Empirical Analysis on the Determinants of Electronic Card Payment Technologies' Adoption (The Case of Commercial Bank of Ethiopia)

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Advisor: Temesgen Belayneh (Ph.D)

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Statement of Certification

This is to certify that **Nebil Abdella Ourduna** has carried out his research work on the topic entitled "***Empirical Analysis on the Determinants of Electronic Card Payment Technologies' Adoption: the Case of Commercial Bank of Ethiopia***" is his original work and is suitable for submission for the award of Masters Degree in Marketing Management.

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Temesgen Belayneh (Ph.D)

(Advisor)

June, 2016

Statement of Declaration

I, **Nebil Abdella Ourduna**, declare that this research entitled "***Empirical Analysis on the Determinants of Electronic Card Payment Technologies' Adoption: the Case of Commercial Bank of Ethiopia***" is the result of my own effort and study. I also declare that all sources of materials used for the study have been duly acknowledged. I have produced it independently except for the guidance and suggestion of the Research Advisor.

This study has not been submitted for award of any Degree or Diploma Program in this or any other Institution.

Declared By Nebil Abdella

Signature_____

Date_____

Acknowledgment

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Abbreviations and Acronyms

ATM	Automatic Teller Machine
CBE	Commercial Bank of Ethiopia
E-banking	Electronic Banking
ECPT	Electronic Card Payment Technology
EFTPOS	Electronic Fund Transfer at Point of Sale
E-Payment	Electronic Payment
PIN	Personal Identification Number
POS-Terminal	Point-of –Sale Terminal
SPSS	Statistical Package for Social Sciences
TAM	Technology Acceptance Model

Abstract

The purpose of this paper is to examine the determinants for customers to adopt Electronic Card Payment Technologies adoption, in the context of the Commercial Bank of Ethiopia. Structured questionnaire was developed. The hypotheses were tested on customers of the CBE with a sample of 440 out of which 396 were collected by making use of multistage sampling method. Both descriptive and inferential analytical techniques were used. To analyze the relationships among the variables under investigation, multinomial logistic regression were employed. In addition, Parameter estimate were used to determine the level of influence variables have on non-adopters, partial adopters and full-adopters. Furthermore, chi-square test was used to analyze the association between selected demographic factors and adoption. The findings of this study have shown that, except for Social Influences, Perceived Ease of use, Perceived Risk, Marketing Communication Influences, Perceived Usefulness and compatibility found to have significant effect on Electronic Card Payment Technologies' adoption of CBE's customers in Addis Ababa. Furthermore, a significant association exists between ECPT adoption and age, educational level and income. However no significant association is found between sex and adoption. The results are very useful for CBE to devise strategies in order to increase the adoption rate of Electronic Card Payment Technologies. It is recommended for awareness creation in order to change the perception that ECPTs are difficult and risky. Furthermore, it is recommended for CBE to intensify its marketing communication activities and introduce more services. As evident from this study, a different result could be gained if comparative study, on the topic of this study, among selected banks in Ethiopia is conducted. This study is conducted only for ECPTs. Hence, the findings might not be applicable to other E-payment services like Internet Banking and Mobile Banking. Furthermore, this study is conducted from the perspective of customers only. However, a more comprehensive result could be gained if a study, that takes all stakeholders in the ecosystem in to account, is conducted.

***Key words**: Electronic Card Payment Technologies (ECPTs), Adoption, Commercial Bank of Ethiopia (CBE), Multinomial Logistic Regression*

CHAPTER ONE
INTRODUCTION

1.1 Background of the Study

Nowadays, business environment is becoming extremely dynamic because of technological advancement and introduction of information and communication technology. Business organizations, especially the banking industry of the 21st century operates in a complex and competitive environment (Agbolade, 2011).

Electronic banking is defined as the provision of information, or services, by a bank to its customers via a computer or Internet and the one that provides the customer with the opportunity to gain access to their accounts and execute transactions or to buy products (Elizabeth, 2000).

Existing relationships and service provision within the financial sector are undergoing rapid change with the development of new financial software applications and banking technologies. The rapidly growing information and communication technology is knocking the front- door of every organization in the world, where Ethiopian banks would never be exceptional (Worku, 2010). The role of Information Technology, particularly Electronic Banking, in rendering quality service and creating value for customers is indispensable. Currently the E-Banking services provided by the Ethiopian banking industry can be categorized in to three – Card Banking (Provided through Point-of-Sale Terminals and Automatic Teller machines), Mobile Banking and Internet Banking. Undeniably the largest state-owned bank, Commercial Bank of Ethiopia, introduced ATM service, for that matter E-Banking, to Ethiopia in 2001 with its eight Automatic Teller Machines located in Addis Ababa. In addition the CBE is the pioneer in introducing Point-of-Sale Banking Technology to Ethiopia (Abdu, 2015; Worku, 2010).

However, given the fact that the low level of E-banking adoption in developing countries likes Ethiopia is very low, it takes time and effort to understand customers' mindset and convince them about the benefits behind adopting E-Banking services.

Internationally numerous studies have been conducted by many scholars on the factors that affect the acceptance or adoption of E-Banking technologies. However, limited studies are currently available in developing countries; it becomes very limited when it comes to Ethiopia. More studies are required to understand the relevance of E-banking in the country in order to identify areas where the country lags behind and the factors that inhibit E-banking adoption and diffusion (Ayana, 2012).

Electronic Card Payment technologies are banking technologies that enable electronic card holders (commonly known as ATM cards) to make electronic fund transfers and/or cash withdrawals by making use of Point-of-Sale terminals and/or Automatic Teller Machines. Electronic Card Payment Systems are not just about convenience – they help to stimulate growth for economies as well, according to a study performed by Moody's Analytics (2013), the rapid proliferation of cards in the past 50 years has changed how consumers pay for goods and services, and how merchants manage their businesses. Electronic Card Payment Systems reduce friction in the economy by providing consumers convenient and secure access to their funds, while reducing cash and check handling for merchants (Zandi et al., 2013).

In Ethiopia, given its importance for banks and the economy in making money to circulate within banking systems and its benefit for customers by creating convenience, little is done in the area of Electronic Card Payment Technologies. The CBE, as a bank pioneer in the area of Electronic Card Payment Technologies and the investment the bank made on the technology, the adoption level of Electronic Card Payment Technologies is low. Therefore, this study aimed at investigating the factors that affect CBE's customers' to fully adopt, partially adopt or not to adopt Electronic Card Payment Technologies. The present study therefore, analyzes the factors that affect CBE's customers' to fully adopt, partially adopt or not to adopt Electronic Card Payment Technologies.

1.2 Background of the Company

The Commercial Bank of Ethiopia (CBE), established in 1942, is the largest and state owned commercial bank in Ethiopia . The CBE is pioneer to introduce modern banking to the country particularly in introducing ATMs and POS terminals. The bank supports the development of the country by financing huge government projects (Commercial Bank of Ethiopia, 2015c).

CBE is managed by Board of Directors. The boards of directors who comprise representatives of various stakeholders give guidance and leadership in key strategic issues. After the implementation of the Business Process Reengineering, in 2008, the bank follows a process-based structure. In the CBE, there are core processes and support processes. Core processes are those fundamental process or group of activities, which ought to be performed for the accomplishment of the organization mission. On the other hand, support processes are processes that are performed for effective execution of the core processes(Commercial Bank of Ethiopia, 2015c)

The CBE, as of March 31st 2016, has more than 1,100 branches, 359.3 billion Birr asset, 12.4 million account holders and more than 25,000 employees (Commercial Bank of Ethiopia, 2015b). Looking at the card banking performance of the CBE, as at June 30 2015, the bank have 1,584,515 Electronic card holders, 644 Automatic Teller Machines and 1866 Point-of-Sale Terminals (Commercial Bank of Ethiopia, 2015a).

1.3 Statement of the Problem

In developing countries, the unintended costs associated with cash transactions at the traditional branch banking are getting alarming. Carrying larger volume of currency notes might expose to robbery and the risk of receiving counterfeit banknotes. Banking through the physical branches might also lead to time loss as a result of long period of waiting and making frequent trips to banks (Adeoti, 2013). Furthermore, central banks also bear high cost of printing bank notes due to the short life cycle of notes, and the cost of moving large amount of cash from bank to bank. Over-dependence on cash for transaction also implies that much cash is held outside the banking system, which naturally reduces the capacity of banks to lend to the productive sectors of the economy (Adeoti, 2013). In Ethiopia, Cash and

branch banking is still the most dominant medium of exchange (Worku, 2010). According to Demirguc-Kunt et al (2015), the use of traditional branch banking remains especially prevalent in some African countries, including Ethiopia which is 83%. According to The World Bank report (2015), during 2014, withdrawals made by Sub-Saharan African countries through ATMs was 51.7%. As compared to Ethiopia, using ATMs for withdrawal of cash is much below than Sub-Saharan African countries (Yeshambel & Nekahiwot, 2015).

The industry assessment, conducted by the CBE (2015), reveals that there is a huge gap in the adoption rate of e-banking in the banking industry in general, and in the CBE in particular. The assessment further indicates that these gaps are the result of many factors, including the perception of customers, the banking industry itself and the infrastructure. As a bank pioneer in the Electronic Payment systems since 2001 that hugely invested in E-Banking technologies, with large number of inactive electronic card holders, and as a bank with huge potential to increase ECPT users, the CBE is expected to perform better than its current performance, details are provided under section 2.4.4 of this paper. In order to increase its performance, the CBE needs to understand the mindset of its customers with regards to E-Banking technology adoption. The issue is multifaceted and should be investigated from the perspective of the concerned stakeholders; nevertheless, customers being the focal point of everything, their side of story should get priority for investigation (Bunn & Colvin, 2011).

In Ethiopia, limited studies are conducted in the areas of E-Banking adoption and very limited studies are conducted in the area of Electronic Card Payment technologies. Therefore, before devising strategies to increase customers' usage of Electronic Card Payment technologies, first the factors that affect customers' not to adopt, partially adopt and fully adopt Electronic Card Payment Technologies must be carefully studied. Hence, the present study investigates the determinants for ECPTs' adoption in CBE's context.

1.4 Research Questions

The present study answers the following research questions:

1. To what extent the determinants of ECPTs adoption explain the variation among non-adopters, partial-adopters and full-adopters.
2. To what extent demographic factors are associated with ECPTs adoption decision?

1.5 Objective of the Research

1.5.1 General Objective of the Research

The general objective of the study is to examine the determinants of customers' Decision to adopt Electronic Card Payment Technologies.

1.5.2 Specific Objectives of the Research

1. To examine the extent of the identified determinants for ECPTs adoption in explaining the variation among Non-adopters;
2. To investigate the extent of the identified determinants for ECPTs adoption in explaining the variation among Partial-adopters;
3. To analyze the extent of the identified determinants for ECPTs adoption in explaining the variation among Full-adopters
4. To assess the association between demographic factors and ECPTs adoption decision

1.6 Operational Definitions

In the context of this study, the following operational definitions are considered:

- **Non-Adopters:** refers to customers of the CBE, both Electronic card holders and non holders that have not tried or used the Electronic Card Banking System of the CBE on ATMs or POS terminals not even for a single time.
- **Partial-Adopters:** refers to customers of the CBE and Electronic card holders, which have used the Electronic Card Banking Technology of the CBE on ATMs only.
- **Full-Adopters:** refers to customers of the CBE and Electronic card holders, which have used the Electronic Card Banking System of the CBE on both ATMs and POS terminals.

1.7 Scope of the Study

In Ethiopian banking industry, except for Zemen bank, commercial banks in Ethiopia provide very similar banking service by targeting similar customers; all of them almost employ mass marketing. Hence, there is no much difference among the banks on the nature of customers targeted, technology used and services provided under Electronic Card Payment Systems. When looking at the Card banking services provided by Commercial Banks in Ethiopia, the services are almost identical. By looking at the websites of the banks that have started Electronic Card Payment services, one can easily understand that the features of their service are very similar or identical. Worku (2010, p. 2) also indicated that all e-payment methods share a number of common characteristics. With regards to Electronic Card Payment Technologies, as compared to the private banks, obviously, the CBE takes the major share, in terms of number of Electronic Card holders, ATMs and POS Terminals deployed.

The researcher believes that the findings of this study could be generalized and used for similar commercial banks. Furthermore, Sekaran (2006, p. 5), defined business research as "Organized, systematic, data-based, critical, objective, scientific inquiry or investigation into a specific problem, undertaken with the purpose of finding answers or solutions to it". In line with this definition, since the specific problem is identified in the CBE, the CBE is used as case company and By considering the number of electronic card holders in Addis Ababa

(45%), the potential of customers in Addis Ababa to adopt the ECPT and the possibility to find all the three target groups of this study (Non-Adopters, Partial Adopters and Full-Adopters), only Customers of the CBE in Addis Ababa are taken as target population for this study.

1.8 Significance of the Study

The very purpose of this study is to identify the factors that affect customers to adopt Electronic Card Payment Technologies. Understanding these factors would help banks in general and CBE in particular to devise strategies in order to increase the adoption rate of Electronic Card Payment Technologies. Unlike previous studies conducted on E-Banking adoption (especially in Ethiopian context), this study provides a comprehensive view of Electronic Card Payment adoption Decision by employing multinomial logistic regression so as to analyze the factors that affect the Decision of Non-adopters, Partial-adopters and Full-adopters.

Since, limited studies are conducted in the area of E-Banking services in general and Electronic Card Payment technologies in particular, this study believed to increase the knowledge in the area of Electronic Card Payment Technologies' adoption with in Ethiopian context and serve as a source for further studies.

1.9 Organization of the Study

This research report is organized into five chapters. Chapter one has presented the introduction part. Chapter two presents the review of theoretical frameworks, empirical studies, E-banking overview, conceptual framework and hypotheses development. The research methodology and procedures used to gather information for the study are presented under Chapter three. The descriptive analyses, correlation analyses, inferential analyses and discussions of results are presented in Chapter four. Finally Chapter five presents Summary of major findings, conclusions recommendations, limitations of the study and areas of further research.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.1 Introduction

This section, in light of Electronic Card Banking Technologies, provides the theoretical framework of the study, empirical review, overview of E-payment, conceptual framework and hypotheseed development.

2.2 Theoretical Framework of the Study

2.2.1 Overview of E-Banking and ECPTs

According to Jaber (2007), the history of E-banking can be traced back to 1970s when the computerization of financial institutions flourished. However, a visible presence of E-Banking was evident to customers since 1980, with the introduction of the Automated Teller Machine (ATM).

E-banking is a form of banking where funds are transferred through an exchange of electronic signal between financial institutions, rather than exchange of cash, checks, or other negotiable instruments (Hasan, 2011).

Elizabeth (2000) defined the term electronic banking as the provision of information, or services, by a bank to its customers via a computer or Internet and the one that provides the customer with the opportunity to gain access to their accounts and execute transactions or to buy products.

Jaber (2007, p. 28) also defined Electronic banking as an "electronic fund transfer which simply mean the use of electronic means to transfer funds directly from one account to another". According to geeksonfinance.com, the term E-banking, or electronic banking, refers to all types of banking transactions performed electronically, without visiting a brick-and-mortar bank.

2.2.1.1 Electronic Card Payment Technologies: Types, Services and Benefits

2.2.1.1.1 Types of Electronic cards

Electronic card is a plastic payment card that provides card holders an electronic access to their bank account(s) at a financial institution through ATMs and POS terminals (Investopedia, 2015a). Basic categories of Payment cards include debit cards, credit cards and prepaid cards.

2.2.1.1.1.1 Debit card

Debit card is a plastic payment card that provides card holders electronic access to their bank account (s) and enables them to deduct money directly from their account to pay for a purchase. The amount of a purchase is withdrawn from the available balance in the cardholder's account. If the available funds are insufficient, the transaction will not be completed. Debit card is issued by payment processors like Visa or MasterCard. Unlike credit cards, they do not allow card holders to go beyond their credit balance (BusinessDictionary.com, 2015; Investopedia, 2014).

A debit card looks just like a regular ATM card, and one can use it at ATMs. The difference is that a debit card has the logo of EFT service providers like Visa and Mastercard on its face. That means it is possible to use a debit card wherever Visa or Mastercard debit cards are accepted, for example, department stores, restaurants, or other Point-of-sale areas. In addition, usage of ATM cards is limited to Automatic Teller machines (Wells Fargo Bank, 2015).

Debit cards are also gaining popularity as a means of effecting payment at a Point-of-Sale (POS) terminal. A user PIN is usually entered for authentication, and the transaction is authorized through an Electronic Funds Transfer (EFT) network, to which the POS terminal is connected. The issuing bank verifies on-line that the funds are available and debits the user's bank account (O'Mahony, Michael, & Tewari, 2001, pp. 153–154).

The Commercial Bank of Ethiopia named its debit card as "Reliable Visa Card" which is a visa branded card and the bank has stopped issuing the previous ATM cards.

2.2.1.1.1.2 Credit card

Credit card, similar with debit cards except that it gives the card holder the option to borrow funds, usually at point of sale (Investopedia, 2015a).

Since 2006, Ethiopian banks have started to accept credit cards like American Express, Master, Visa, Diners Club and Cart Blanche, and Euro cards are used (National Bank of Ethiopia, 2015).

2.2.1.1.1.3 Prepaid cards

Prepaid cards, also known as stored-value cards, on the other hand, are cards where a set of amount of money is "loaded" onto the card prior to use, and many prepaid cards can be reloaded over and over again. During a transaction, the purchase amount is withdrawn from the card's value. Prepaid cards can be single purpose or multipurpose (MasterCard Worldwide, 2015). On April 2015, the Commercial Bank of Ethiopia, in collaboration with Shoa Supermarket, has launched a co-branded prepaid card named "Sitota" gift card. The card can be presented as a gift to friends, relatives and others on special occasions such as weddings, birthdays, graduations and other special events (Commercial Bank of Ethiopia, 2015c). The CBE has also started a general purpose Prepaid Gift Card named "CBE Wallet", which can be used as gift cards and other purposes like fuel allowance and per-diem payments (E-Payment Process - CBE, 2015).

In general, currently the CBE has three types or variety of debit cards namely 'Domestic visa debit card', 'International visa debit card' and 'International visa prepaid card' (E-Payment Process - CBE, 2015)

2.2.1.2 Types of Card Banking Service Delivery Channels

2.2.1.2.1 Automatic Teller Machine (ATM)

Automated Teller Machines (ATMs) are electronic terminals which give consumers the opportunity to bank at almost any time. To withdraw cash, make deposits or transfer funds between accounts, a consumer needs an ATM card and a personal identification number (Jaber, 2007).

In a very simplified manner, ATM can be defined as an electronic outlet which allows customers to complete basic transactions without the aid of a branch representative or teller (Investopedia, 2016).

With the exception of CBE's ATMs, which have the capacity to exchange foreign currency to local currency (birr), the service provided by all Ethiopian banks' ATMs is almost identical. For instance, looking at the websites of CBE, Dashen, Abyssinia, Berehan International and NIB international banks, it can be seen that their ATMs' functionality revolve around the following services – Cash withdrawal, Fund Transfer (Account to account transfer), Balance inquiry and Mini statement for previous transactions and Other Services like PIN change and unlock.

The major benefit of ATM is Convenience; it enables users to avoid long teller lines in banks and users can find an ATM quickly if they need cash. Use of the ATM to get cash instead of swiping the debit card can help with budgeting by controlling spending and providing a statement of transactions instead of a bunch of receipts (Gail, 2014).

