficient utilization of the countries resource, the view of respondents is in the measurement scale of agree, which is evidenced with mean value of 4.17 and SD value of 0.68, which reveals the minimum dispersion from the mean. The surge to create paperless transaction and supporting the overall economy with efficient financial service can be addressed with the shared infrastructure.

***Q11. Service delivery thought the national switch meets the expectation of customers for e banking services***

Concerning on how it meets the expectation of the customers through integrated and instant payment system, respondent neither agreed nor disagreed with mean value of 3.39, and there is a dispersed opinion with SD value of 1.37. Though the payment system has turned out to be one of the means in addressing the highest expectation of customers in effecting and receiving their payment, there is concern on how it meets their demand up on integration with other service providers, such as bill paying centers, ethio-telecom and power providing institutions.

### 4.3.2 Assessment of the challenges of national e-payment switch

As it has been discussed in the earlier section of the paper, the national e-payment switch has various opportunities and challenges. This section addresses the possible challenges that may be encountered under such operation.

**Table 4. 8 Assessment of challenges**

Evaluating Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	Standard Deviation
Customers are fully aware and have enough information about the national switch service	2	14	22	37	11	3.4767	0.991
The national switch service are adapted to disabled and elder people who are lacking technology experience	1	11	5	56	13	3.8023	0.892
Customers encounter problem related with network and power interruption while using the national switch	2	4	7	48	25	4.0465	0.879
Absence of experienced and skilled personnel for customers support	1	14	15	29	27	3.7791	1.099
Customers as well as commercial banks are concerned about their private information and security policy	1	16	29	30	10	3.3721	0.958
National switch member commercial banks encounter flexibility problem in their new product adoption.	3	18	25	30	10	3.3023	1.041
Customers encounter a problem related with dispute management, while performing a transactions which are unsuccessful	3	17	16	34	16	3.5000	1.114
The national switch charge back management is inefficient, which takes more time than customers expected	4	7	6	33	36	4.0465	1.115
Commercial banks and customers are satisfied with gov't policies implemented for national switch system, like money laundering and prohibiting cardholders from effecting for international	1	18	24	32	11	3.3953	0.997
Fraud is becoming pervasive and more complex	6	21	20	31	8	3.1628	1.115
	<b>Average Mean</b>					<b>3.5884</b>	

Source: Own computation

***Q1. Customers are fully aware and have enough information about the national switch service***

The response with regard to change resistance reveals that, customers might not develop confidence and trust on such kind of services, and they may prefer to be served under their base commercial banks than the national switch. This has been supported with scale of agree; where the score of mean and SD shows 3.47 and 0.99, respectively.

***Q2. The national switch services are adapted to disabled and elder people who are lacking technology experience***

Respondents agree on the limited awareness of customers upon overall service rendered under such operation, which is evidenced through mean value of 3.80 and SD 0.89. This refers to how customers are less exposed to such kind of service and their level of awareness on the availability of such service in the country, which can be delivered through such system.

***Q3. Customers encounter problem related with network and power interruption while using the national switch***

Regarding existing infrastructure in the country, the opinion of respondents is within the agree measurement scale, with mean value of 4.04 and SD 0.87. Although there is undergoing improvement in infrastructure, it is still considered as the prime challenge for smooth operation of the service.

***Q4. Absence of experienced and skilled personnel for customers support***

As per respondents rating value, customers might not receive the required support under such operation. The mean value in this regard is in the scale of agree, with a mean value of 3.77 and SD 1.09. In this regard, slight dispersion is observed, which is justified through the organizational arrangement of commercial banks, on how equipped with the required technical staffs in addressing customer request, while others are unable to do so.

***Q5. Customers as well as commercial banks are concerned about their private information and security policy***

Respondents are neutral on how the national switch and its operation is vulnerable to risk, which is evidenced with mean score 3.37 and SD 0.95. This indicates how the country is less exposed

to security bridges that emanate from such kind of operation. The mean score shows how respondents are unable to clearly reflect their stand on this point. However, advanced nations and some West African countries identified operational risk as one of their main challenges in rendering this type of service; and this indicates the need for efforts to combat the associated security problem.