Linda (2008), have indicated that Criminal acts against ATMs and customer have always been a top concern for financial institutions. She also pointed out that additional surveillance cameras, electronic locks and other physical controls have been added at many institutions to make the ATM a secure place for making banking transactions. Linda stressed that criminals may attack individuals during ATM withdrawals or they even attack the ATM itself in order to access the money in the vault.

2.2.1.2.2 EFTPOS (POS Terminals)

Banking Technology at point of sale, known as Electronic Fund Transfer at Point-of-Sale (EFTPOS) or simply called POS terminal, is a system that allows customers to pay for goods by moving money, electronically, from their bank account to the account of the company or to the person they have bought from (Macmillan Publishers Limited, 2015).

Cambridge online dictionary (2015) also defines EFTPOS as “a system of paying for goods or services in shops using a bank card or a credit card, so that the money is paid directly from the buyer's bank account to the shop's bank account”.

Furthermore, Techopedia (2015) defines EFTPOS as “an electronic payment system involving electronic fund transfers based on the use of payment cards, such as debit or credit cards, at payment terminals located at points of sale”.

Investopedia (2015b) defines Point-of-Sale Terminal as “A type of electronic-transaction terminal. Which usually include a computer, a cash register and other equipment or software used to sell goods or services. They also transmit sales data to be posted to customer accounts”.

Techopedia (2015) explains that A POS terminal generally perform the following:

- Reads the information off a customer’s credit or debit card;
- Checks whether the funds in a customer’s bank account are sufficient;
- Transfers the funds from the customer’s account to the seller’s account;
- Records the transaction and prints a receipt.

2.2.1.3 E-Banking in the Ethiopian Banking Context

Modern banking begins in Ethiopia more than 10 decades back from now. Currently there are 16 private and 2 public banks majority of them established in the near past. These banks took a significant branch expansion and able to reach the total branch network more than 2,693 branches and narrowing the gap of branch to population ratio from 1:39,833 in 2013/14 to 1:33,448 in 2014/15. However branch expansion in itself could not solve the issue of accessibility and assist to achieve the expected deposit mobilization unless supported by convenient technology (Yeshambel & Nekahiwot, 2015).

According to the industry assessment conducted by the CBE (2015), until December 31, 2015 the total number of ATMs operated by all commercial banks has reached 1,355 where a single ATM is to around 70,000 people and Country wide, all banks deploy around 4,327 POSs until December 31, 2015. Certainly the banking industry in Ethiopia is underdeveloped and therefore there is an immediate need to embark on capacity building arrangements and

modernize the banking system by employing the modern technologies which are used elsewhere in the world (Tollossa, 2012).Undeniably the largest state-owned bank, Commercial Bank of Ethiopia, introduced ATM service for local users in 2001 with its eight ATMs located in Addis Ababa. Moreover, CBE has had Visa membership since November 14, 2005. Despite, being the pioneer in introducing ATM based electronic payment system and acquiring Visa membership, CBE lagged behind Dashen Bank, which worked aggressively to maintain its lead in electronic payment systems (Worku, 2010).

The current E-Banking services provided by Ethiopian banks can be categorized in to three – Card Banking (through ATMs and POS terminals), Mobile Banking and Internet Banking.

1. **Mobile Banking**: This is a service that allows customers to access their bank account by making use of their mobile device (Commercial Bank of Ethiopia, 2012a).
2. **Internet Banking**: According to CBE's E – Payment procedure (2012a, p. 9), Internet Banking is defined as "the use of the internet as a remote delivery channel for banking services through a secure website operated by the bank"
3. **ATM and POS terminals** are defined and discussed in more detail in subsequent sections.

2.2.1.4 Electronic Card Banking Performance of the CBE

Currently the Commercial Bank of Ethiopia provides card banking, Mobile Banking and Internet Banking services for its customers (Commercial Bank of Ethiopia, 2012b). Looking at the card banking performance of the CBE, as at June 30 2015, the bank have 1,584,515 Electronic card holders (planned to deliver more than 2 million cards), 644 Automatic Teller Machines and 1866 Point-of-Sale Terminals (Commercial Bank of Ethiopia, 2015a). According to the annual report of the bank for the fiscal year ended June 30, 2015 (Commercial Bank of Ethiopia, 2015a), out of the 1,584,515 card holders, only 762,595 of them are active users. The percentage of active card users, i.e. users that have used their Electronic card, on either ATMs or POS terminals, at least for one time, is 48% (Commercial Bank of Ethiopia, 2015a). A closer look at the performance to the CBE shows that, as at June 30, 2015, the number of transaction conducted through ATMs, in a year time, has reached 16.8 million this means, on average, each ATM has

handled 71 transactions per day (Commercial Bank of Ethiopia, 2015a). On the other hand, in a year time, the number of transaction conducted through POS terminals has reached 294, 817 this means, on average, each POS terminal has handled 13 transactions per month and 0.43 transactions per day (Commercial Bank of Ethiopia, 2015a).

The performance of CBE branches in Addis Ababa is not that much better than the overall performance of the bank; as at June 30, 2015, branches in Addis Ababa has 717, 730 card holders (45% of the total card holders of the bank) and out of which 53% (380,397) are active card holders (Commercial Bank of Ethiopia, 2015a). The rest 47% (337,333) have the electronic card but they have not tried their electronic card, on either ATMs or POS terminals, not even for a single time. When looking at the potential of the bank for Electronic Card Payment Technologies, based on the existing customers of the bank, as at June 30, 2015, the CBE has 10,657,678 accounts of which only 15% are Electronic card holders; the total number of account holders in Addis Ababa is 4,133,475 out of which only 17% are Electronic card holders. Further looking at the cost associated with Electronic Card Payment Technologies, in addition to the already deployed POS terminals, the CBE has more than 6,000 POS terminals at its stock, additional purchases are also underway (Abdu, 2015). With regards to ATMs, in addition to the already deployed 644 ATMs, CBE has 400 ATMs at its stock (Endeshaw, 2015b) and further ATM purchases are also underway (Endeshaw, 2016). According to HowMuchIsIt (2016) and Endeshaw (2015a), on average, one ATM costs as little as 2,000 US dollars to as much as 17,000 US dollars, while a POS terminal is sold in between 2,000 and 3,000 US dollars.

It can be seen from previous discussions that the CBE is the leading bank particularly in the area of Electronic card payment technologies in terms of the channels (ATM and POS Terminal) deployed, number of electronic card holders and potential e-banking adopters i.e. Account holders of the bank that are not using its e-banking services.

2.2.1.5 Electronic card banking services provided by the CBE

The CBE defines e-payment service as a service conveyed through the support of technologies namely ATM, POS, Mobile Banking, Internet Banking and Agent banking (Yeshambel & Nekahiwot, 2016). According to CBE (2012b), Electronic Card banking services provided by the CBE is carried out by making use of a debit card, ATM and/or POS terminals.

2.2.1.5.1 CBE Reliable Visa Card

Reliable is a visa branded debit card issued by the CBE to facilitate the exchange of funds without paper or hard copy. Reliable visa debit card is either domestic or international. The domestic card is valid only in Ethiopia while the international card is used to make international transactions (Commercial Bank of Ethiopia, 2012b).

Eligibility to Get Reliable Visa Card

According to CBE (2012b), in order to get the reliable visa debit card services, the following requirements must be met:

- The applicant must be above 18 years old;
- The applicant must have a valid and renewed ID card;
- The applicant must have an account in one of CBE's branch. Those who are not account holder can get the service through prepaid reliable visa card;
- The applicant must fill visa debit application form.

2.2.1.5.2 *ATM*

According to CBE (2012b), By making use of CBE reliable visa card, customers of the bank can get the following services on ATMs:

- Cash Withdrawals
- Bill Payments
- Foreign currency exchange
- Fund Transfer and balance enquiry
- Mobile Top Up

2.2.1.5.3 Point of Sale Terminal (POS)

By making use of CBE reliable visa card, customers of the bank can get the following services on Point of Sale Terminals (Commercial Bank of Ethiopia, 2012b).

- Various Payments
- Fund Transfer
- Mobile Top Up
- Bill Payment
- Cash Advance

2.2.2 Innovation, Technology Adoption and Diffusion

Hoyer and MacInnis(2008, p. 415), defined innovation as an offering that is perceived as new by consumers within a market segment and that has an effect on existing consumption patterns. Rogers (1995, p. 11), also defined innovation as an idea, practice, or object that is perceived as new by an individual or another unit of adoption. Technology adoption is The choice to acquire and use a new invention or innovation (Hall & Khan, 2002).

On the other hand, Diffusion is the process by which an innovation is communicated through certain channels over time among the members of a social system. And it is a kind of social change, defined as the process by which alteration occurs in the structure and function of a social system (Rogers, 1995, pp. 5–6). According to Rogers's definition, innovation diffusion has four important elements – an innovation, communication channels, time and social system.

Technology adoption and diffusion are two interrelated concepts. Adoption is the process by which an individual becomes committed to continued use of an innovation. It occurs at the micro level, being the individual's Decision process leading to adoption or rejection. Diffusion occurs at a macro level, being the process by which adoption spreads through a specific culture (Angeli, Coventry, & Johnson, 2005).Adoption, resistance, and diffusion can be influenced by the type of innovation, its breadth, its characteristics, and the social system into which it is introduced (Hoyer & MacInnis, 2008).

There are many well known models that are tested in various contexts and Technological products. In this study the widely known models are discussed as follows:

1. Theory of Reasoned Action (TRA)
2. The Theory of Planned Behavior (TPB)
3. Technological Acceptance Model (TAM)
4. The Innovation Diffusion Theory (IDT)

2.2.3 Theory of Reasoned Action (TRA)

This theory, developed by Ajzen and Fishbein (1975), empirically indicated that an individual's behavior intentions determine his or her actual behavior. Behavior intention in turn is determined by the individual's attitude toward the behavior and subjective norms which deals with the influence of the social environment on behavior.

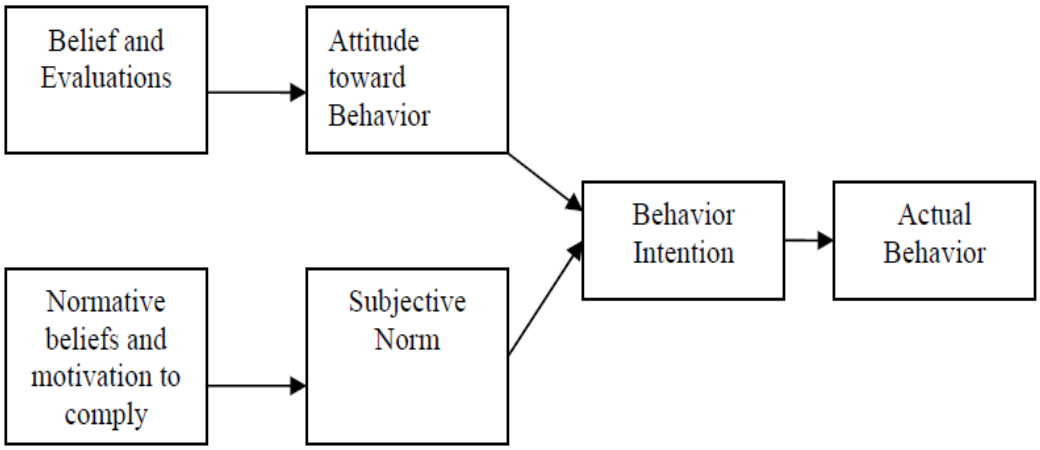

Figure 2.2:1The Theory of Reasoned Action

Source: *Ajzen and Fishbein* (1975)

2.2.4 Theory of Planned Behavior (TPB)

This theory, developed by Icek Ajzen (1991), is an extension of the Theory of Reasoned Action (Fishbein & Ajzen, 1975). Ajzen indicated that TRA has limitation in dealing with behaviors over which people have incomplete volitional control. Ajzen introduced a new variable, called Perceived behavioral control, to the TRA model and developed the Theory of Planned Behavior.

Ajzen's empirical evidence indicated that Intentions to perform behaviors of different kinds can be predicted with high accuracy from attitudes toward the behavior, subjective norms, and perceived behavioral control; and these intentions, together with perceptions of behavioral control, account for considerable variance in actual behavior.

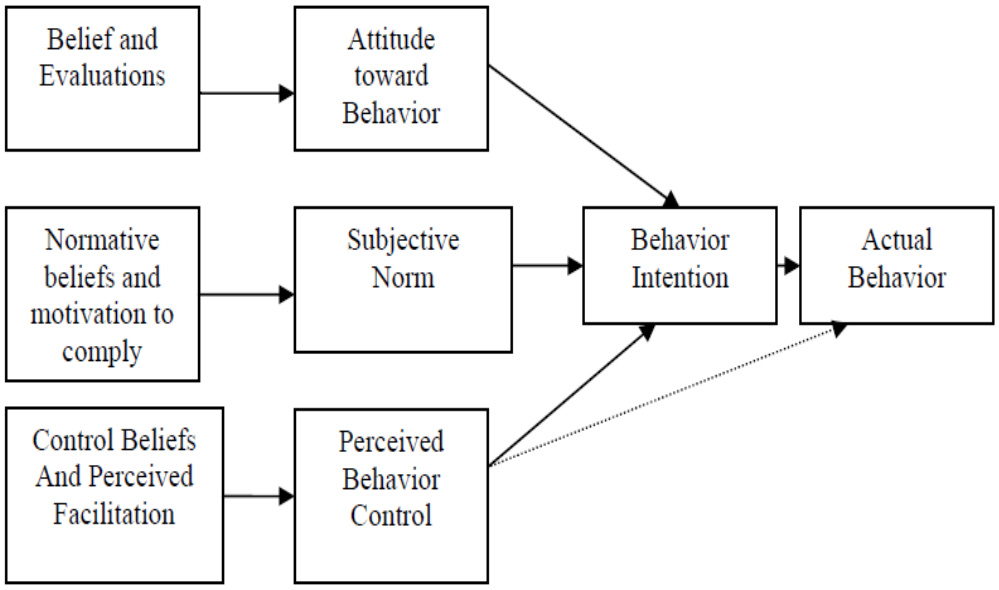

Figure 2.2:2 The Theory of Planned Behavior

Source: *Ajzen (1991)*

2.2.5 Technology Acceptance Model (TAM)

The model was originally developed by Davis (1989) in order to predict and measure users acceptance of computers. Davis Proposed two theoretical constructs, "Perceived Usefulness" and "Perceived Ease of Use", which are theorized to be fundamental determinants of Information Technology use. He then studied the effect of these two constructs on actual information technology usage behavior of users (self-reported current usage and self-predicted future usage). TAM has been employed in itself or by incorporating it with other models in almost all kinds of researches related with technology adoption. Particularly, TAM is the common model for most researchers in the area of Electronic banking adoption.

Based on two separate empirical studies conducted by Davis, he found out that "Perceived Usefulness" is significantly correlated with both self-reported current usage and self-predicted future usage. "Perceived Ease of Use" is also found to be correlated with current and future usage behavior (Davis, 1989, p. 324).

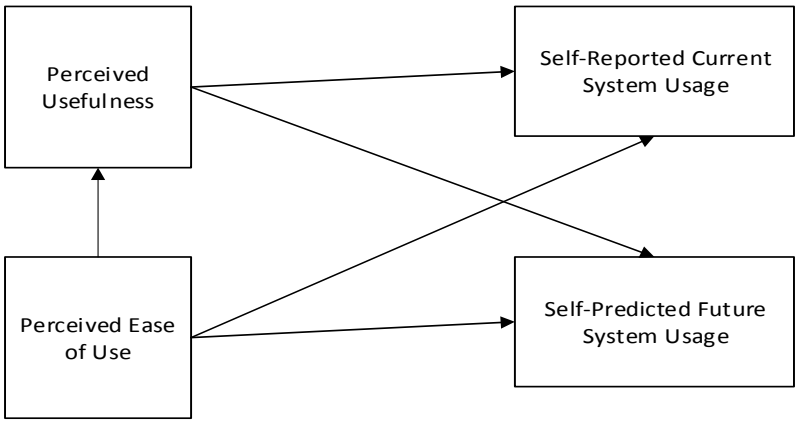

Figure 2.2:3: The Original Technology Acceptance Model

Source: *Davis(1989)*

Since its development in 1989, many scholars tried to improve TAM by introducing new variables and relationships to the model; including (Venkatesh & Davis, 2000; Venkatesh & Hillol, 2008; Venkatesh, Morris, Davis, & Davis, 2003) because the original TAM and the extended TAM2 model has been criticized (Legris, Ingham, &

Collerette, 2003) for their inability to strongly explain a particular system's use (only 40%). Legris et al (2003), suggests that significant factors are not included in the two models; and TAM and the extended TAM2 has to be integrated with other variables related to both human and social change processes, and to the adoption of the innovation model.

2.2.6 Innovation Diffusion Theory (IDT)

Everett M. Rogers, in his book titled " Diffusion of Innovations" (1995), developed a model for Innovation-Decision process (Figure 2.2.4), Rogers defined this process as " the process through which an individual (or other Decision making unit) passes from first knowledge of an innovation, to forming an attitude toward the innovation, to a Decision to adopt or reject, to implementation of the new idea, and to confirmation of this Decision" (Rogers, 1995, p. 165).

Rogers indicated that the Decision to adopt an innovation or a "new idea" depends on five factors – Relative Advantage, Compatibility, Complexity, Trialability and Observability.

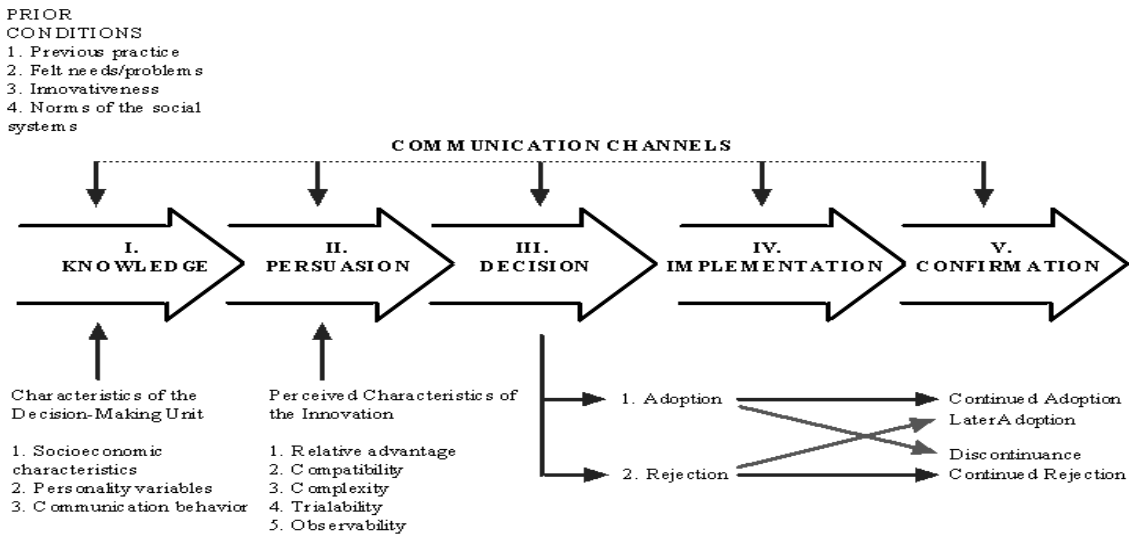

Figure 2.2:4 The Innovation-Decision Process

Source: *Rogers (1995)*

Most researches' conducted in relation to E-Banking adoption are carried out by incorporating factors in the above discussed models; it is not common to find a research study carried out with a single model.

Many researchers tried to combine the above discussed models so as to come up with a more comprehensive models; For instance Taylor and Todd (1995) combined TAM and TPB and created TAM 2. There was also an attempt to add Innovation Diffusion Theory to the Technology Acceptance Model in order to investigate Employees' Intentions to use E-Learning Systems (Y. H. Lee, Hsieh, & Hsu, 2011). In addition to the constructs discussed in the above models, there are other constructs applied by researchers in their study to determine factors that affect E-Banking adoption. These include – Perceived Risk, Culture, demographic factors and so on.

2.2.7 Comparison of the Models

TRA, TAM and TPB all focus on explaining the actual behavior for technology adoption. TRA provides the theoretical foundation to both TAM and TPB. TAM uses TRA to specify the causal linkages between two key beliefs: Perceived Usefulness and perceived ease of use (Qayyum & Ali, 2012). TPB also uses TRA as a theoretical basis for explaining the actual behavior, but it only differs from TRA because of the addition of perceived behavioral control (Qayyum & Ali, 2012). TAM and IDT have similar constructs like perceived usefulness and Relative advantage, perceived ease of use and complexity.

2.3 Empirical Review

There are enormous empirical studies in other countries about the factors that affect e-banking adoption in genral and ECPTs in particular. These studies showed different empirical results in different contexts.

Dehbini et al (2015) conducted a research on factors influencing the adoption of electronic payment cards in urban micro-payments. They considered Ease of Use, Usefulness, Compulsion, norms, satisfaction, and network externalities as independent variables. Research hypotheses were tested using one-sample t-test. The effects of age, educational level and occupational status variables with the main variables, tested with the Kruskal-Wallis test. The results of the research revealed that all of these 6 factors on the acceptance of electronic payment cards in urban micro-payments are a Significant impact on the citizens' payments. Prioritization of these factors is as follows: usefulness, ease of use, satisfaction, compulsion, network externality and norms.

Omotayo and Dahunsi (2015) conducted a research on factors affecting adoption of Point of Sale Terminals by Business Organizations in Nigeria. Subjective Norms, Image, Perceived Usefulness, Perceived Ease of Use and organization characteristic (Age and Size) were used as dimensions. Regression and correlation analysis is used to analyze the data. The results reveal that subjective norms and perceived ease of use have significant relationship with adoption of POS machine by the organizations. However, the characteristics of the organizations, image and perceived usefulness do not have significant relationship with adoption of POS.

Alagheband (2006) conducted a research on adoption of Electronic Banking Services in the context of Iranian Customers. The study considered Characteristics of new technology (Relative Advantage/ Usefulness, Compatibility, Complexity/Ease of Use, Observability, Traialability, Perceived Risk and Cost) and Personal Characteristics (Demographic, Social Interaction & Communication Behavior, Attitude and Personality). The study employed Bi-Variate (by making use of Independent sample t-test) to check the impact of each independent variable on the dependent variable (Decision to adopt). And multivariate analysis is employed by making use of logistic regression to check the overall impact of the dependent variables on the dependent variable. The result revealed that Perceptions of

relative advantages, compatibility and trailability of the services, cost and risk as well as gender and social character were found to influence the adoption of electronic banking services.

Zheng (2010), conducted an empirical analysis of factors that influence the adoption of internet banking in China in the context of Zhengzhou. The study considered Web Design/Feature, Internet skills, Marketing Exposure, Reliability, Internet Prestige and Demographic Characteristics as dimensions and employed binary logistic regression because the dependent variable (adoption of IB) assumed to have binary values (1 if adopted and 0 if not adopted). The result indicated that Perceived Security, Internet Experience, Reliability and Internet Prestige found to be significant in affecting IB adoption.

Safeena et al (2011), conducted a research on Customer's Adoption of Mobile-Commerce. The study considered Perceived Usefulness, Perceived Ease Of Use, Subjective Norm, Consumer Awareness And Perceived Risk as dimentions and employed Principal Component Analysis and Varimax with Kaiser Normalization. The result of this study shows that perceived usefulness, perceived ease of use, subjective norm, consumer awareness and perceived risk are the important determinants of mobile banking adoption.

Al-Jabri and Sohail (2012) conducted a research on the topic "Mobile Banking Adoption: Application Of Diffusion Of Innovation Theory". The study considered Relative Advantage, Complexity, Compatibility Observability, Trialability and Perceived Risk as factors. The study employed Exploratory factor analysis, Cronbach's coefficient of reliability and multiple regression analysis. It is found that relative advantage, compatibility, and observability have positive impact on adoption. According to the study trialability and complexity have no significant effect on adoption and Perceived risk has a negative impact on adoption.

Clemes et al (2012) conducted a research on the factors impacting on customers' Decisions to adopt Internet banking". The Decision to adopt Internet banking is hypothesized to be a function of convenience, user-friendly website, Internet access/Internet familiarity, marketing communications, word-of-mouth, perceived risks, price, self-image and demographic characteristics. Multivariate analysis (Binary Logistic regression) is used to analyze the impact of the independent variables on customers' Decisions to adopt Internet

banking. The findings reveal that a user-friendly website, marketing communications, perceived risks, price, and Internet access/Internet familiarity have an impact on customers' Decisions to adopt Internet banking. The results also reveal that consumers in the young age and the high income groups are more likely to adopt Internet banking.

Eze et al (2011) conducted a research on the topic "Factors Affecting Internet Banking Adoption among Young Adults: Evidence from Malaysia". Perceived Ease of Use, Perceived Usefulness, Relative Advantage, Self-Efficacy, Perceived Credibility and Trialability were used as dimensions. The study used Multiple Regression Analysis and the results indicate that perceived ease of use, perceived usefulness, relative advantage, self-efficacy, perceived credibility and trialability tend to influence consumers to adopt Internet Banking.

Mulima (2012) conducted a research on factors Influencing Adoption Of Internet Banking In Kenyan context: The Case Of Kenya Commercial Bank, Mombasa County". The study considered Consumer perception and attitude (Relative Advantage, Compatibility, Complexity Perceived Cost, Perceived Risk), Demographic characteristics (Age, education level, income, Occupation) and Social influences (Friends, Parents, Colleagues) as dimnetions.Chi-square test and Independent Sample T-test is used.A chi-square test was used to test for relationship between consumers' demographic characteristics and the adoption of internet banking. Demographic factors including age, income, education level and occupation have a relationship with the adoption of internet banking. Psychological factors including perceived relative advantage, perceived compatibility, perceived complexity, perceived risk, and perceived cost were found to influence the adoption of internet banking. Social influences were not found to be significant factors to influence the adoption of internet banking in Kenyan context.

Cudjoe et al (2015) conducted a research on the determinants of Mobile Banking Adoption in the Ghanaian Banking Industry. The study employed Awareness, Perceived Usefulness, Perceived Ease of Use, compatibility, social influence, perceived credibility, perceived self efficacy and perceived financial cost as dimentions. Data analysis was done qualitatively. The study unveiled that, perceived credibility and perceived financial cost were the major setback with regards to customers adoption of mobile banking services provided by Access.

Perceived credibility and perceived financial cost have a stronger effect on consumer intention to adopt and use mobile banking service than perceived usefulness and perceived ease of use.

Wangari and Willy (2014) conducted a research on the factors affecting adoption of mobile banking in kenyan context by considering Perceived risk, perceived convenience, trust and relative advantage as independent variables. Data was analyzed using descriptive statistics such as frequencies and percentages, Conclusions were made using inferential statistics namely correlation analysis. Customers' perceived risk was found to negatively affect adoption of M-Banking service. On the other hand, perceived convenience was found to positively affect adoption of M-banking. In regards to trust, the reliability of M-Banking services was found to positively affect adoption of these services. Lastly, the M-banking service was found to possess relative advantages in comparison to traditional banking services.

Safeena et al (2012) conducted a research on technology adoption in indian contextt consumers: study on mobile banking. Perceived Usefulness, Perceived Ease Of Use, Awareness And Perceived Risk considered as dimensions. Principal component factor analysis with a varimax rotation was conducted. The result of this study shows that perceived usefulness, perceived ease of use, consumer awareness and perceived risk are the important determinants of mobile banking adoption.

Aliyu et al (2012) conducted an exploratory study on adoption of electronic banking. As independent variables, Cost/Price factors, customer Accessibility, Perceived Ease of use, customer reluctant to change, customer awareness, and security concern were considered. By employing Regression analysis, the research found out that except for perceive ease of use and reluctant to change, the rest found to be significant.

2.4 Knowledge Gap

As the previously discussed theoretical and empirical literatures indicated, information communication technologies are critical success factors in today's business world. Particularly, in the banking industry, without the deployment of technologies, it would be impossible to serve customers and meet their demands.

E-banking technologies provide enormous benefits for the customer as well as for the banks by making transactions efficient and creating convenience for the customer.

Like any other new innovation, new technologies require effort and time to be diffused in the social system. E-banking technologies, particularity in developing countries like Ethiopia, are at their infancy stage. Since the introduction of E-Banking technology in Ethiopia on 2001, the banking industry has witnessed various improvements on technologies and the acceptance of these technologies. However, as many researchers indicated, given the huge investments made on E-banking technologies, the level of e-banking technology adoption is very low. In order to understand the reason behind the low adoption rate, it is very necessary to understand the factors that affect the Decision to adopt and not to adopt E-banking technologies. In this regard, Many researchers, in an attempt to explain the reason behind low adoption rate, have considered various factors related with perceptions, personal characteristics, technological characteristics and influences induced by marketers and the social system.

In global context numerous studies have been conducted in the area of e-banking particularity in the area of internet banking adoption. However little is done in the context of developing countries like Ethiopia; particularly it is very difficult to find studies conducted in the area of Electronic Card Payment technologies in a manner this research is to be conducted.

Handful of studies are conducted with a descriptive type of research to assess the challenges and opportunities associated with e-banking in Ethiopia including Ayana (2012), Worku (2010), Taddesse and Kidan (2005), Shaikh (2014) and Sinha et al (2014).

Takele and Sira (2013) undertaken a study to analyze factors that influence customers' intention to adopt e-banking service channels in Bahir Dar city. Takele and Sira (2013) developed a conceptual framework by integrating six variables from theory of planned

behavior, technology acceptance model and previous studies. However, Takele and Sira tried to determine customers' intention and Decision towards E-banking adoption in general and failed to capture customers' specific intention towards sub-components of e-banking like card-banking, mobile banking and internet banking.

With regards to specific e-banking technologies, (Yohannes, 2010) attempted to assess key factors that determine adoption of internet banking in Ethiopia by making use of descriptive type of research by considering factors like relative advantage, compatibility, complexity, perceived cost and social influences. On the other hand, (Alebachew, 2015), employed descriptive analysis and inferential analysis (using structural equation modeling) and found out that perceived usefulness, perceived ease of use, attitude, perceived risk, and culture have a significant effect on intention to adopt Internet banking.

With regards to Electronic Card Payment technologies, Abreha (2015), conducted a study about Automated Teller Machine (ATM) adoption of users in Commercial Bank of Ethiopia in Mekelle branch. Abreha employed a descriptive type of research to find out the most commonly used types of ATM banking services; assessing the users' frequency of usage of ATM; examining the attitude of users towards ATM banking service; and determining the ranks of each attributes that determine the adoption rate of ATM.

Another research undertaking worth of mentioning is Rahel (2012). Rahel attempted to point out factors affecting the behavioral intention of customers toward using ATM services in the case of Dashen Visa Card with an application of Technology Acceptance Model and by considering there factors – Perceived ease of use, Perceived usefulness and social influences. Rahel employed both descriptive and inferential analysis (using multiple linear regression) to determine the effect of the three factors on the intention towards Dashen Visa Card adoption. However, Rahel only considers ATMs and targeted only card holder customers of Dashen bank and left out non card holders and the other channel of card banking technology (POS Terminal).

Although limited researches are conducted in Ethiopia in the area of E-banking in general and on specific e-banking technologies in particular, one may not find a research conducted in the context of Ethiopia (particularly in Commercial Bank of Ethiopia) that attempts to analyze the factors that affect the Decision of three types of customers' to use electronic

cards on either of ATMs and POS terminals. This research considers six factors (Perceived Usefulness, Perceived Ease of Use, Perceived Risk, Marketing Communication Influences, Social Influences and Compatibility) to be determinants of customers' Decision towards ECPT adoption and this research undertaking is unique for using multinomial logistic regression to infer about the adoption Decision of three target groups i.e. non-adopters, partial adopters and full adopters.

2.5 Conceptual Framework and Hypothesis Development

2.5.1 Conceptual Framework

Based on the reviewed literatures and the findings of previous researchers, the following conceptual framework (Research model) was developed.

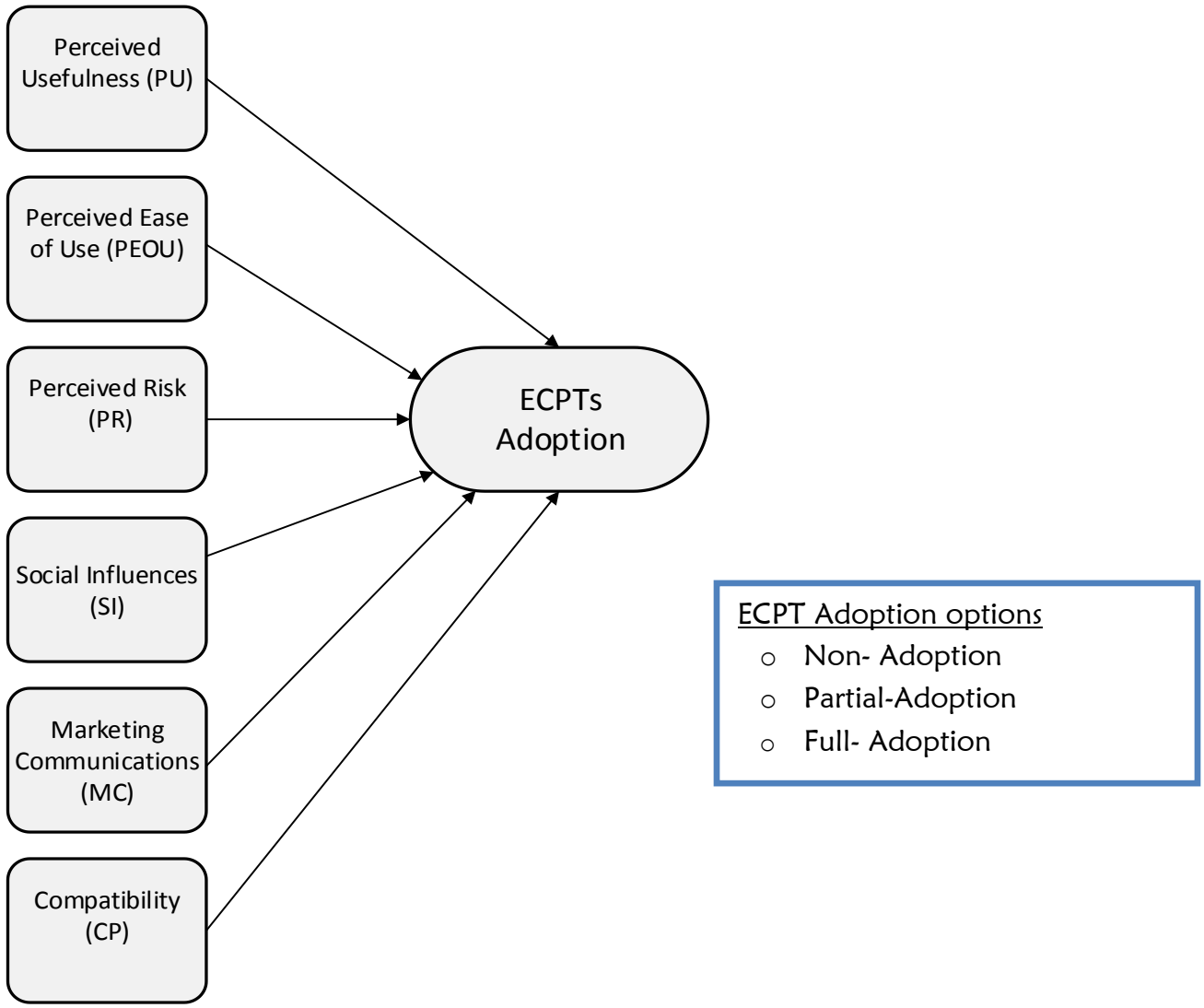

Figure 2.5:1: Conceptual Framework

Source: *Constructed By the Researcher (2016)*

2.5.2 Hypothesis Development

Moore and Benbasat (2001), described the importance of adopters perception by discussing primary and secondary attributes of technology. According to Moore and Benbasat (2001), primary attributes are intrinsic to an innovation and independent of their perception by potential adopters. However, the behavior of individuals is predicted by how they perceive these primary attributes. Different adopters might perceive primary characteristics in different ways and their Decision is influenced by these characteristics. Studying the interaction among the perceived attributes of innovation helps the establishment of a general theory (Moore & Benbasat, 2001). A consumer may not act in isolation in the purchase Decision, but rather may be influenced by any of several factors. Consumer's behavior and the resulting purchase Decision are strongly influenced by cultural, social, personal and psychological characteristics (Hoyer & MacInnis, 2008; Kotler & Keller, 2013)

2.5.2.1 Perceived Usefulness

Davis (1989, p. 320), defined Perceived Usefulness as "The degree to which a person believes that using a particular system would enhance his or her job performance". According to Davis the word "useful" is defined as "Capable of being used advantageously". Many researchers incorporated the construct "perceived usefulness" in their attempt to investigate its impact on customers' Decision to adopt E-banking technologies. Those who found out that perceived usefulness has a positive and significant impact on customers' intention and Decision to adopt E-Banking technologies include Amin (2010), Ayana (2012), Dehbini et al (2015), Domeher et al (2014), Narteh (2012), Safeena et al (2012), Takele and Sira (2013), Tollossa (2012) and Wahab (2012).