***Q6. National switch member commercial banks encounter flexibility problem in their new product adoption.***

The response to the statement that “member banks could encounter flexibility problem on their operation” shows a mean score of 3.30 and dispersed opinion of SD 1.04. Independent new products’ development and launching such new products through the national switch can be challenge, if commercial banks cannot segment and serve their customers based on their needs and preference.

***Q.7 Customers encounter a problem related with dispute management, while performing a transactions which are unsuccessful***

Regarding the limited level of customers’ awareness on how to report disputed transaction to the concerned body, respondents agree with mean score and SD 3.50 and 1.11, respectively, while there is high dispersion on their opinion. Unsuccessful transactions due to network, power outage and system malfunction are categorized as part of operational challenges, which become the reasons for transaction dispute among service providing commercial banks and customers who initiate the transaction. In this respect, customers have limited awareness on how to follow the required procedure so as to address their disputed transaction.

***Q8. The national switch charge back management is inefficient, which takes more time than customers expected***

Majority of the respondents believed and agree that the chargeback management process takes more time than the lead time, and their view was supported with mean score of 4.04 and SD 1.11, while strong dispersion is observed from the mean. Irrespective of the difference on their opinion, prolonged chargeback management process is among the main challenges in this operation, which strongly affects customers’ satisfaction and service rendering quality in general.

***Q9. Commercial banks and customers are satisfied with gov't policies implemented for national switch system, like money laundering and prohibiting cardholders from effecting for international***

With regard to the statement that evaluate the satisfaction of customer on gov't policies and regulation on the national payment system a mean score of 3.39 and SD value of 0.99 was registered. Therefore, directives and regulations issued in relation to the service are either becoming a challenge for its smooth operation or might not have any effect on the matter in general.

***Q10. Fraud is becoming pervasive and more complex***

Considering fraud as pervasive and complex challenge under such operation is also in the average or neutral scale range with mean of 3.16 and highly dispersed opinion with SD 1.11. The level of our country's technological engagement in the financial sector and the level of awareness in Ethiopia to do such crime in the business have made the respondent reluctant to consider fraud as one of the challenges for providing national switch services.

## **4.4 Discussion**

### **4.4.1 Opportunity**

Since National switch service is more accessible than visiting a bank branch, it greatly contributes to combat the financial needs for both banked and unbanked population through the country. On the other hand the need to hugely invest on an independent switch system by commercial banks can be address through the adoption of the national switch. Irrespective their strategic differences, commercial banks can easily introduces, new electronic banking functionality, which attracts the interest of many stakeholders to bring cash payment into the electronic system, which intern results the creation of cashless society.

Access for shared infrastructure will improve the level of service rendered to the customers and overcome the associated cost that is incurred to get the service and also becoming their source of income for commercial banks connected their system to the national switch. Above all other

things, the national switch becomes the means to facilitate financial inclusion which can address the financial need of the unbanked population in the country.

In general, in the literature part of this paper the following are clearly expressed as the main opportunities of the payment system that includes: cost saving which can expressed in terms of acquiring the service of national e-payment system and saving transaction cost of customer, new product innovation and creation of cashless society and bringing cash into the electronic system. Therefore, based on the assessment made on those points and other additional variables, an overall mean value of 3.93 is registered, which shows the overall opportunities of adopting the national e-payment switch system

#### **4.4.2 Challenges**

In rendering an efficient national switch service in the country, the awareness level of existing and potential customers in the financial sector, which mainly fails to meet the requirement of disabled and elderly individuals who have less exposure for technology. As one of the biggest challenge in the national switch service, the available infrastructure in the country sighted as the major one, while skilled manpower and privacy and security policy, and requires a due attention as a challenge.

Above all other things, the existing dispute management and chargeback process of the national switch system are main challenges on the smooth operation of the service, while rules and regulation as well potential fraud on the service receives less attention.

In general, the findings from the assessment of challenges associated with the national switch shows some inconsistency. Few respondents neither agreed nor disagreed on certain statements which include; operational risk, product flexibility, NBE directive and fraud. However, the overall mean average score stood at 3.58, which evidenced the support of respondents to consider those variables as prevailing operational challenges, and this implies that efforts are needed in addressing these issues for efficient operation of the national switch.