A similar concept, In terms of a benefit gained from a particular innovation, which Rogers(1995) came up called "Relative Advantage". Rogers (1995, p. 213), defines relative advantage as " the degree to which an innovation is perceived as being better than the idea it supersedes". Rogers indicated that the degree of relative advantage is often expressed in economic profitability, in status giving, or in other ways. According to Rogers, The nature of the innovation largely determines what specific type of relative advantage (such as economic, social, and the like) is important to adopters. Researchers

who found out that relative advantage is influential in customers Decision to adopt E-banking technologies and Electronic Card Payment Systems include (Alagheband, 2006; Olatokun & Igbinedion, 2009)

Another benefit gained from a particular innovation or technology that will lead a potential adopter to perceive the innovation as useful is "convenience". Convenience is a very important benefit gained from adopting technologies in general and e-banking technologies in particular. The thefreedictionary.com, defines convenience as "The quality of being suitable to one's comfort, purposes, or needs and something that increases comfort or saves work". Convenient procedures, products and services are those intended to increase ease in accessibility, save resources (such as time, effort and energy) and decrease frustration. Convenience is a relative concept, and depends on context (Berry, Kathkeen, & Dhruv, 2002)

In the context of this study, Convenience refers to the consumer's perception of lesser need of carrying cash in small transactions and increasing the availability of purchase possibilities; E-payments are commonly expected to increase consumer convenience by reducing the burden of carrying cash and they are expected to be available at the users' convenience (Adeoti & Oshotimehin, 2011). Researchers who found out that convenience is influential in customers Decision to adopt E-banking technologies and Electronic Card Payment Systems include (Adeoti & Oshotimehin, 2011; Supinah, Anis, & Amin, 2008; Tuli, Khatri, & Yadav, 2012). Therefore, based on the previous discussion of perceived usefulness and related concepts (Relative advantage and Convenience) and the findings of prior researchers, it is hypothesized that:

H1: Perceived Usefulness has effect on Electronic Card Payment Technologies' adoption Decision by customers of the CBE in Addis Ababa

2.5.2.2 Perceived Ease of Use

Davis (1989, p. 320) defined perceived ease of use as "The degree to which a person believes that using a particularly system would be free of effort". And the word "ease" is

with the use of the system" (Venkatesh et al., 2003, p. 450). defined as Freedom from difficulty or great effort. Many researchers incorporated the construct "perceived ease of use" in their attempt to investigate its impact on customers' Decision to adopt E-banking technologies. Those who found out that perceived ease of use has a positive and significant impact on customers' intention and Decision to adopt E-Banking and ECPT includes Adeoti (2011), Amin (2010), Ayana (2012), Dehbini et al (2015), Eze et al (2011), Featherman and Pavlou (2003), Mulima (2012), Narteh (2012), Nasri and Zarai (2014), Omotayo and Dahunsi (2015), Safeena et al (2012), Tiamarumilanzi (2013) and Tollossa (2012). Another similar concept with that of Perceived Ease of Use is complexity. Rogers (1995, pp. 230–231), defined Complexity as "the degree to which an innovation is perceived as relatively difficult to understand and use". According to Rogers, any new idea may be classified on the complexity-simplicity continuum. Some innovations are clear in their meaning to potential adopters while others are not. In the context of E-Banking and ECPT adoption, researchers who found out that complexity negatively impact customers' intention and Decision to adopt E-Banking technologies includes (Adeoti & Oshotimehin, 2011; Domeher et al., 2014; Olatokun & Igbinedion, 2009).

Venkatesh et al (2003), created a construct called "Effort expectancy" by combining the concepts of two constructs – perceived ease of use and complexity. Effort expectancy is defined as "the degree of ease associated

Yet another similar concept related with the perceived ease of use and complexity is perceived behavioral control which is defined as "The perceived ease or difficulty of performing the behavior" (Ajzen, 1991, p. 188) and Perceived behavioral control is assumed to reflect past experience as well as anticipated impediments and obstacles (Ajzen, 1991). In the context of E-Banking and ECPT adoption, researchers who found

out that Perceived behavioral control impact customers' Decision to adopt E-Banking technologies includes (Al-smadi, 2012; Takele & Sira, 2013; Tan & S.H.Teo, 2000).

Therefore, based on the previous discussion of perceived ease of use and related concepts (effort expectancy, Complexity and Perceived behavioral control) and the findings of prior researchers, it is hypothesized that:

H2: Perceived Ease of Use has effect on Electronic Card Payment Technologies' adoption Decision by customers of the CBE in Addis Ababa

2.5.2.3 Perceived Risk

Perceived risk is "the extent to which the consumer is uncertain about the consequences of an action, e.g., buying, using, or disposing of an offering" (Hoyer & MacInnis, 2008, p. 59). This uncertainty frequently is felt when a consumer is considering the purchase and use of what is for her/him a new product (Goodwin, 2009).Perceived risk or uncertainty affects people's confidence in their Decisions. Risky situations can be those where the probabilities of outcomes are not known (Im, Kim, & Han, 2008). In the context of E-Banking, Perceived risk refers to the risk that consumers perceive in using of a new technology (Vazifehdoost, Khosrozadeh, & Mirzaee far, 2014). Although there are many types of risks, in the context of E-Banking the repeatedly mentioned are Performance risks, Financial Risks, Security/Privacy risks and Time/convenience risks.

Performance risk is the "Uncertainty about whether the offering will perform as expected" (Hoyer & MacInnis, 2008, p. 60). Similarly Ming-Chi Lee (2008, p. 2), defined performance risk as "The possibility of the product malfunctioning and not performing as it was designed and advertised and therefore failing to deliver the desired benefits". In this regard Featherman and Pavlou (2003) has found out that e-services adoption is adversely affected primarily by performance-based risk perceptions. In the context of Electronic Card Payment system, Performance risk might be associated with the breakdown of ATMs and POS terminals due to various reasons and unable to serve customers. Even the Electronic card might not function properly due to various physical damages on the card (Abate et al., 2015; Commercial Bank of Ethiopia, 2012a).

Financial risk is "the extent to which buying, using, or disposing of an offering is perceived to have the potential to create financial harm" (Hoyer & MacInnis, 2008, p. 60). In the context of E-Banking, Lee (2008, p. 2) defined financial risk as "the potential for monetary loss due to transaction error or bank account misuse". In the context of Electronic Card Payment system, financial risk might be associated with malfunctioning of the Card Banking system which is manifested through, for example, an ATM machine might deduct the money from the customer's account but might fail to deliver the cash. Similarly the POS terminal might deduct the money from the customer's account but might fail to credit the sellers account (Abate et al., 2015; Commercial Bank of Ethiopia, 2012a). **Security/privacy risk** is defined as a potential loss due to fraud or a hacker compromising the security of an online bank user Lee (2008, p. 2). In the context of ECPT, customers might be exposed to security/privacy risk by losing their electronic card or PIN code. **Time/convenience Risk** may refer to the loss of the time and inconvenience incurred due to the delays of receiving the payment or the difficulty of navigation (M. Lee, 2008, p. 2). Time risk can be explained (in the context of ECPT) by the fact that ATMs might breakdown for various reasons and customers might spend a considerable amount of time by searching for an ATM that is working. Similarly, ATMs might not be deployed in places convenient for the customers and as a result a customer might spend a considerable time by looking for the nearby ATM.

By taking the previously discussed perceived risk types in to account, many researchers in the area of E-Banking and ECPT adoption found out that Perceived risk has a significant negative impact on the customers' intention and Decision to adopt E-Banking technologies including Alagheband (2006), Farzianpour et al (2014), Featherman and Pavlou (2003), Im et al (2008), Karma et al (2014), Kurnia et al (2010), Lee (2008), Mulima (2012), Safeena et al (2012), Vazifehdoost et al (2014), Wangari and Willy (2014) and Wong et al (2009).

Therefore, based on the previous discussion on perceived risk and its components, and the findings of prior researchers, it is hypothesized that:

H3: Perceived Risk has effect on Electronic Card Payment Technologies' adoption Decision by customers of the CBE in Addis Ababa

2.5.2.4 Social Influences

Hoyer and Maclnnis (2008, p. 386) defined social influences as an implicit or explicit pressures from individuals, groups, and the mass media that affect how a person behaves. According to Hoyer and Maclnnis (2008), Influence can come from marketing and non-marketing sources and can be delivered via the mass media or personally and Non-marketing sources tend to be more credible.

Non-marketing information could be delivered via mass media sources like News, Critiques/reviews/blogs, Program content, External endorsements, Cultural heroes/heroines, Clubs/organizations (Hoyer & MacInnis, 2008). On the other hand, non-marketing information delivered personally (word of mouth) includes sources like Family, Friends, Neighbors, Casual acquaintances, Classmates (Hoyer & MacInnis, 2008). Non marketing sources will ultimately influence the perception of a person particularly they will affect his or her subjective norm. Fishbein and Ajzen defined Subjective norm as "the Person's perception that most people who are important to him/her think he should or should not perform the behavior in question" (1975, p. 302). Similarly Hoyer and Maclnnis (2008, p. 399), defined Normative influence, from the society point of view as "the social pressure designed to encourage conformity to the expectations of others" (Hoyer & MacInnis, 2008, p. 399).

According to Rogers (1995), innovation/new technology diffusion has four important elements – an innovation, communication channels, time and social system. Rogers defined social system as "a set of interrelated units that are engaged in joint problem solving to accomplish a common goal. The members or units of a social system may be individuals, informal groups, organizations, and/or subsystems" (Rogers, 1995, p. 24).

In the context of technology, Venkatesh (2003, p. 452), defined social influences as "the degree to which an individual perceives that important others believe he or she use the new system". And In the context of E-Banking and ECPT adoption, researchers who found out that Social influences impact customers' intention and Decision to adopt E-Banking technologies includes

Alagheband (2006), Al-Jabri and Sohail (2012), Al-smadi (2012), Domeher et al (2014), Olatokun and Igbinedion (2009), Omotayo and Dahunsi (2015) and Safeena (2011)..

Therefore, based on the previous discussion of Social influences and related concepts (Subjective Norm and Normative Influence) and the findings of prior researchers, it is hypothesized that:

H5: Social Influences have effect on Electronic Card Payment Technologies' adoption Decision by customers of the CBE in Addis Ababa

2.5.2.5 Marketing Communication Influences

Marketing communications refers to "a set of promotional messages used by organizations to make their products known, enhance their brand, and influence adoption" (Chinakidzwa, 2014, p. 4). Marketing communications are the means by which firms attempt to inform, persuade, and remind consumers directly or indirectly about the products they sell (Kotler & Keller, 2013, p. 498). Marketing communications also works for consumers when they show how and why a product is used, by whom, where and when (Kotler & Keller, 2013). With the growing importance of the financial sector, well designed promotional strategies are very important to promote banking services effectively (Aliata et al., 2012). Creating effective communication with the customers is the important aspect in service marketing and therefore banking sector. Banks have to communicate with their existing customer as well as potential customer about what they are doing and what they are planning to do in the future (Manisha, 2012). when banks are offering new and innovative services to the market, the content of promotional tools should help the customer in making Decision (Aliata et al., 2012).

The objective of marketing communication may include creating awareness or knowledge about a product and its attributes or benefits; creating an image; or developing favorable attitudes, preferences, or purchase intentions (Belch & Belch, 2003, p. 31). Zheng (2010), indicated that one of the most important contributing factors for adoption or acceptance of any innovative service or product is the creation of awareness, through marketing communication, among consumers . Rogers (Rogers, 1995) indicated that consumers go through a process of knowledge, conviction, Decision, and confirmation before they are ready to adopt an innovation. In this regard the importance of awarness on innovation adoption turn out to be significant in the research of (A.Ismail & Osman, 2012; Aliyu et al., 2012; Safeena et al., 2011). One of the most important parts of effective marketing is communicating information about the product to potential customers; an array of communication methods can be used to pass on information about the product that is being sold (Abubakar, 2014).

Marketing communications inform customers about services provided by an organization, persuade customers that a specific service product offers the best solution to a customer's needs, remind customers of service product availability, and motivate customers to act (Clemes et al., 2012). Marketing sources that deliver influence through the mass media include advertising, sales promotions, publicity, and special events (Hoyer & MacInnis, 2008, p. 386). Marketing sources can also deliver information personally. Salespeople, service representatives, and customer service agents are marketing sources of influence who deliver information personally in retail outlets, at consumers' homes or offices, over the phone, or via e-mail or online chat (Hoyer & MacInnis, 2008, p. 386). According to Du (2011) the widely applied forms of marketing communications, In a banking context, are advertising and personal selling.

Advertising is defined as "any paid form of non-personal communication about an organization, product, service, or idea by an identified sponsor" (Belch & Belch, 2003, p. 16). On the other hand personal selling is "a form of person-to-person communication in which a seller attempts to assist and/or persuade prospective buyers to purchase the company's product or service or to act on an idea"(Belch & Belch, 2003). Unlike

advertising, personal selling involves direct contact between buyer and seller. Advertising plays a major role in promoting a bank's products and services on a large scale (Manisha, 2012). According Hoyer and MacInnis (2008), Advertising and selling efforts clearly affect the inferences consumers make about an offering.

Due to the characteristics of banking services, personal selling is the way that most banks prefer in expanding selling and use of them (Önce, 2000).It occurs in two ways. First it occurs in a way that customer and banker perform face to face interaction with each other at branch office. Second it occurs in a way that bank's representative go to customer's places and the bank's representative update the customer's knowledge about the banks services and strengthen the relationship between the bank and customer (Manisha, 2012). In the context of E-banking, Elliott and Fu (2008), empirically found out the personal selling has a positive and significant impact on Consumers' Decision to accept technological Products. Ineffective marketing communication, such as ineffective advertising, poor television and/or radio advertisements eludes the attention of many banking consumers who may be prospective adopters of e-banking (Clemes et al., 2012; Lichtenstein & Williamson, 2006).

In the context of E-Banking, many researchers including Chinakidzwa (2014), Clemes et al (2012), Du (2011), Elliott and Fu (2008) and Lichtenstein and Williamson (2006) has found out that Marketing communications, particularly advertising and personal selling has a positive and significant impact on customers' Decision to adopt e-banking technologies.

Therefore, based on the previous discussion of marketing communications impact on customers' purchase Decision, with due emphasis of advertising and personal selling, and the findings of prior researchers, it is hypothesized that:

H4: Effective Marketing Communication has effect on Electronic Card Payment Technologies' adoption Decision by customers of the CBE in Addis Ababa

2.5.2.6 Compatibility

Rogers (1995, p. 223), defined compatibility as ”the degree to which an innovation is perceived as consistent with the existing values, past experiences, and needs of potential adopters”. Rogers indicated that an idea that is more compatible is less uncertain to the potential adopter. Compatibility relates to how the production of the innovation and the innovation itself takes into account the local values and customs of the adopters. It is the point at which an innovation fits into the specific society. The smoother the innovation fits into the culture, the faster the rate of adoption (Olatokun & Igbinedion, 2009; Rogers, 1995).

Karahanna, Agarwal, and Angst (2006) provided a more comprehensive conceptual definition that disaggregates the content of compatibility into four distinct and separable constructs. compatibility with existing work practices, measuring the extent to which a technology "fits" with a user's current work process; (2) compatibility with preferred work style, capturing the possibility offered by the technology of being consistent with a desired work style; (3) compatibility with prior experience, reflecting a fit between the target technology and a variety of users' past encounters with technology; and (4) compatibility with values, epitomizing the match between the possibilities offered by the technology and the user' s dominant value system (Karahanna et al., 2006, p. 787).

Attributes of compatibility can impact on the Decision to use new technology because technology often requires establishments to change their existing business practices and operations in order to increase the benefits of using the technology (Mndzebele, 2013). In the context of E-Banking and ECPT adoption, researchers who found out that compatibility impact customers’ intention and Decision to adopt E-Banking technologies includes Abreha (2015), Alagheband (2006), Al-Jabri and Sohail (2012), Domeher et al (2014), Moore and Benbasat (2001), Mulima (2012) and Olatokun and Igbinedion (2009). Therefore, based on the previous discussion of Compatibility and the findings of prior researchers, it is hypothesized that:

H6: Compatibility has effect on Electronic Card Payment Technologies’ adoption Decision by customers of the CBE in Addis Ababa

2.5.2.7 Demographic Factors

Many researchers have found that Demographic factors have association with E-banking adoption. Demography is the interdisciplinary study of human populations; demography deals with social characteristics of the population and their development through time. Demographic data may include analysis of the population on the basis of age, occupation or changes in the population as a result of birth, marriage, and death or levels of education or economic and social statistics and so on(Microsoft Corporation, 2009).

Many researchers have found out that demographic factors have association with e-banking adoption. For instance Haq and Khan (2013), found out that most of the e-banking users are middle-aged (i.e. between 31-39) that have monthly income in excess of 25000 rupee which are educated to Post Graduate level and belongs to working class. Furthermore, the study has found out that there is no relation in between gender and the adoption of e-banking banking. Izogo, Nnaemeka, Onuoha, and Ezema (2012), has also examined the impact of six demographic variables, namely gender, marital status, religion, income, age and education level on the adoption of e-banking in Nigeria; their results show that while the influence of marital status, age and education level on the adoption of e-banking is significant, the reverse is the case with such demographic variables as gender, religion and income.

Mohammed (2012) in his research indicated that respondents that are graduated and employed (Government or private service) male customers who belong from higher income groups (greater than Rs. 100,000) and having a bank account preferably in public sector bank are greatly emphasized to use of the banking services. Like the previous researchers, the research results of Tater, Tanwar and Murari (2011), shows that demographic variables such as gender, age, educational qualification and income play a positive role in adoption of banking technology. Jin and Devaney (2005) have also found out that household heads that were younger, with more education, and more income were more likely to use debit cards. In summary, among other demographic factors like marital status, gender, religion and occupation, the research findings of Haq and Khan (2013), Izogo et al (2012), Jin and Devaney (2005), Mohammed (2012) and Tater et al (2011)

confirmed that education level, Age and Income has significant association with e-banking adoption.

2.5.2.8 Types of Adopters and Adoption Decisions

Rogers (1995) developed ideal classification to categorize adopters based on their behavior towards accepting or adopting an innovation. Rogers indicated that there are five categories – Innovators (venturesome), early adopters (Respectable), Early majority (Deliberate), Late majority (Skeptical) and Laggards (Traditional)

1. **Innovators** – These individuals are very eager to try new ideas. These people are very willing to take risks, and are often the first to develop new ideas. Very little, if anything, needs to be done to appeal to these individuals (Rogers, 1995, p. 248)
2. **Early Adopters** – These individuals are a more integrated part of the local social system than are innovators. Whereas innovators are cosmopolites, early adopters are localities and these are people who represent opinion leaders (Rogers, 1995, p. 248)
3. **Early Majority** – These individuals adopt new ideas just before the average member of a social system. The early majority may deliberate for some time before completely adopting a new idea. They are more of "Be not the first by which the new is tried/Nor the last to lay the old aside" (Rogers, 1995, p. 249)
4. **Late Majority** – These individuals adopt new ideas just after the average member of a social system. They perceive Innovations with skepticism. They can be persuaded of the utility of new ideas, but the pressure of peers is necessary to motivate adoption (Rogers, 1995, p. 249)
5. **Laggards** – These individuals are the last in a social system to adopt an innovation. They possess almost no opinion leadership. The point of reference for the laggard is the past. Decisions are often made in terms of what has been done in previous generations and these individuals interact primarily with others who also have relatively traditional values (Rogers, 1995, p. 250). In the context of this research undertaking, three general types of adopters and/or Decisions are identified as Non-Adopters, Partial adopters and full adopters.

CHAPTER THREE
RESEARCH METHODOLOGY

3.1 Introduction

This chapter outlines the research framework and methodology used to collect the data to test the six hypotheses of this study. It includes about research approach, research design, data source, population of the study, sampling procedure and technique, sample size determination, measurement of constructs, validity and reliability of the instrument, methods of data analysis and ethical considerations.

3.2 Research Approach

In general research approach can be divided into two – deductive and inductive. Deductive approach tests the validity of assumptions (or theories/hypotheses) in hand, whereas inductive approach contributes to the emergence of new theories and generalizations (Dudovskiy, 2016; Walliman & Baiche, 2001). On the other hand, research type refers to pure and applied research. Pure research has no obvious practical implications beyond contributing to a particular area of intellectual enquiry. Applied research, on the other hand, is problem focused and is directed towards solving some particular intellectual question that has practical implications for a client outside the academic world (Sekaran, 2006). This study, through deductive reasoning approach, attempt to develop a model to solve a problem and its focus is thus application of findings to solve problems outside the academic world.

3.3 Research Design

Research Design refers to the framework into which the research fits depends on the theory and nature of the research problem. This will underpin all of the research activities (Walliman, 2006). According to Creswell (2009), there are three research designs. These are – Qualitative, Quantitative, and Mixed designs. Quantitative research approach has two types of research design – Survey and Experimental (Creswell, 2009). A survey design provides a quantitative or numeric description of trends, attitudes, or opinions of a population by

studying a sample of that population. From sample results, the researcher generalizes or makes claims about the population (Creswell, 2009, p. 137). This study aims to find out and analyze the factors that affect CBE's customers' Decision to adopt ECPT on sample basis so that the results can be generalized to the population i.e. to CBE's customers in Addis Ababa. Therefore this study followed quantitative survey design.

In order to ensure that the research design was consistent with the research objectives, the first step was taken by selecting CBE as a sample to examine factors that affect ECPTs adoption. Secondly, exploratory research was used to develop to understand the problem and the subject. Thirdly, a self administered questionnaire was considered an appropriate approach to collecting the data for this research. Finally, pre-testing of the questionnaire was conducted before the questionnaire was distributed to the sample Respondents. Due to the nature of the research which was to be studied at one time, the researcher preferred to use a cross sectional approach.

3.4 Data Source

Basically there are two sources of information used for research purposes – primary and secondary sources. Primary sources are those in which require to conduct a new survey for gathering information at different levels with regard to the inquiry. Secondary sources are those which are made available or have been collected for other research purposes (Adams et al, 2007).

In order to meet the objective of this study, the researcher have used various secondary sources in a bid to understand the determinants that affect customers' to adopt ECPT including books, journal articles, various postgraduate studies, newspaper articles, academic conference proceedings, the web particularly Google Scholar and internal documents of the CBE like E-Payment procedure, E-Payment strategy, Annual performance report for the fiscal year ended June 30 2015 and Training documents of the bank in the area of E-Banking. So as to analyze the effect of the identified factors on customers' to adopt ECPTs, primary data is collected from selected customers of the CBE in Addis Ababa.

3.5 Population of the Study

Population refers to the entire group of people, events, or things of interest that the researcher wishes to investigate (Sekaran, 2006).

The CBE has divided the country in to fifteen district offices; these district offices are responsible for managing the branches of the bank. The division of districts in the CBE is just for the purpose of efficient management; there is no difference among district offices and the branches under their supervision on the type of customer they target or the types of services they provide. Hence it can be said that the CBE follows mass marketing approach.

According to the annual report of the CBE for the fiscal year ended June 2015 (summarized under Table 3.5.1), the four districts found in Addis Ababa has 4,133,475 accounts and 717, 730 electronic card holders. In countrywide the CBE have 10.6 million accounts and as compared to the other regions, Addis Ababa takes relatively higher share. Since this study aims to analyze the determinants that affect customers' ECPT adoption, the target population is the entire customers of the CBE in Addis Ababa.

Therefore, based on the data in Table 3.5.1, appropriate sample is taken out of the four districts. Including respondents from every corner of Addis Ababa i.e. from the four districts, this enabled the researcher to reach respondents with different demographic characteristics and perceptions about the matter of this study which in return enables to generalize the findings to the population of this study.

Table 3.5-1Number of Account and Electronic card holders of the CBE in Addis Ababa

Districts of the CBE in Addis Ababa	Number of Account as at June 30, 2015	Number of Electronic Card holders as at June, 2015
East Addis Ababa	911,466	194,641
North Addis Ababa	1,248,125	217,544
South Addis Ababa	1,028,292	167,800
West Addis Ababa	945,592	137,745
Total	**4,133,475**	**717,730**

Source: *Commercial Bank of Ethiopia (2015a)*

3.6 Sampling Procedure and Sample Size determination

In general, there are two basic sampling techniques: probability and non-probability sampling. A probability sample is defined as a sample in which every element of the population has an equal chance of being selected (random selection). Alternatively, if sample units are selected on the basis of personal judgment (non-random selection), and elements of the population does not have equal chance of being selected, the sample method is a non-probability sample (Adams et al., 2007; Kothari, 2004). Probability sampling includes Simple Random, Systematic, Stratified, Cluster and Multistage sampling methods (Adams et al., 2007).

In the case of this study, multistage sampling method is employed by making use of cluster, systematic and simple random sampling. The sampling procedure was as follows:

1. Out of the fifteen districts of the CBE, the four districts (clusters) in Addis Ababa city are selected and considered as target population;
2. Total sample size is determined based on the total number of accounts under the four districts;
3. From the list of all branches and by making use of simple random sampling lottery method, four branches (a total of 16 branches) are selected from each district/cluster;
4. The determined sample size is distributed to the selected branches in each district proportionally to their account number;
5. On the basis of the average customers served within half day of the particular branch, systematic sampling method (Table 3.7.3) is employed to select customers. Sample was selected when customers come to the selected branches to get banking services during the time interval of 8:30 AM to 12:30 PM.

3.6.1 Sample Size Determination

Sample size determination is an important element in any survey research. According to Israel (2009), there are four strategies to determine sample size – using a census for small population, using the sample size of similar studies, using published tables like the table of Krejcie and Morgan (1970), or using formulas to calculate a sample size.

For instance Krejcie and Morgan (1970), using a formula, came up with a table (Table 3.7.1) for sample size determination. According to Krejcie and Morgan (1970), for a

population greater than 1,000,000 and confidence level of 95%, the sample size should be 384. Another possible way of determining the required sample size is by using the Slovin's Formula. Tejada and Punzalan (2012) indicated that Slovin's formula is applicable when the confidence coefficient is 95% and the population proportion is suspected to be close to 0.5. The formula is given by:

$n = \frac{N}{1+Ne^2}$ Where, n= required sample size, N = Population size and e = Margin of error

Table 3.6-1 Sample size calculation result based on two approaches

Formula (Method)	Sample size with 95% level of confidence, 0.05 margin of error and population proportion assumed to be 0.5
Krejcie and Morgan	384
Slovin's formula	400

Source: *Krejcie and Morgan (1970)*

As shown in Table 3.7.1, two alternative methods are used to determine the sample size for this study. Many researchers suggest for a sample size to be determined with confidence level of 95% and margin error of 5% (The Research Advisors, 2006). The Research Advisors (2006) also indicated that, with 95% confidence level and 5% margin error, the sample size for a population between 2.5 million and 10 million should be 384. Furthermore, Crouch and Housden (2003, p. 166), also suggested that the minimum sample sizes for quantitative consumer surveys should be between 300 to 500 respondents. Therefore based on these justifications, the researcher has decided for the sample size of this study to be 400. Accordingly, sample size of 440 (including 10% contingency), is proportionally distributed to the selected branches based on their customer number.

Table 3.6-2 Sample Size distribution

District	Branches	Total Number of Account (As at June 30, 2015)	Distributed
East Addis Ababa District	Airport	23,316	15
	Andinet	48,952	31
	Bole Medhanialem	19,887	13
	Meskel Square	34,833	22
District Total		**126,988**	**81**
North Addis Ababa District	Arada Giorgis	87,151	56
	Addis Ababa	138,148	88
	Yohannes	16,299	10
	Mahtama Ghandi	23,196	14
District Total		**264,794**	**168**
South Addis Ababa District	Sengatera	48,665	31
	Lideta	62,200	39
	Shell Depo	13,125	10
	Mexico	21,629	15
District Total		**145,619**	**95**
West Addis Ababa District	Mehal Gebeya	44,206	28
	Addis Ketema	55,677	35
	Keranio	19,340	12
	Paulos	32,630	21
District Total		**151,853**	**96**
Total of the four districts		**689,254**	**440**

Source: *Commercial Bank of Ethiopia (2015a)*

Table 3.6-3: Systematic Sampling for selecting respondents

District	Branches	Average number of customer served within a half day (A)	Allocated Sample size (B)	Systematic Sampling (A÷B)
East Addis Ababa District	Airport	230	15	Every 15th Customer
	Andinet	370	31	Every 12th Customer
	Bole Medhanialem	218	13	Every 17th Customer
	Meskel Square	222	22	Every 10th Customer
North Addis Ababa District	Arada Giorgis	354	56	Every 6th Customer
	Addis Ababa	952	88	Every 11th Customer
	Yohannes	154	10	Every 15th Customer
	Mahtama Ghandi	214	14	Every 15th Customer
South Addis Ababa District	Sengatera	388	31	Every 13th Customer
	Lideta	422	39	Every 11th Customer
	Shell Depo	126	10	Every 13th Customer
	Mexico	320	15	Every 21st Customer
West Addis Ababa District	Mehal Gebeya	432	28	Every 15th Customer
	Addis Ketema	462	35	Every 13th Customer
	Keranio	130	12	Every 11th Customer
	Paulos	370	21	Every 18th Customer

Source: *Survey Result (2016)*

3.7 Data Collection Instrument

There are two types of data collection methods – primary and secondary. Primary data collection methods include observation, experimentation, Surveys and interviews; on the other hand Secondary data is data collected by someone else and are available in the from books, libraries and the web (Adams et al., 2007).

Since this study employed a survey design, primary data is collected through structured questionnaires and the questionnaire is prepared based on the dependent and independent variables of this study. As indicated under table ____, The questionnaire items are adapted from the work of various researchers and modified to make them fit to the context of this study.

As shown in Appendix A and B the questioner has two sections: the first section addresses the profile of the respondent and ECPTs usage behavior. The second part asks about the perception of respondents about the hypothesized independent variables – Perceived

usefulness, Perceived Ease of Use, Perceived Risk, Social Influences, Marketing Communications and Compatibility. Five-point Likert scale was used for the statement of the second section of the questionnaire ranging from "strongly disagree" to “strongly agree".

The primary data is collected, by making use of systematic sampling method (Table 3.6.3), when customers come to the selected branches to get banking services.

Table 3.7-1 Source of questionnaire Items

Constructs	Number of Items	Source of Questionnaire Items
Perceived Usefulness (PU)	6	(Davis, 1993; Safeena et al., 2011; Tollossa, 2012)
Perceived Ease of Use (PEOU)	4	(Davis, 1993; Moore & Benbasat, 2001)
Perceived Risk (PR)	6	(Featherman & Pavlou, 2003; M. Lee, 2008)
Social Influence (SI)	4	(Alagheband, 2006; Venkatesh et al., 2003)
Marketing Communication (MC)	5	(Du, 2011; Safeena et al., 2011; Zheng, 2010)
Compatibility (CP)	4	(Alagheband, 2006; Moore & Benbasat, 2001)
ECPT Adoption	1	Researcher’s own definition
	1	Researcher’s own definition
	1	Researcher’s own definition

Source: *Survey Result (2016)*

3.8 Validity and Reliability of the Instrument

3.8.1 Pre-testing Procedures

A pre-test is necessary to assess the reliability and validity of a questionnaire (Du, 2011). In this study, a random sample of 50 CBE customers is drawn to check the clarity of the question and run reliability analysis. The Respondents were asked to make comments and corrections are made on grammatical and clarity problems of the questionnaire.

3.8.2 Validity

Validity is the strength of conclusions, inferences or propositions. It involves the degree to which one is measuring what is supposed to be measured, more simply, validity is the accuracy of measurement (Adams et al., 2007).

There are four types of validity commonly examined in research undertakings and these are Internal, External, Construct and Conclusion Validity.

Internal validity refers to the approximate truth about inferences regarding cause-effect or causal relationships (Trochim, 2000) thus, internal validity is only relevant in studies that try to establish a causal relationship. External validity refers to the ability to generalize the results of the study to other settings (Adams et al., 2007). Construct validity refers to the degree to which inferences can legitimately be made from the operationalizations in the study to the theoretical constructs on which those operationalizations were based (Trochim, 2000).

In order to ensure the validity of this study and data collection instrument, the following actions are taken:

1. To assure construct validity, questionnaire items are adapted from previous related studies.
2. A pilot survey was conducted on randomly selected 50 customers by making use of the questionnaire developed for this study in order to ensure that the questionnaire is appropriate and statements are generally understandable.
3. The questionnaire is translated to Amharic by professional translators.

3.8.3 Scale Reliability

The reliability of a measure indicates the extent to which it is without bias and hence ensures consistent measurement across time and across the various items in the instrument (Sekaran, 2006).

As Trochim (2000, pp. 94–100) discussed it, there are four general classes of reliability estimates, each of which estimates reliability in a different way. These are: - Inter-Rater or Inter-Observer Reliability, Test-Retest Reliability, Parallel-Forms Reliability and Internal Consistency Reliability.

According to Trochim (2000), among the four estimates of reliability, Internal consistency reliability is the widely used one. Internal Consistency Reliability used to assess the consistency of results across items within a test. In internal consistency reliability estimation, single measurement instrument administered to a group of people on one occasion to estimate reliability. In effect the reliability of the instrument can be judged by estimating how well the items that reflect the same construct yield similar results (Trochim, 2000, p. 97).

There are variety of internal consistency measures that can be used including average Inter-item Correlation, Average Item total Correlation, Split-Half Reliability and Cronbach's Alpha (Trochim, 2000). Cronbach's alpha is the most common measure of internal consistency. It is most commonly used on multiple Likert-scale questions in a survey questionnaire to determine if the scale is reliable (Lund Research Ltd, 2007).

In Interpreting Cronbach’s alpha, the closer the coefficient gets to 1.0, the better. Coefficients less than 0.60 are considered poor and those in the 0.70 range, acceptable, and those over 0.80 good (Sekaran, 2006, p. 311).

In this study reliability analysis is carried out on each item of the six independent variables by making use of the 50 pilot survey samples. Accordingly, as presented on table 3.10.1, the overall scale reliability of this study is 0.906 and individual items have a value greater than 0.7 which is acceptable according to the standard indicated by Sekaran (2006).

Table 3.8-1 Reliability Analyses of Variables

Variables	Number of Items	Cronbach's Alpha
Perceived Usefulness	6	.851
Perceived Ease of Use	4	.897
Perceived Risk	6	.748
Social Influence	4	.722
Marketing Communication	5	.852
Compatibility	4	.737
Overall Scale Reliability	**29**	**.906**

Source: *Survey Result (2016)*

3.9 Methods of Data Analysis

Data Analysis, particularly in case of survey or experimental design, involves estimating the values of unknown parameters of the population and testing of hypotheses for drawing inference. Analysis may be categorized as descriptive analysis and inferential analysis (statistical analysis). Descriptive analysis is largely the study and description of one variable (Kothari, 2004). Inferential analysis is used to analyze the relationship between two or more variables and to assess how the independent variables explain the dependent variable (Alebachew, 2015). Unlike descriptive analysis, with inferential statistics, conclusions to be reached extend beyond the immediate data alone (Trochim, 2000).

3.9.1 Logistic Regression

Logistic regression is multiple regression but with an outcome variable that is a categorical variable and predictor variables that are continuous or categorical (Field, 2009). Ordinary multiple regression is used to examine influences on a continuous variable (Adams et al., 2007). Logistic regression does not make assumptions concerning the distribution of scores for the predictor variables; however, it is sensitive to outliers and high correlations (Multicollinearity) among the predictor variables (Pallant, 2005). When the dependent variable have only two categories ,binary logistic regression is used and when the dependent variable has more than two categories, multinomial logistic regression is used (Field, 2009).

In this study the dependent variable (ECPT adoption) was measured with nominal scale and has there mutually exclusive categories – non-adopters, partial adopters and full adopters. On the other hand the independent variables (Perceived usefulness, Perceived Ease of Use, Perceived Risk, Social Influences, Marketing Communications and Compatibility) are

measured with five-point Likert scale. Therefore by taking the characteristics of the dependent and independent variables of this study, multinomial logistic regression was used to analyze the variables.

To sum up, in this study both descriptive and inferential analysis were conducted and the data analyses was carried out in the following manner:

1. The items/variables on the questionnaire were coded and the collected data was inserted in to Statistical Package for Social Sciences (SPSS) software version 20.0.
2. Descriptive statistic analysis was conducted by making use of frequency distribution, measure of dispersion, measure of central tendency and cross-tabulation.
3. Multinomial Logistic regression analysis was employed to determine the extent of independent variables in explaining the variation among ECPTs' adoption.
4. Chi-square test was used to check whether education level, age and income have association with the Decision to adopt ECPT as the literature suggest.

3.9.2 The Model

The logistic regression from which the probability of Y is predicted is given by:

$$P(Y) = \frac{1}{1+e^{-(b_0+b_1X_{1i+}\ b_2X_{2i+}\ldots b_nX_{ni})}}$$

Therefore the model for this study is given by:

$$\text{P (Y)} = \frac{1}{1+e^{-(b_0+b_1X_{1+}b_2X_{2+}b_3X_{3+}b_4X_{4+}b_5X_{5+}b_6X_{6})}}$$

Where,

P(Y) = the occurrence probability of Non-adoption, Partial Adoption and Full adoption

b_0 = is the Y intercept or the constant

b_1 = beta weigh of Perceived Usefulness

X_1 = Perceived Usefulness

b_2 = beta weigh of Perceived Ease of Use

X_2 = Perceived Ease of Use

b_3 = beta weigh of Perceived Risk

X_3 = Perceived Risk

b_4 = beta weigh of Social influences

X_4 = Social influences

b_5 = beta weigh of Marketing Communication influences

X_5 = Marketing Communication influences

b_6 = beta weigh of Compatibility

X_6 = Compatibility

3.9.3 Summated Scale

Summing the answers to questions with Likert scale responses is the usual practice(Vogt, Vogt, Gardner, & Haeffele, 2014). According to Vogt (2014), It is possible to construct Summated scales by adding together the numerical codes of answers. The total or the average score of the variables is used as a replacement variable (Hair, Black, Babin, & Anderson, 2010). According to Hair et al (2010), summated scales provide two specific benefits. First, it provides a means of overcoming the measurement error by using multiple variables to reduce the reliance on a single response. Second, summated scales have the ability to represent the multiple aspect of a concept in a single measure. In this study, summated scales are created by adding items under each of the six independent variables (Perceived Usefulness, Perceived Ease of Use, Perceived Risk, Social Influences, Marketing Communication Influences and Compatibility). According to Hair et al (2010), there are four issues basic to the construction of any summated scale and these are conceptual definition, validity, dimensionality and reliability.

3.9.3.1 Conceptual Definition

The conceptual definition specifies the theoretical basis for the summated scale by defining the concept being represented in terms applicable to the research context (Hair et al., 2010). In this study, the conceptual definitions are provided under Table 3.9.1.

3.9.3.2 Content validity

Content validity is the assessment of the correspondence of the individual items and the concept (Hair et al., 2010). According to Hair et al (2010), content validity can be checked by ratings of expert judges, pretests with subpopulations or other mean. The objective is to ensure that the selection of scale items extends past just empirical issues to also include theoretical and practical considerations (Hair et al., 2010). As indicated under Appendix C, content validity is ensured for this study. Furthermore, all variables (items) were inspected by the researcher and other experts from the E-payment department of the CBE for clarity and proper contextualization.

3.9.3.3 Dimensionality

An underlying assumption and essential requirement for creating a summated scale is that the items are unidirectional, meaning that they are strongly associated with each other and represent a single concept (Hair et al., 2010). On way to check dimensionality is using factor analyses. Field (2009), indicated that the significance of a factor loading will depend on the sample size. According to Field (2009), for a sample size of 50 a loading of 0.722 can be considered significant, for 100 the loading should be greater than 0.512, for 200 it should be greater than 0.364, for 300 it should be greater than 0.298, for 600 it should be greater than 0.21, and for 1000 it should be greater than 0.162.

In this study, as indicated under Appendix D3, except for one item under Perceived Usefulness, all meet the requirement stated by (Field, 2009).