## Chapter 5

### SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

Based on the objective of this study opportunities and challenges of the national e-payment switch in Ethiopia have been assessed. Accordingly, the data have been gathered through secondary and mainly primary sources and analysis is conducted. In this section of the paper the findings and conclusions are presented based on the research questions. Recommendations are also forwarded.

#### 5.1 Summary of findings

##### a) Opportunities of the national e-payment switch system

The first assessment was made to evaluate the major opportunities that can be realized in the adoption of the national e-payment switch system in Ethiopia. Accordingly, eleven statements were presented so that respondents can evaluate using five scales about the opportunities in the aforementioned system.

As a result, respondents have given their positive responses for majority of evaluating statements in agreeing that the national e-payment switch system have various opportunities as their responses evidenced by average mean score of 3.93 for the entire table.

The average scale range of almost strongly agree and agree was given by respondents to statements that the national e-payment switch system:

- The national switch enables the creation of easy access to financial service and introduction of new financial products, to the largest population.
- It curves the cost of acquiring an independent switch by all commercial banks, which is capital intensive to do so and becomes source of revenue as well.
- The effort towards the creation of cashless society can be achieved through the adoption of the national e-payment switch.



- It becomes the means to bring cash payment into electronic payment system, which relieves the conventional banking service.
- With its broad range of service, it will facilitate financial inclusion, which can address the needs of the unbanked population and efficient utilization of countries resources.

On the other hand, as per the respondent's scale of evaluating statement that describe the national e-payment switch system addresses the expectation of customers, the responses were on the average moderate or neutral, which is the only statement that scored such value.

#### b) Challenges of the national e-payment switch system

With regard to the associated challenges in the operation of the national e-payment switch system, majority of the statements believed there can be operational challenges for the service, which is revealed by the average mean value of 3.58.

Statements in the scale of agreed extent includes:

- Limited awareness about the overall service, which triggered customers resistance to the change, for operation of the national e-payment switch system.
- Existing infrastructure of the country both in terms of ICT and power supply sighted as the major challenge for the operation.
- As a result of limited technical skill and unorganized structure of operation, customers might not receive the required support, while they encountered an issue.
- Limited awareness on how to raise a disputed transaction from customer side and inefficient chargeback management process from the service provider are concerns of the respondents.

Respondents feel neutral with regard to statements that the national e-payment switch system become source of operational risk, member banks could encounter flexibility problem on their operation, NBE directives and regulations can be challenges, and fraud is becoming pervasive and more complex, which implies that, to take more time to see the effect of these evaluating statements.

## 5.2 Conclusion

The main objective of the research was to assess the opportunities and challenges associated with the adoption of national e-payment switch system in Ethiopia. Based on this objective, basic research questions were developed and respondents' opinions were gathered from eight selected commercial banks, which targeted employees whose place of assignment are related with the subject matter of the research.

Regarding the assessment made on opportunities, it can be concluded that the adoption of the national e-payment system can have various opportunities which mainly address the cost of investment in acquiring independent switch system by commercial banks, speed up the creation of cashless society, bringing paper or cash into the electronic payment system, which helps to efficiently utilize the country's economy and financial inclusion so as to provide access to financial service fair, transparent and equitable manner at an affordable cost. Thus, the above concluding remark and main variables have been adequately supported with agreed mean score value from the analysis.

Based on this empirical analysis the key challenges for the smooth operation of the national switch system are infrastructure, customer support, security or operational risk, chargeback management and socio-culture factors. Since the Ethiopian government has given a considerable attention on information communication in recent years, this lays the foundation for smooth operation of the national e-payment switch and e-payment system in general.

Finally it is concluded that, the national switch system is still at its infancy to meet the expectation of customer on e-banking service. This is due to the fact that, the existing service provision mainly depends on limited card banking service, while customers and the public at large expects more system integrated e-banking channels i.e. mobile banking, internet banking, agent banking, mobile top up and bill payment services.