3.9.3.4 Reliability

As indicated under section 3.10.3, reliability of the instrument was checked by making use of Cronbach's Alpha. And all items meet the standard.

3.10 Ethical Considerations

As suggested by (Sekaran, 2006; Trochim, 2000), the researcher has ensured the strict adherence of the following ethical conducts:

- Respondents take part in the research voluntarily and data was collected based on the consent of the individual.
- The purpose of the research was clearly explained to respondents
- Information provided by respondents was treated with strict confidentiality and the researcher ensured that participants will remain anonymous throughout the study.
- There was no misrepresentation or distortion of the actual data collected from respondents.

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS AND INTERPRETATION

4.1 Introduction

This chapter presents the results of the data analysis according to the research methodology discussed in chapter three. In this chapter, the collected data from the customers of the Commercial Bank of Ethiopia are analyzed in order to realize the objective of this study. Accordingly, descriptive analysis of respondents' profile, ECPT usage behavior, descriptive analysis of the six variables, correlation analysis and inferential analysis by making use of multinomial logistic regression is presented and discussed. At last, a detailed discussion regarding to the six research hypotheses, in light of similar studies, is also presented. Finally, summary of major findings are presented.

4.1.1 Sample and Response Rate

The sample size of this study was 400, however, for contingency purpose, 440 questionnaires were distributed to the customers of the Commercial bank of Ethiopia and 410 were returned. After checking the returned questionnaires, 396 questionnaires, which are 99% of the sample size, found to be valid for statistical analysis.

4.1.2 Missing Data Management

While collecting data from respondents, it is common to have missing data for various reasons (Field, 2009). In this study, if a questionnaire, within an item, has more than one missing value in the second part of the questionnaire, such questionnaire considered as incomplete and rejected from further analysis. In this study, questionnaires that have more than one missing value, in the second part of the questionnaire, are 14.

Because of low percentages of missing values considered, the primary procedure used in this study was to replace missing values with mean of other valid responses within the item. According to Pallant (2005), mean substitution is one way of replacing missing values if there are few missing values.

4.2 Descriptive Analysis

In the questionnaire (see Appendix A and B), section I, was designed to capture some basic demographic details of the respondents involved in this study. And section II was designed to capture data on Perceived Usefulness, Perceived Ease of Use, Perceived Risk, Social Influence, Marketing Communication Influences and Compatibility.

4.2.1 Analysis on Respondents' Profile

Before starting the analyses of the data, some background information about respondents such as demographic data, is useful to provide complete information for the readers.

From the total of valid responses, male customers constitute 231 (58.3%) of the respondents while female respondents constitute 165 (41.7%). Respondents within the age range of 18-29 account for 59.8% of the total respondents followed by the age group 30-39 which comprise 26.8% of valid responses. The survey result shows that 225 (56.8%) of the respondents have first degree and 73 (18%) are college diploma holders. The study also shows that 52.4% of the respondents are self-employed and 23.5% are employed in the private sector. With regards to monthly income, 28.2% of the respondents are within the income range of 5,000 – 9,999 and the income ranges 1,000 – 2,999 and 3,000 – 4,999 each constitute of 24.3% of the total valid responses. Table 4.2.1 summarizes the profile of the respondents.

Table 4.2-1: Respondents' Profile

Questions	Response Alternatives	Count	Percent
Sex of the Respondents	Male	231	58.3%
	Female	165	41.7%
Age of the Respondents	Below 18	0	0.0%
	Between 18 – 29	232	59.8%
	Between 30 – 39	104	26.8%
	Between 40 – 50	33	8.5%
	Between 51 – 64	15	3.9%
	Above 65	4	1.0%
	Missing	8	2.0%
Education level of the Respondents	No Formal education	4	1.0%
	Primary school completed	13	3.3%
	Secondary School completed	49	12.4%
	College Diploma	73	18.4%
	First degree	225	56.8%
	Masters degree and above	32	8.1%
Occupation of the Respondents	No job (Job seeker)	25	6.3%
	Government employed	59	14.9%
	Private sector employed	93	23.5%
	Self-employed	207	52.4%
	Other	11	2.8%
	Missing	1	0%.3
Monthly Income of the Respondents	Below 1,000	19	4.9%
	1,000- 2,999	94	24.3%
	3,000-4,999	94	24.3%
	5,000-9,999	109	28.2%
	10,000-19,999	43	11.1%
	More than 20, 000	28	7.2%
	Missing	9	2.3%

Source: *Survey Result (2016)*

4.2.2 ECPT Usage Behavior

From the total respondents, 332 (83.8%) have indicated that they have electronic card and 64 (16.2%) indicated that they do not have electronic card. On the other hand, 97 (24.25%) have indicated that they have never used CBE's electronic card and 135 (34.1%) have indicated that they use CBE's electronic card almost every time for their banking needs. Out of the 332

respondents, who have indicated that they have electronic card, 33 (9.94%) have never used their electronic card. The details are summarized under Table 4.2.2 and Table 4.2.2

Table 4.2-2: Respondents' Electronic Card Banking Usage Behavior

Questions	Response options	Count	Column N %
Do you have electronic card (ATM card)?	Yes	332	83.8%
	No	64	16.2%
How frequently do you use CBE's ATM card for your banking needs?	Never	97	24.5%
	Almost never	42	10.6%
	Occasionally	122	30.8%
	Almost every time	135	34.1%

Source: *Survey Result (2016)*

Table 4.2-3: Cross-Tabulation (Having Electronic Card vs. Usage Frequency)

		How frequently do you use CBE's ATM card for your banking needs?				Total
		Never	Almost never	Occasionally	Almost every time	
Do you have electronic card (ATM card)?	**Yes**	33	42	122	135	332
	No	64	0	0	0	64
Total		**97**	**42**	**122**	**135**	**396**

Source: *Survey Result (2016)*

4.2.3 Descriptive Analysis of independent variables

The mean scores have been computed for all items under the six independent variables of this study. Respondents were asked to rate their perception on a five-point Likert type scale ranging from strongly disagree to strongly agree and 1 being strongly disagree and 5 strongly agree. The descriptive analysis result is summarized as follows (for the detail see Appendix D1).

- The mean scores of items under perceived usefulness range from 3.74 to 4.28 which indicate that customers agreed that ECPTs are useful.
- The mean scores of items under perceived ease of use range from 2.81 to 3.30 which indicate that, on average, customers agreed or perceive that ECPTs are easy to use.
- The mean scores of items under perceived risk from 2.71 to 2.94 which indicate that, on average, customers disagree or have no opinion with regards to the argument that ECPTs expose to various risks.

- The mean scores of items under Social influence range from 2.34 to 3.36 which indicate that, on average, customers are neutral or have no opinion with respect to social influence and ECPTs adoption.
- The mean scores of items under Marketing Communication Influences range from 3.07 to 3.49 which indicate that, on average, customers agreed or perceive that their adoption Decision is influenced by marketing communication efforts of the CBE.
- The mean scores of items under compatibility range from 3.31 to 3.67 which indicate that, on average, customers agreed or perceive that ECPTs are compatible with them and their situation.

4.3 Association between ECPTs Adoption and Demographic Factors

Chi-Square test is conducted to check the association between Age, Education level, Income, Sex and ECPTs' Adoption. The summary is presented under Table 4.3.1.

Table 4.3-1 Chi-Square Test between Age, Education level, Income, Sex and Adoption

Comparison		Value	df	Asymp. Sig. (2-sided)
Age and ECPTs' adoption	Pearson Chi-Square	15.694[a]	8	.047
	Likelihood Ratio	17.433	8	.026
	Linear-by-Linear Association	2.856	1	.091
	N of Valid Cases	388		
Education level and ECPTs' adoption	Pearson Chi-Square	53.102[a]	10	.000
	Likelihood Ratio	53.383	10	.000
	Linear-by-Linear Association	41.509	1	.000
	N of Valid Cases	396		
Income and ECPTs' adoptionDecision	Pearson Chi-Square	52.204[a]	10	.000
	Likelihood Ratio	56.590	10	.000
	Linear-by-Linear Association	33.868	1	.000
	N of Valid Cases	387		
Sex and ECPTs' adoption	Pearson Chi-Square	4.091[a]	2	.129
	Likelihood Ratio	4.162	2	.125
	Linear-by-Linear Association	2.044	1	.153
	N of Valid Cases	396		

Source: *Survey Result (2016)*

4.3.1 Age and Adoption Decision

At 95% confidence interval, the significance value (.047) is less than 0.05. Hence it can be concluded that there is a significant relationship between age and ECPTs adoption (Table 4.3.1).

4.3.2 Education level and Adoption Decision

At 95% confidence interval, the significance value (.000) is less than 0.05. Hence it can be concluded that there is a significant relationship between education level and ECPTs adoption (Table 4.3.1).

4.3.3 Income and Adoption Decision

At 95% confidence interval, the significance value (.000) is less than 0.05. Hence it can be concluded that there is a significant relationship between income and ECPTs adoption (Table 4.3.1).

4.3.4 Sex and Adoption Decision

At 95% confidence interval, the significance value (.129) is greater than 0.05. Hence it can be concluded that there is no significant relationship between sex and ECPTs adoption (Table 4.3.1).

4.4 Inferential Analysis

Unlike multiple linear regression, where the value of the dependent variable is predicted from the independent variables, logistic regression predict the occurrence probability of the dependent variable from the independent variables (Field, 2009). Before, proceeding to the main analysis, assumptions of logistic regression have to be tested.

4.4.1 Assumption Testing for Logistic Regression

As compared to normal regression, logistic regression is less prone to assumptions. Field (2009) indicated that logistic regression can only be used if it fulfils six assumptions or conditions and these are:

1. The dependent variable should be measured at the nominal level.
2. There should be one or more independent variables which are continuous, ordinal or nominal.
3. There should be independence of observations and the dependent variable should have mutually exclusive and exhaustive categories.
4. There should be no multicollinearity. Multicollinearity occurs when you have two or more independent variables that are highly correlated with each other.
5. There needs to be a linear relationship between any continuous independent variables and the logit transformation of the dependent variable.
6. There should be no outliers, high leverage values or highly influential points.

In this study the dependent variable measure with mutually exclusive nominal scales, there are six independent variables and since the independent variables are measure with Likert scale, outliers are not expected. The remaining assumptions, Linearity, Independence of errors and Multicollinearity, are tested in subsequent sections.

4.4.1.1 Linearity

The assumption of linearity in logistic regression, assumes that there is a linear relationship between any continuous predictors and the outcome variable (Field, 2009). The scatter plot of standardized residuals versus the fitted values *(*see Appendix D4*)* for the regression models were visually inspected. The

plots did not show any systematic pattern, thus providing support for the specified linear relationship.

4.4.1.2 Independence of Errors

This assumption refers to that errors in regression are independent; this assumption is likely to be met if the Durbin–Watson statistic is close to 2 and between 1 and 3 (Field, 2009). The Durbin–Watson statistic test for this study found to be 1.955 which indicates the assumption of independence of errors is met (see Appendix D4).

4.4.1.3 Multicollinearity

This assumption refers to that predictors should not be too highly correlated. As with ordinary regression, this assumption can be checked with tolerance and VIF statistics (Field, 2009). According to Landau and Everitt (2004), Variance Inflation Factors (VIFs) above 10 or Tolerances below 0.1 are seen as a cause of concern. In this study Variance Inflation Factors (VIFs) are below 10 and Tolerances are greater than 0.1 (Table 4.4.1). Furthermore, the correlation (Pearson) among independent variables is not strong (see Appendix D2).

Table 4.4-1: Multicollinearity Test

Variables	Collinearity Statistics	
	Tolerance	VIF
Perceived Usefulness	.743	1.345
Perceived Ease of Use	.510	1.960
Perceived Risk	.602	1.662
Social Influences	.888	1.126
Marketing Communication Influences	.469	2.133
Compatibility	.574	1.743

Source: *Survey Result (2016)*

4.4.2 Multinomial Logistic Regression Analysis

Logistic regression is an increasingly popular statistical technique used to model the probability of binary or multinomial outcomes. Logistic regression analyses yield very powerful insights in to what variables are more or less likely to predict event outcome in a population of interest. Logistic regression also shows the extent to which changes in the values of the attributes may increase or decrease the predicted probability of event outcome (Constantin, 2015; Peng, Lee, & Ingersoll, 2002).

4.4.2.1 Fitness and accuracy of the model

4.4.2.1.1 Case Processing Summary

The Case Processing Summary (Table 4.4.2) simply shows how many cases or observations were in each category of the outcome variable (as well as their percentages). It also shows if there was any missing data. In this study Non Adopters account for 24.5%, Partial-Adopters 47.5% and full adopters 28%.

Table 4.4-2: Case Processing Summary

		N	Marginal Percentage
Adoption Decision	**Non Adoption**	97	24.5%
	Partial Adoption	188	47.5%
	Full Adoption	111	28.0%
Valid		396	100.0%
Missing		0	
Total		396	

Source: *Survey Result (2016)*

4.4.2.1.2 Model Fitting Information

The model fitting information (Table 4.4.3) produces a table that compares the model to the baseline or the model with only the intercept term in it and no predictor variables and this table can be useful to compare whether the model had improved (from the baseline) as a result of entering the predictors (Field, 2009).

As it can be seen from Table 4.4.3, the model fit is significant i.e. χ^2 (12) = 542.309, $p < .000$, which indicates that full model predicts significantly better. On the other hand the Goodness-of-Fit, (Table 4.4.4), where lack of significance is interpreted as an indicator of good fit, it can be seen that both Pearson and

Deviance statistic tests are insignificant. Further looking at the classification accuracy of the model, or how well it predicts group membership (Table 4.4.5), the model is 84.8% correct and classification accuracy above 50% for a model is suggested to be acceptable (Kahn, 2006).

Table 4.4-3: Model Fitting Information

Model	Model Fitting Criteria	Likelihood Ratio Tests		
	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	835.368			
Final	293.060	542.309	12	.000

Source: *Survey Result (2016)*

Table 4.4-4: Goodness-of-Fit

	Chi-Square	df	Sig.
Pearson	664.797	776	.998
Deviance	293.060	776	1.000

Source: *Survey Result (2016)*

Table 4.4-5: Prediction Accuracy of the Model (Classification of cases)

Observed	Predicted			
	Non Adoption	Partial Adoption	Full Adoption	Percent Correct
Non Adoption	83	14	0	85.6%
Partial Adoption	12	160	16	85.1%
Full Adoption	0	18	93	83.8%
Overall Percentage	24.0%	48.5%	27.5%	84.8%

Source: *Survey Result (2016)*

4.4.2.1.3 Explanatory Power of the Model

Multinomial logistic regression computes measures to estimate the strength of the relationship. SPSS supports three R^2-like measures – Cox and Snell's, Nagelkerke's, and McFadden's. These measures basically indicate the amount of variation in the dependent variable caused by the independent variables. Table 4.4.6 reveals that the values of Cox and Snell's, Nagelkerke's, and McFadden's pseudo R-Square are 0.746, 0.849 and 0.649 respectively; suggesting that between

64.9% percent and 84.9% percent of the variability on the dependent variable is explained by the set of variables used in the model of this study which indicates that the model is good in explaining the variability on the dependent variable.

Table 4.4-6: Pseudo R-Square

Cox and Snell	Nagelkerke	McFadden
0.746	0.849	0.649

Source: *Survey Result (2016)*

4.4.3 Hypotheses Testing

In logistic regression hypotheses can be tested using Likelihood Ratio test or Wald test. The statistics in the Likelihood Ratio Tests (Table 4.4.7) are the same types as those reported for the null and full models in the Model Fitting Information (Table 4.4.3). Here however, each element of the model is being compared to the full model to determine if each independent variable should be included in the full model or it is to check whether each element (predictor) contribute meaningfully to the full effect.

As it can be seen from Table 4.4.7, Multinomial logistic regression was performed to model the relationship between the predictors and membership in the three groups (Non-Adopters, Partial-Adopters and Full-Adopters). Statistical significance of 0.05 was employed for all tests. Accordingly, Perceived Usefulness (.000), Perceived Ease of Use (.000), Perceived Risk (.000), Marketing Communication Influences (.000) and Compatibility (.026) all have a *p*-value less than 0.05. However, social influence have a *p*-value greater than 0.05 (.651). Therefore, except the hypothesis made on Social Influence, all hypothesis are confirmed.

The overall equation of the model is stated as follows:

$$\mathbf{P\ (Y)} = \frac{\mathbf{1}}{\mathbf{1} + \boldsymbol{e}^{-}(\mathbf{296.651} + \mathbf{336.04}\boldsymbol{X}_{\mathbf{1+}}\mathbf{452.86}\boldsymbol{X}_{\mathbf{2+}}\mathbf{378.56}\boldsymbol{X}_{\mathbf{3+}}\mathbf{351.28}\boldsymbol{X}_{\mathbf{5+}}\mathbf{300.39}\boldsymbol{X}_{\mathbf{6}})}$$

Table 4.4-7: Likelihood Ratio Tests

Effect	Model Fitting Criteria	Likelihood Ratio Tests		
	-2 Log Likelihood of Reduced Model	Chi-Square	df	Sig.
Intercept	296.651	3.592	2	.166
Perceived Usefulness	336.038	42.979	2	.000
Perceived Ease Of Use	452.857	159.797	2	.000
Perceived Risk	378.562	85.502	2	.000
Social Influence	293.917	.858	2	.651
Marketing Communication Influences	351.282	58.223	2	.000
Compatibility	300.394	7.334	2	.026

Source: *Survey Result (2016)*

Table 4.4-8: Summary of Hypotheses Test Result

Hypotheses	Decision	Reason for the Decision
H1: Perceived Usefulness has effect on Electronic Card Payment Technologies' adoption of CBE's customers in Addis Ababa	**Confirmed**	α =0.05 sig =.000
H2: Perceived Ease of Use has effect on Electronic Card Payment Technologies' adoption of CBE's customers in Addis Ababa	**Confirmed**	α =0.05 sig =.000
H3: Perceived Risk has effect on Electronic Card Payment Technologies' adoption of CBE's customers in Addis Ababa	**Confirmed**	α =0.05 sig =.000
H4: Social Influences have effect on Electronic Card Payment Technologies' adoption of CBE's customers in Addis Ababa	**Not-Confirmed**	α =0.05 sig =.651
H5: Marketing Communication Influences has effect on Electronic Card Payment Technologies' adoption of CBE's customers in Addis Ababa	**Confirmed**	α =0.05 sig =.000
H6: Compatibility has effect on Electronic Card Payment Technologies' adoption of CBE's customers in Addis Ababa	**Confirmed**	α =0.05 sig =.026

Source: *Survey Result (2016)*

4.4.4 Parameter Estimates

The Parameter Estimates table (Table 4.4.9 and Table 4.4.10) shows the logistic coefficient (B) for each predictor variable for each alternative category of the outcome variable and parameters with significant negative coefficients decrease the likelihood of that response category with respect to the reference category; Parameters with positive coefficients increase the likelihood of that response category (Starkweather, 2014).

On the other hand, Wald statistic shows whether the B coefficient for that predictor is significantly different from zero. If the coefficient is significantly different from zero then it is possible to assume that the predictor is making a significant contribution to the prediction of the outcome (Field, 2009).

4.4.4.1 Parameter Estimates by Making Non-Adoption Reference Category

When partial adoption is compared with non adoption (Table 4.4.9), the following can be extracted:

- As Perceived Usefulness increases by a unit, the odds of becoming partial adopter, as compared to non-adoption, will decrease by 26.5% (1-0.735).
- As Perceived Ease of Use increases by a unit, the odds of becoming partial adopter, as compared to non-adoption, will increase by 1.3 times.
- As Perceived Risk increases by a unit, the odds of becoming partial adopter, as compared to non-adoption, will decrease by 27.1% (1-0.729).
- As compared with non-adoption, a unit increase on Social Influence has no significant impact on partial adoption.
- As Marketing Communication Influences increases by a unit, the odds of becoming partial adopter, as compared to non-adoption, will increase by 1.69 times.
- As compared with non-adoption, a unit increase on compatibility has no significant impact on partial-adoption.
- Regarding the Wald statistics, except for Social Influence and Compatibility, all are relatively far from zero. And the standard errors are less than 2

Similarly when full-adoption is compared with non adoption (Table 4.4.9), the following can be extracted:

- As Perceived Usefulness increases by a unit, the odds of becoming full adopter, as compared to non-adoption, will decrease by 45.1% (1-0.549).
- As Perceived Ease of Use increases by a unit, the odds of becoming full-adopter, as compared to non-adoption, will increase by 3.43 times.
- As Perceived Risk increases by a unit, the odds of becoming full adopter, as compared to non-adoption, will decrease by 46.6% (1-0.534).
- As compared with non-adoption, a unit increase on Social Influence has no significant impact on full- adoption.
- As Marketing Communication Influences increases by a unit, the odds of becoming full adopter, as compared to non-adoption, will increase by 1.64 times.
- As compared with non-adoption, a unit increase on compatibility has no significant impact on full- adoption.
- Regarding the Wald statistics, except for Social Influence, all are relatively far from zero.
- The standard errors are less than 2. A standard error larger than 2.0 indicates a problem (Şeker, 2009).

Table 4.4-9: Parameter Estimates by making Non-Adoption Reference Category

Adoption Decision		B	Std. Error	Wald	df	Sig.	Exp(B)
Partial Adoption	Intercept	3.664	2.002	3.349	1	.067	
	Perceived Usefulness	-.308	.075	16.802	1	.000	.735
	Perceived Ease Of Use	.259	.091	8.105	1	.004	1.295
	Perceived Risk	-.316	.058	29.498	1	.000	.729
	Social Influences	.055	.091	.366	1	.545	1.057
	Marketing Communication Influences	.525	.086	37.176	1	.000	1.691
	Compatibility	.111	.077	2.072	1	.150	1.117
Full Adoption	Intercept	3.563	2.787	1.634	1	.201	
	Perceived Usefulness	-.600	.103	34.104	1	.000	.549
	Perceived Ease Of Use	1.233	.155	62.913	1	.000	3.430
	Perceived Risk	-.627	.082	59.184	1	.000	.534
	Social Influences	.110	.120	.843	1	.359	1.116
	Marketing Communication Influences	.492	.107	20.992	1	.000	1.635
	Compatibility	-.081	.112	.529	1	.467	.922

Source: *Survey Result (2016)*

4.4.4.2 Parameter Estimates by Making Partial-Adoption Reference Category

When non-adoption is compared with partial adoption (Table 4.4.10), the following can be extracted:

- As Perceived Usefulness increases by a unit, the odds of becoming non-adopter, as compared to partial-adoption, will increase by 1.36 times.
- As Perceived Ease of Use increases by a unit, the odds of becoming non-adopter, as compared to partial-adoption, will decrease by 22.8% (1-0.772)
- As Perceived Risk increases by a unit, the odds of becoming non-adopter, as compared to partial-adoption, will increase by 1.37 times.
- As compared with partial-adoption, a unit increase on Social Influence has no significant impact on non- adoption.

- As Marketing Communication Influences increases by a unit, the odds of becoming non-adopter, as compared to partial-adoption, will decrease by 40.9% (1-0.591).
- As compared with partial-adoption, a unit increase on compatibility has no significant impact on non- adoption.
- Regarding the Wald statistics, except for Social Influence and Compatibility, all are relatively far from zero. And the standard errors are less than 2.

On the other hand, when full adoption is compared with partial adoption, the following can be extracted (Table 4.4.10):

- As Perceived Usefulness increases by a unit, the odds of becoming full adopter, as compared to partial-adoption, will decrease by 25.3% (1-0.747).
- As Perceived Ease of Use increases by a unit, the odds of becoming full-adopter, as compared to partial-adoption, will increase by 2.65 times.
- As Perceived Risk increases by a unit, the odds of becoming full adopter, as compared to partial-adoption, will decrease by 26.7% (1-0.733).
- As compared with partial-adoption, a unit increase on Social Influence has no significant impact on full- adoption.
- As compared with partial-adoption, a unit increase on Marketing Communication Influences has no significant impact on full- adoption.
- As Compatibility increases by a unit, the odds of becoming full-adopter, as compared to partial-adoption, will decrease by 17.5% (1-0.825)
- Regarding the Wald statistics, except for Social Influence and Marketing Communication Influences, all are relatively far from zero. And the standard errors are less than 2.

Table 4.4-10: Parameter Estimates by Making Partial-Adoption Reference Category

Adoption Decision		B	Std. Error	Wald	df	Sig.	Exp(B)
Non Adoption	Intercept	-3.664	2.002	3.349	1	.067	
	Perceived Usefulness	.308	.075	16.802	1	.000	1.360
	Perceived Ease Of Use	-.259	.091	8.105	1	.004	.772
	Perceived Risk	.316	.058	29.498	1	.000	1.372
	Social Influences	-.055	.091	.366	1	.545	.946
	Marketing Communication Influences	-.525	.086	37.176	1	.000	.591
	Compatibility	-.111	.077	2.072	1	.150	.895
Full Adoption	Intercept	-.101	1.998	.003	1	.960	
	Perceived Usefulness	-.292	.072	16.327	1	.000	.747
	Perceived Ease Of Use	.974	.129	57.206	1	.000	2.649
	Perceived Risk	-.311	.058	29.141	1	.000	.733
	Social Influences	.055	.081	.460	1	.498	1.057
	Marketing Communication Influences	-.033	.070	.226	1	.634	.967
	Compatibility	-.192	.084	5.249	1	.022	.825

Source: *Survey Result (2016)*

4.5 Discussion of Results

In this section detail discussions are done based on the results of likelihood ratio test and parameter estimates. The empirical findings of this study are compared contrasted with that of previous studies in order to provide a wider perspective of the matter. Furthermore, the results of Chi-Square test on the association between selected demographic factors and adoption Decision are also discussed.

The first hypothesis (H1) states that Perceived Usefulness has effect on Electronic Card Payment Technologies' adoption Decision of CBE's customers in Addis Ababa. The result in the likelihood ratio test (Table 4.4.7) shows that perceived usefulness has significant impact on the adoption Decision of CBE's customers in Addis Ababa. This result, is consistent with the findings of Amin (2010), Ayana (2012), Dehbini et al (2015), Domeher et al (2014), Narteh (2012), Safeena et al (2012), Takele and Sira (2013), Tollossa (2012) and Wahab (2012).

In general perceived usefulness has effect on adoption Decision. However a closer look at the parameter estimates for each adoption Decisions (Non-adoption, partial adoption and full-adoption) reveals that the Decision of partial adopters and full adopters is not significantly influenced by perceived usefulness. As Perceived Usefulness increases by a unit, the odds of becoming partial adopter, as compared to non-adoption, will decrease and as Perceived Usefulness increases by a unit, the odds of becoming full adopter, as compared to non-adoption, will decrease. Therefore, this indicates that non-adopters understand that ECPTs are useful but this perception did not influence them to become partial adopter or full adopter.

The second hypothesis (H2) states that Perceived Ease of Use has effect on Electronic Card Payment Technologies' adoption Decision of CBE's customers in Addis Ababa. The result in the likelihood ratio test (Table 4.4.7) shows that Perceived Ease of Use has significant impact on the adoption Decision of CBE's customers in Addis Ababa. The impact of Perceived Ease of Use, as compare to the other variables, is very significant. This result, is consistent with the findings of Adeoti (2011), Amin (2010), Ayana (2012), Dehbini et al (2015), Eze et al (2011), Featherman and Pavlou (2003), Mulima (2012), Narteh (2012), Nasri and Zarai

(2014), Omotayo and Dahunsi (2015), Safeena et al (2012), Tiamarumilanzi (2013) and Tollossa (2012).

A closer look at the parameter estimates for each adoption Decisions (Non-adoption, partial adoption and full-adoption) reveals that as Perceived Ease of Use increases by a unit, as compared to non-adoption, the chance of becoming partial or full adopter will increase. This indicates that as customers perceive ECPTs are easy to use then it is highly likely that they will either become partial adopters or full adopters. Furthermore, by comparing partial adopters and full adopters, it can be seen that as Perceived Ease of Use increases by a unit, as compared to partial-adoption, then the chance of becoming full adopter will increase.

The third hypothesis (H3) states that Perceived Risk has effect on Electronic Card Payment Technologies' adoption Decision of CBE's customers in Addis Ababa. The result in the likelihood ratio test (Table 4.4.7) shows that Perceived Risk has significant impact on the adoption Decision of CBE's customers in Addis Ababa. The impact of Perceived Risk, as compare to the other variables, next to Perceived Ease of Use, is very significant. This result, is consistent with the findings of Alagheband (2006), Farzianpour et al (2014), Featherman and Pavlou (2003), Im et al (2008), Karma et al (2014), Kurnia et al (2010), Lee (2008), Mulima (2012), Safeena et al (2012), Vazifehdoost et al (2014), Wangari and Willy (2014) and Wong et al (2009).

A closer look at the parameter estimates for each adoption Decisions (Non-adoption, partial adoption and full-adoption) reveals that as Perceived Risk increases by a unit, as compared to non-adoption, the chance of becoming partial or full adopter will decrease. This indicates that as customers perceive ECPTs are risky, then it is highly likely that they will neither become partial adopters nor full adopters. Furthermore, by comparing partial adopters and full adopters, it can be seen that as Perceived Risk increases by a unit, the odds of becoming non-adopter, as compared to partial-adoption, will increase and As Perceived Risk increases by a unit, the odds of becoming full adopter, as compared to partial-adoption, will decrease.

The fourth hypothesis (H4) states that Social Influences has effect on Electronic Card Payment Technologies' adoption Decision of CBE's customers in Addis Ababa. The result in the likelihood ratio test (Table 4.4.7) shows that Social Influence does not have significant impact on the adoption Decision of CBE's customers in Addis Ababa. In other words, Social Influence does not have impact on the Decision of non-adopters, partial adopters and full-adopters. The result is contrary to the findings of Alagheband (2006), Al-Jabri and Sohail (2012), Al-smadi (2012), Domeher et al (2014), Olatokun and Igbinedion (2009), Omotayo and Dahunsi (2015) and Safeena (2011).

The fifth hypothesis (H5) states that Marketing Communication Influences have effect on Electronic Card Payment Technologies' adoption Decision of CBE's customers in Addis Ababa. The result in the likelihood ratio test (Table 4.4.7) shows that Marketing Communication Influences have significant impact on the adoption Decision of CBE's customers in Addis Ababa. The impact of Marketing Communication Influences, next to Perceived Ease of Use and Perceived Risk, is very significant. This result, is consistent with the findings of Chinakidzwa (2014), Clemes et al (2012), Du (2011), Elliott and Fu (2008) and Lichtenstein and Williamson (2006).

In general Marketing Communication Influences have effect on adoption Decision. However a closer look at the parameter estimates for each adoption Decisions (Non-adoption, partial adoption and full-adoption) reveals that as Marketing Communication Influences increase by a unit, as compared to non-adoption, the chance of becoming partial or full adopter will increase. This indicates that if customers are exposed to various effective marketing communication efforts, it is highly likely that they will either become partial adopters or full adopters. On the other hand, by comparing partial adopters and full adopters, it can be seen that a unit increase on Marketing Communication Influences have no significant impact on full- adoption. This means that marketing communication efforts has no significant impact to turn partial adopters to full-adopters.

The sixth hypothesis (H6) states that Compatibility has effect on Electronic Card Payment Technologies' adoption Decision of CBE's customers in Addis Ababa. The result in the likelihood ratio test (Table 4.4.7) shows that Compatibility has significant impact (at α=0.05) on the adoption Decision of CBE's customers in Addis Ababa. This result, is consistent with the findings of Abreha (2015), Alagheband (2006), Al-Jabri and Sohail (2012), Domeher et al (2014), Moore and Benbasat (2001), Mulima (2012) and Olatokun and Igbinedion (2009).

In general Compatibility has effect on adoption Decision. However a closer look at the parameter estimates for each adoption Decisions (Non-adoption, partial adoption and full-adoption) reveals that as compared with non-adoption, a unit increase on compatibility has no significant impact on partial-adoption. Meaning, compatibility of ECPTs has no impact to turn non-adopters to either partial adopters or full adopters. On the other hand, as Compatibility increases by a unit, the odds of becoming full-adopter, as compared to partial-adoption, will decrease. This indicates that compatibility of ECPTs has no impact to turn partial-adopters to full adopters.

The association between selected demographic factors and adoption Decision is also analyzed, as it can be seen in Table from Table 4.3.1. In this study, the association between age and adoption Decision found to be significant which means age affects ECPTs Decision. The association between educational level and adoption Decision found to be significant which means education level affects ECPTs Decision. The association between income and adoption Decision, also, found to be significant which means that the level of income affects ECPTs Decision. On the other hand, the association between sex and adoption Decision found to be insignificant. Meaning, being male or female does not have relationship with ECPTs adoption Decision. The findings on Age, Educational level and income is consistent with the studies of Haq and Khan (2013), Izogo et al (2012), Jin and Devaney (2005), Mohammed (2012) and Tater et al (2011).

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

In this chapter the summary of major findings, conclusion, recommendation, Limitations, and finally suggestions for future research are presented and discussed.

5.2 Summary of Major Findings

The present study analyzes the determinants for customers' to adopt Electronic Card Payment Technologies by using Commercial Bank of Ethiopia as case Company. The study employed both descriptive and inferential analysis. The major findings of the study are summarized as follows:

- Out of the 396 respondents, 24.5% are non-adopters, 47.5% partial adopters and 28% full adopters.
- Out of those respondents who have indicated that they have electronic card, 33 (9.94%) stated that they have never used their card on any of ECPT channels (ATMs or POS terminals).
- It is confirmed that a significant association exists between ECPT adoption Decision and age, educational level and income. However no significant association is found between sex and adoption Decision.
- Except for Social Influences, Perceived Ease of use, Perceived Risk, Marketing Communication Influences, Perceived Usefulness and compatibility have significant effect on Electronic Card Payment Technologies' adoption Decision of CBE's customers in Addis Ababa.
- The results of the parameter estimates for each adoption Decisions revealed the following major findings:
    - As Perceived Usefulness increases by a unit, the chance of becoming partial adopter or full adopter, as compared to non-adoption, will decrease.

- As Perceived Ease of Use increases by a unit, as compared to non-adoption, the chance of becoming partial or full adopter will increase by 1.3 times and 3.43 times respectively. Furthermore, it can be seen that as Perceived Ease of Use increases by a unit, as compared to partial-adoption, then the chance of becoming full adopter will increase by 2.65 times.
- As Perceived Risk increases by a unit, as compared to non-adoption, the chance of becoming partial or full adopter will decrease by 27.1% and 46.6% respectively. And as Perceived Risk increases by a unit, the odds of becoming non-adopter, as compared to partial-adoption, will increase by 1.37 times and As Perceived Risk increases by a unit, the odds of becoming full adopter, as compared to partial-adoption, will decrease by 26.7% .
- Social Influence does not have significant impact on ECPTs adoption Decision.
- As Marketing Communication Influences increase by a unit, as compared to non-adoption, the chance of becoming partial or full adopter will increase by 1.69 times and 1.64 times respectively. As compared with partial adoption, a unit increase on Marketing Communication Influences has no significant impact on full- adoption.
- As compared with non-adoption, a unit increase on compatibility has no significant impact on partial-adoption. On the other hand, as Compatibility increases by a unit, the odds of becoming full-adopter, as compared to partial-adoption, will decrease by 17.5%.

5.3 Conclusion

The objective of this study was to analyze the determinants for customers' Decision to adopt Electronic Card Payment Technologies. Accordingly the study analyzed the effect of Perceived Usefulness, Perceived Ease of Use, Perceived Risk, Social Influences, Marketing Communication Influences and Compatibility on ECPT adoption Decisions – Non-adoption, Partial-adoption and Full-adoption.

The study in general showed that, except for Social Influences, Perceived Ease of use, Perceived Risk, Marketing Communication Influences, Perceived Usefulness and compatibility has effect on Electronic Card Payment Technologies' adoption Decision of CBE's customers in Addis Ababa.

Furthermore, from the parameter estimates it can be concluded as follows:

- Non-adopters understand that ECPTs are useful but this perception did not influence them to become partial adopter or full adopter.
- As customers perceive ECPTs are easy to use then it is highly likely that they will either become partial adopters or full adopters.
- As customers perceive ECPTs are risky, then it is highly likely that they will neither become partial adopters nor full adopters.
- Social Influence does not have impact on the Decision of non-adopters, partial adopters and full-adopters.
- If non-adopters are exposed to various effective marketing communication efforts, it is highly likely that they will either become partial adopters or full adopters. However, marketing communication efforts has no significant impact to turn partial adopters to full-adopters.
- Compatibility of ECPTs has no impact to turn non-adopters to either partial adopters or full adopters. And compatibility of ECPTs has no impact to turn partial-adopters to full adopters.

5.4 Recommendations

The purpose of this study was to identify and analyze the factors that affect customers' Decision to adopt Electronic Card Payment Technologies. Understanding these factors would help banks in general and Commercial Bank of Ethiopia in particular to devise strategies in order to increase the adoption rate of Electronic Card Payment Technologies.

Based on the analysis and findings of this study, the following recommendations are forwarded to Decision makers:

- The major deterrent factor for customers not to use ECPTs is their perception that it is difficult to use. Therefore, customers, particularly non-adopters, should be convinced that ECPTs are easy to use. Branch Staffs, that directly contact customers, should convince customers that ECPTs are easy to use by practically showing them how electronic cards are used on both ATMs and POS-Terminals.
- Branches and the head office should work in collaboration to convince customers, particularly non-adopters and partial adopters, that ECPTs will not expose them to various risks like performance, Financial and security risks. In addition, the bank should work to avoid situations that increase perceived risks. For instance, the bank should, as much as possible, avoid situations where ATMs are out of cash, network failures and malfunctions in the system like refusal of ATMs to deliver cash but debit customers account or the failure of POS terminals to debit customer's account and credit the seller's account.
- By focusing on non-adopters, the bank should aggressively advertise about ECPTs and branches must conduct Awareness creation programs in their surroundings. The bank should also implement more promotional campaigns by targeting specific customer groups and to stimulate ECPTs usage, incentive and reward programs should be incorporated in the promotional campaigns.
- The bank should increase the accessibility of its ATMs and POS terminals. The bank should also enhance its ATMs to support features such as bill payment, local cash deposit and recharging mobile air time.

- The bank should continue working on introducing general purpose prepaid cards, co-branding of gift cards with major traders, like supermarkets, so as to attract and retain their customers.