### 5.3 Recommendations

Based on the research findings and conclusions above, the following are recommended in order to contribute for the overall sound operation of the national e-payment switch system.

- a) In order to exploit the benefits that can be achieved from the provision of national switch services in the country, the regulatory body needs to establish a strong link with financial institutions, in creating customer awareness, which builds trust and confidence to use the national switch services effectively. As a result of this, cashless society will be created in the country.
- b) In order to make the national switch system operation successful, telecommunication infrastructure and uninterrupted power supply is a major prerequisite. Thus, the government should support the national switch services hugely investing on the aforementioned infrastructures development. In this regard, the telecom provider can arrange or provide quality network with having a higher bandwidth, those integrated commercial banks as well the national switch service provider.
- c) Customer security and privacy policy are basic concerns of end users, which requires due attention of the national switch service provider and member commercial banks, to provide security measure to their customers that demonstrates full authentication, privacy, completion of transaction from beginning to end and its confirmation.
- d) Without equipping ourselves with latest innovation, it is difficult to address customer's expectations. Therefore, internal capacity building at the level of this operation has to be practiced, with the view to have well trained and technically capable employees, that can provide the required support to customers and mitigating system malfunctions.
- e) The existing dispute management system has to be assessed in such a way that meets the requirement of member commercial banks and their customers. The existing automated dispute management system is inefficient, which required to be improved in order to shorten the response time for customer compliant and also helps streamlines workflows, reduces cost and improves compliance percentage at the back office of the payment environment. This in return creates effective chargeback management in the national e-payment system switch.

- f) The national switch system is still delivering very limited e-banking services, while customers demand the introduction of other alternative channels. This therefore strongly recommends introducing mobile, internet, agent and the delivery of other services through various enterprises, so as to meet the expectation of customers on the service in general.

#### **5.4 Further Studies**

In this endeavor, the research also recommends that further research needs to be done on how the transaction costs of paper-based instruments have been reduced through the adoption of electronic based payment, which in return contributes to the national economy in general.

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# APPENDICES

## APPENDIX A

### St. Mary's University School of Graduate Studies MBA Program

Dear Respondent:

This questionnaire is prepared to collect all relevant data for the study under the title of "National e-payment Switch (EthSwitch) opportunity and challenges". It is aimed to fulfill academic requirements, and the information provided will be kept confidential and will not be used for any other purpose. I am very grateful for your honestly responded answers and also would like to thank you for your cooperation in advance.

*In case you have any questions please call +251 911 108888 or email wondyeh@gmail.com*

Profile:

Gender:

Female       Male

Age:

20 - 30       31 - 40       41 - 50       Above 50

Educational Level

Diploma       First Degree       Second Degree       PHD

Name of the organization / Bank \_\_\_\_\_

Years of Experience \_\_\_\_\_

Please read the statements and indicate to what extents do you agree or disagree by marking "Right" to your choice under each items.



**1. Opportunities in adoption of the National e-payment Switch (EthSwitch)**

No.	Items	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	National switch service is more accessible than visiting a bank branch					
2	The acquiring of an independent switch system is capital intensive, which can be addressed through national switch					
3	National switch service can be delivered throughout the country.					
4	Easy to introduce new functionalities through the national switch system					
5	The national switch stimulates the growth of cashless society					
6	Cash payments into electronic payment systems can be achieved through the national switch					
7	Available platform allows, reduced transaction cost to customers and enhance access to finance					
8	Member commercial banks can benefit from national payment system interchange fees.					
9	National switch becomes the means to facilitates financial inclusion					
10	As a tool to create a paperless transaction, it would help to utilize the countries resources efficiently.					
11	Service delivery thought the national switch meets the expectation of customers for e banking services					

Other Opportunities (If any)

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## 2. Challenges in adoption of national e-payment switch (EthSwitch)

No.	Items	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	Customers are fully aware and have enough information about the national switch service					
2	The national switch service are adapted to disabled and elder people who are lacking technology experience					
3	Customers encounter problem related with network and power interruption while using the national switch					
4	Absence of experienced and skilled personnel for customers support					
5	Customers as well as commercial banks are concerned about their private information and security policy					
6	National switch member commercial banks encounter flexibility problem in their new product adoption.					
7	Customers encounter a problem related with dispute management, while performing a transactions which are unsuccessful					
8	The national switch charge back management is inefficient, which takes more time than customers expected					
9	Commercial banks and customers are satisfied with gov't policies implemented for national switch system, like money laundering and prohibiting cardholders from effecting for international transactions					
10	The national switch service is vulnerable to internal and external fraud					

Other Challenges (If any)

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## APPENDIX B

### ATM Transactions of Member Commercial Banks

No.	Banks	Total Interbank ATM Transactions		Declined Transactions		Successfully Processed Transactions		Cash Withdrawal Transactions					
								Successfully Processed Cash Withdrawal		Reversed Transaction		Net Cash Withdrawal	
		Volume	Value (In Mill)	Volume	Value (In Mill)	Volume	Value (In Mill)	Volume	Value (In Mill)	Volume	Value (In Mill)	Volume	Value (In Mill)
							( D-F )						( J - L )
1	Abay	61,859	47.5	31,185	25.96	30,674	22	24,067	20.79	1,519	1.48	22,548	19.31
2	Addis	40,651	36.72	13,076	13.57	27,575	23	22,161	22.78	543	0.74	21,618	22.04
3	Awash	938,875	671.7	351,445	276.8	587,430	395	448,018	390.6	12,656	13.03	435,362	377.57
4	Abyssinia	496,139	417.68	190,481	198.96	305,658	219	264,173	220.14	6,762	6.14	257,411	214
5	Berhan	176,765	301.13	100,110	86.17	76,655	215	62,487	57.79	1,372	1.53	61,115	56.26
6	Bunna	61,670	165.78	15,747	13.91	45,923	152	24,894	22.8	121	0.08	258	22.72
7	CBE	3,077,569	1,750.92	1,748,565	1,070.64	1,329,004	680	1,110,222	708.03	8,487	7.06	1,101,735	700.97
8	CBO	112,618	73.1	53,406	36.44	59,212	37	44,252	35.79	1,506	1.37	42,746	34.42
9	Dashen	1,275,549	881.64	394,733	330.11	880,816	552	724,403	551.16	17,385	15.72	707,018	535.44
10	Enat	10,197	4.3	1,637	1.01	8,560	3	4,105	2.78	16	0.02	4,089	2.76
11	Lion	79,235	43.35	25,232	18.27	54,003	25	29,404	24.99	79	0.08	220	24.91
12	Nib	252,904	210.15	79,688	73.36	173,216	137	140,496	134.97	3,778	4.3	136,718	130.67
13	OIB	216,060	95.28	49,013	30.95	167,047	64	74,626	64.26	86	0.08	1,637	64.18
14	United	449,273	417.39	127,120	128.37	322,153	289	284,426	284.91	7,444	9.15	276,982	275.76
15	Wegagen	350,471	257.26	181,698	151.74	168,773	106	143,039	109.09	824	0.77	25,691	108.32
16	Zemen	90,528	98.63	23,541	28.44	66,987	70	57,272	69.99	1,331	2.06	55,941	67.93
17	DGB	7,127	3.33	2,037	1.3	5,090	2	3,038	2.07	11	0.01	3,027	2.06
<b>Total</b>		<b>7,697,490</b>	<b>5,476</b>	<b>3,388,714</b>	<b>2,486</b>	<b>4,308,776</b>	<b>2,990</b>	<b>3,461,083</b>	<b>2,723</b>	<b>63,920</b>	<b>64</b>	<b>3,154,116</b>	<b>2,659</b>

Source: EthSwit

## DECLARATION

I, the undersigned, declare that this thesis is my original work, prepared under the guidance of Dr. Elias Nour. 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.

Wondimagegn H/Selassie

Name

**St. Mary's University, Addis Ababa**

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Signature

**June, 2018**

## ENDORSEMENT

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

Elias Nour (PHD)

Advisor

**St. Mary's University, Addis Ababa**

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Signature

**June, 2018**