5.5 Limitations and Suggestion for Further Research

This section is intended to address some of the limitations surrounding this study so they may be eliminated in future researches. The findings of this study are based entirely upon the research conducted in the Addis Ababa city and hence may not be applicable to other areas and regions on accounts of contextual factors. Even though, as Worku (2010) indicated that all e-payment services provided share a number of common characteristics, a different result could be gained if comparative study, on the topic of this study, among selected banks in Ethiopia is conducted. This study is conducted only for ECPTs. Hence, the findings might not be applicable to other E-payment services like Internet Banking and Mobile Banking. This study is conducted from the perspective of customers only. However, a more comprehensive result could be gained if a study, that takes all stakeholders in the ecosystem in to account, is conducted. This study employed cross-sectional data and it is difficult to determine the time series link among variables. As a result the research may result different findings if it is conducted in another time.

Therefore, the researcher recommends the following for future researches:

- A replica of this research can be carried out with longitudinal data and on a wider scale (nation-wide) so that cross-regional similarities and differences can be studied.
- Comparative study on banks with regards to ECPTs adoption or other e-payment services.
- The approach of this paper can be extended to analyze Internet Banking and Mobile Banking by including variables such as culture, trust and awareness.
- A Comprehensive study of the e-payment ecosystem can be conducted by concurrently analyzing the effect of individuals' perception, government regulations, infrastructure and organizational factors.
- The approach of this research can be extended to other technology related products like cell phones and computers.

References

A.Ismail, M., & Osman, M. A. Y. (2012). Factors Influencing the Adoption of E-banking in Sudan: Perceptions of Retail Banking Clients. *Journal of Internet Banking and Commerce*, *17*(3), 1–16.

Abate, D., Tefera, A., Getahun, D., Zewdu, S., Gamo, T., Yilma, Y., & Teka, Y. (2015). *CBE's Customer Satisfaction Survey*. Addis Ababa.

Abdu, B. (2015, May 11). CBE Awards 16 . 4m Br for Supply of 2 , 000 POS Machines to SS Communications. *Addis Fortune*. Retrieved from http://addisfortune.net/articles/cbe-awards-16-4m-br-for-supply-of-2000-pos-machines-to-ss-communications/

Abreha, F. A. (2015). ATM Adoption of Customers in Commercial Bank of Ethiopia (CBE), Mekelle. *Journal of Business Management & Social Sciences Research (JBM&SSR)*, *4*(5), 365–373.

Abubakar, H. S. (2014). Impact of Marketing Communication on Financial Performance of Banks: A Study of First Bank of Nigeria Plc. In *Proceedings of 25th International Business Research Conference*.

Adams, J., Khan, H. T. A., Raeside, R., & White, D. (2007). *Researche Methods for Graduate Business and Social Science Students*. *Zhurnal Eksperimental'noi i Teoreticheskoi Fiziki* (1st ed.). New Delhi: Response Books. Retrieved from http://scholar.google.com/scholar?hl=en&btnG=Search&q=intitle:No+Title#0

Adeoti, O. . (2013). Challenges to the efficient use of point of sale (POS) terminals in Nigeria. *African Journal of Business Management*, *7*(28), 2801–2806. http://doi.org/10.5897/AJBM12.1129

Adeoti, O. ., & Oshotimehin, K. . (2011). Factors Influencing Consumers Adoption of Point of Sale Terminals in Nigeria. *Journal of Emerging Trends in Economics and Management Sciences*, *2*(5), 388–392.

Agbolade, O. K. (2011). Information and Communication Technology and Banks Profitability in Nigeria. *Australian Journal of Business and Management Research*, *1*(4), 102–107.

Ajzen, I. (1991). The theory of Planned Behavior. *Orgnizational Behavior and Human Decision Processes*, *50*, 179–211. http://doi.org/10.1016/0749-5978(91)90020-T

Alagheband, P. (2006). *Adoption of Electronic Banking Services by Iranian Customers*. Lulea University of Technology.

Alebachew, B. (2015). *Factors Affecting the Adoption of Internet Banking Services by Customers in Addis Ababa*. Addis Ababa University.

Aliata, V. L., Odondo, A. J., Aila, F. O., Ojera, P. B., Abong'o, B. E., & Odera, O. (2012). Influence of Promotional Strategies on Banks Performance. *International Journal of Business Humanity and Technology*, *2*(5), 169–178. Retrieved from http://eprints.usq.edu.au/22021

Aliyu, A., Younus, S. M. ., & Tasmin, R. (2012). An Exploratory Study on Adoption of Electronic Banking: Underlying Consumer Behaviour and Critical Success Factors Case of Nigeria. *Business and Management Review*, *2*(1), 1–6.

Al-Jabri, I. M., & Sohail, M. S. (2012). Mobile banking adoption: application of diffusion of innovation theory. *Journal of Electronic Commerce Research*, *13*(4), 379–391.

Al-smadi, M. O. (2012). Factors Affecting Adoption of Electronic Banking: An Analysis of the Perspectives of Banks ' Customers. *International Journal of Business and Social Science*,

3(17), 294–309.
Amin, H. (2010). Factors Affecting the Decisions of Tabung Haji Customers in Malaysia to Use ATM Banking: An Empirical Investigation Hanudin. *Journal of Internet Banking and Commerce*, *15*(2), 1–12.
Angeli, A. De, Coventry, L., & Johnson, G. I. (2005). ATM's Adoption in Developing Countries: Déjà vu or not?
Ayana, G. (2012). *Adoption of Electronic banking system in Ethiopian Banking industry: Barriers and Drivers*. Addis Ababa University.
Belch, G., & Belch, M. (2003). *Advertising and Promotion: An Integrated Marketing Communications Perspective* (6th ed.). The McGraw− Hill. http://doi.org/10.1007/s13398-014-0173-7.2
Berry, L., Kathkeen, S., & Dhruv, G. (2002). Understanding Service Convenience. *Journal of Marketing*, *66*(July), 1–17.
Bunn, M., & Colvin, B. (2011). *Creating a Debit Card Payment Habit*. *Europe Insights*.
BusinessDictionary.com. (2015). debit card. Retrieved December 25, 2015, from http://www.businessdictionary.com/definition/debit-card.html
Cambridge University Press. (2015). Meaning of "EFTPOS" in the English Dictionary. Retrieved December 24, 2015, from http://dictionary.cambridge.org/dictionary/english/iq
Chinakidzwa, M. (2014). Impact of Marketing Communications on Consumer Attitudes towards Internet Banking Adoption by University Students in Zimbabwe - Case of Harare Institute of Technology (HIT). *Journal of Business Administration and Education*, *6*(1), 1–14.
Clemes, M. D., Gan, C., & Du, J. (2012). The factors impacting on customers ' Decisions to adopt Internet banking. *Banks and Bank Systems*, *7*(3), 33–50.
Commercial Bank of Ethiopia. (2012a). *E-Payment Procedures*.
Commercial Bank of Ethiopia. (2012b). E-Payment Services. Retrieved January 28, 2016, from http://www.combanketh.et/EPayment/CardBanking.aspx
Commercial Bank of Ethiopia. (2015a). *2014/15 Annual Performance Report*. Addis Ababa.
Commercial Bank of Ethiopia. (2015b). About CBE. Retrieved May 15, 2016, from http://www.combanketh.et/AboutUs/CompanyProfile.aspx
Commercial Bank of Ethiopia. (2015c). News. Retrieved September 13, 2015, from http://www.combanketh.et/
Constantin, C. (2015). Using the Logistic Regression model in supporting Decisions of establishing marketing strategies. *Bulletin of the Transilvania University of Braşov*, *8*(2).
Creswell, J. W. (2009). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches* (3rd ed.). SAGE Publications, Inc.
Crouch, S., & Housden, M. (2003). *Marketing Research for Managers*. London, UK: Butterworth-Heinemann.
Cudjoe, A. G., Anim, P. A., & Nyanyofio, J. G. N. T. (2015). Determinants of Mobile Banking Adoption in the Ghanaian Banking Industry: A Case of Access Bank Ghana Limited. *Journal of Computer and Communications*, *3*, 1–19.
Davis, F. D. (1989). Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology. *MIS Quarterly*, *13*(3), 319–340.
Davis, F. D. (1993). User Acceptance of Information Technology: System Characteristics, User Perception and Behaviorla Impacts. *Int. J. Man - Machine Studies*, *38*, 475–487.
Dehbini, N., Birjandi, M., & Birjandi, H. (2015). Factors influencing the adoption of electronic

payment cards in urban micro-payments. *Journal of Business Management and Accounts*, *4*(2), 62–70.
Demirguc-Kunt, A., Klapper, L., Singer, D., & Oudheusden, P. Van. (2015). *The Global Findex Database 2014 Measuring Financial Inclusion around the World* (7255).
Domeher, D., Frimpong, J. M., & Appiah, T. (2014). Adoption of financial innovation in the Ghanaian banking industry. *African Review of Economics and Finance*, *6*(2), 88–114.
Du, J. (2011). *An Empirical Analysis of Internet Banking Adoption in New Zealand*. Lincoln University.
Dudovskiy, J. (2016). Research Approach. Retrieved January 19, 2016, from http://research-methodology.net/research-methodology/research-approach/
Elizabeth, D. (2000). The provision of electronic banking services in the UK and Scandinavia. *Journal of Financial Services Marketing*, *4*(4), 319–330. Retrieved from http://oro.open.ac.uk/15954/2/SCANPAP_final_revised.pdf
Elliott, M. T., & Fu, F. Q. (2008). Consumer Acceptance of Technology Products: the Impact of Tactical Selling Approaches. *Marketing Management Journal*, *18*(2), 47–64. Retrieved from http://www.redi-bw.de/db/ebsco.php/search.ebscohost.com/login.aspx?direct=true&db=buh&AN=36403584&site=ehost-live
Endeshaw, D. (2015a). Awash is one of the seven members of the Premium Switch Solution (PSS), which integrates the services of seven banks. *Addis Fortune*. Retrieved from http://addisfortune.net/articles/awash?is?one?of?the?seven?members?of?the?premium?switch?solution?pss?which?integrates?the?services?of?seven?banks
Endeshaw, D. (2015b). CBE Awards $3.1m Contract for Supply of ATM Machines. *Addis Fortune*. Retrieved from http://addisfortune.net/articles/cbe?awards?3?1m?contract?for?supply?of?atm?machines/
Endeshaw, D. (2016). CBE to Award Moti, NCR for 400 ATMs. *Addis Fortune*.
E-Payment Process - CBE. (2015). Overview of E-Payment Product and Service: Training Document.
Eze, U. C., Manyeki, J. K., & Har, L. C. (2011). Factors Affecting Internet Banking Adoption among Young Adults: Evidence from Malaysia. In *International Conference on Social Science and Humanity* (Vol. 5, pp. 377–381). IACSIT Press, Singapore.
Farzianpour, F., Pishdar, M., Shakib, M. D., Reza, M., & Hashemi, S. (2014). Consumers' Perceived Risk and Its Effect on Adoption of Online Banking Services. *American Journal of Applied Sciences*, *11*(1), 47–56. http://doi.org/10.3844/ajassp.2014.47.56
Featherman, M. S., & Pavlou, P. A. (2003). Predicting e-services adoption: a perceived risk facets perspective. *International Journal of Human-Computer Studies*, *59*, 451–474. http://doi.org/10.1016/S1071-5819(03)00111-3
Field, A. (2009). *Discovering Statistics using SPSS* (3rd ed.). SAGE Publications Ltd. http://doi.org/10.1234/12345678
Fishbein, M., & Ajzen, I. (1975). *Belief, Attitude, Intention and Behavior: An Introduction to Theory and Research* (1st Editio). Addison-Wesley Publishing Compnay.
Gail, S. (2014). Benefits & Risks of Using ATM Machines. Retrieved January 4, 2016, from http://budgeting.thenest.com/benefits-risks-using-atm-machines-23502.html
Goodwin, S. A. (2009). The Concept and Measurement of Perceived Risk: A Marketing application in the Context of the New Product Development Process. In *ASBBS Annual*

Conference (Vol. 16). Retrieved from http://asbbs.org/files/2009/PDF/G/Goodwin.pdf
Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2010). Multivariate Data Analysis. Pearson Education Limited.
Hall, B. H., & Khan, B. (2002). Adoption of New Technology. *New Economy Handbook*, (November), 1–38.
Haq, S., & Khan, B. M. (2013). Impact of Demographic Factors in Adoption of E-Banking. *International Journal of Advanced Research in Management and Social Sciences*, *2*(7), 121–132.
Hasan, K. (2011). E-Banking in Bangladesh: The Future of Banking. *Proceedings of Annual Paris Conference on "Money, Economy and Management"Annual Paris Conference on "Money, Economy and Management,"* 1–19. Retrieved from http://www.wbiconpro.com/602-Kamril.pdf
HowMuchIsIt. (2016). Finance Costs. Retrieved January 8, 2016, from http://www.howmuchisit.org/finance-costs/
Hoyer, W. D., & MacInnis, D. J. (2008). *Consumer Behavior*. *Journal of Consumer Behaviour* (5th ed., Vol. 1). South-Western - Cengage Learning. http://doi.org/10.1002/cb.84
Im, I., Kim, Y., & Han, H.-J. (2008). The Effects of Perceived Risk and Technology Type on Users' Acceptance of Technologies. *Information & Management*, *45*(1), 1–9. http://doi.org/10.1016/j.im.2007.03.005
Investopedia. (2014). Debit Card. Retrieved December 25, 2015, from http://www.investopedia.com/terms/d/debitcard.asp?layout=orig
Investopedia. (2015a). Credit Card. Retrieved December 25, 2015, from http://www.investopedia.com/terms/c/creditcard.asp?layout=orig
Investopedia. (2016). Automated Teller Machine - ATM. Retrieved January 28, 2016, from http://www.investopedia.com/terms/a/atm.asp
Investopedia, L. (2015b). Point --Of-- Sale Terminal. Retrieved December 9, 2015, from http://www.investopedia.com/terms/p/point-of-sale-terminal.asp
Israel, G. D. (2009). *Determining Sample Size*. *University of Florida, IFAS Extension*. Retrieved from https://edis.ifas.ufl.edu/pdffiles/PD/PD00600.pdf
Izogo, E. E., Nnaemeka, O. C., Onuoha, O. A., & Ezema, K. S. (2012). Impact of Demographic Variables on Consumers ' Adoption of E-banking in Nigeria: An Empirical Investigation. *European Journal of Business and Management*, *4*(17), 27–39.
Jaber, A. M. (2007). *Readiness of the Palestinian banking sector in adopting the electronic banking system*. The Islamic University. Retrieved from http://library.iugaza.edu.ps/thesis/78742.pdf
Jin, R., & Devaney, S. A. (2005). Determinants of Debit Card Use: A Study from the Consumers' Perspective. *Consumer Interests Annual*, *51*, 62–70.
Kahn, K. B. (2006). *New Product Forecasting: An Applied Approach*. New York: M.E. Sharpe, Inc.
Karahanna, E., Agarwal, R., & Angst, C. M. (2006). Reconceptualizing Compatibility Beliefs Technology Acceptance Research. *MIS Quarterly*, *30*(4), 781–804.
Karma, N. G., Ibrahim, S. B., & Ali, A. H. (2014). Key Factors Affecting Mobile Banking Adoption among Banks' Customers in Sudan. *International Journal of Liberal Arts and Social Science*, *2*(6), 112–122.
Kothari, C. . (2004). *Research Methodology: Methods and Techniques* (2nd ed.). New Age

International (P) Limited, Publishers.
Kotler, P., & Keller, K. (2013). *Marketing Management* (14th ed.). Pearson Education Limited.
Krejcie, R. V, & Morgan, D. W. (1970). Determining Sample Size for Research Activities. *Educational and Psychological Measurement*, *38*, 607–610.
Kurnia, S., Peng, F., & Liu, Y. R. (2010). Understanding the Adoption of Electronic Banking in China. In *Proceedings of the 43rd Hawaii International Conference on System Sciences* (Vol. 43, pp. 1–10).
Landau, S., & Everitt, B. S. (2004). *A Handbook of Statistical Analyses using SPSS* (1st ed.). Chapman & Hall/CRC Press LLC.
Lee, M. (2008). Factors influencing the adoption of internet banking: An integration of TAM and TPB with perceived risk and perceived benefit. *Electronic Commerce Research and Applications*, (December), 1–12. http://doi.org/10.1016/j.elerap.2008.11.006
Lee, Y. H., Hsieh, Y. C., & Hsu, C. N. (2011). Adding Innovation Diffusion Theory to the Technology Acceptance Model: Supporting Employees' Intentions to use E-Learning Systems. *Educational Technology & Society*, *14*(4), 124–137.
Legris, P., Ingham, J., & Collerette, P. (2003). Why do people use information technology?: a critical review of the technology acceptance model. *Journal Information and Management*, *40*(3), 191–204. http://doi.org/10.1016/S0378-7206(01)00143-4
Lichtenstein, S., & Williamson, K. (2006). Understanding Consumer Adoption of Internet Banking: an interpretive study in the Australian Banking Context. *Journal of Electronic Commerce Research*, *7*(2), 50–66.
Linda, M. (2008). ATM Security: Customers and Machines are at Risk. Retrieved January 4, 2016, from http://www.bankinfosecurity.com/atm-security-customers-machines-are-at-risk-a-686/op-1
Lund Research Ltd. (2007). Cronbach's Alpha (α) using SPSS Statistics. Retrieved January 19, 2016, from https://statistics.laerd.com/spss-tutorials/cronbachs-alpha-using-spss-statistics.php
Lund Research Ltd. (2013). Multinomial Logistic Regression using SPSS Statistics. Retrieved May 15, 2016, from https://statistics.laerd.com/spss-tutorials/multinomial-logistic-regression-using-spss-statistics.php
Macmillan Publishers Limited. (2015). EFTPOS definition and synonyms. Retrieved December 24, 2015, from http://www.macmillandictionary.com/dictionary/british/eftpos
Manisha. (2012). Marketing Communication Strategies of Public and Private Sector Banks- A Comparative Analysis, *15*(6), 16–22.
MasterCard Worldwide. (2015). All About Payment Cards. Retrieved December 25, 2015, from https://www.mastercard.com/us/company/en/docs/All_About_Payment_Cards.pdf
Microsoft Corporation. (2009). Demography. In *Microsoft Encarta premium*. Microsoft Corporation.
Mndzebele, N. (2013). The Effects of Relative Advantage, Compatibility and Complexity in the Adoption of EC in the Hotel Industry. *International Journal of Computer and Communication Engineering*, *2*(4), 473–476. http://doi.org/10.7763/IJCCE.2013.V2.229
Mohammed, S. (2012). Factors Affecting ATM Usage in India: An Empirical Analysis. *UTMS Journal of Economics*, *3*(1), 1–7.
Moore, G. C., & Benbasat, I. (2001). Development of an Instrument to Measure the perceptions of adopting an Information Technology Innovation. *The Institute of Management Sciences*,

192–222.
Mulima, O. A. L. (2012). *Factors Influencing Adoption of Internet Banking In Kenya: The Case of Kenya Commercial Bank, Mombasa County*. University of Nairobi.
Narteh, B. (2012). Challenges of Marketing E-banking Services in a Developing Country: The Case of Ghana. *Journal of Internet Banking and Commerce*, *17*(2), 1–21.
Nasri, W., & Zarai, M. (2014). Empirical Analysis of Internet Banking Adoption in Tunisia. *Asian Economic and Financial Review*, *4*(12), 1812–1825.
National Bank of Ethiopia. (2015). Frequently Asked Questions. Retrieved December 25, 2015, from http://www.nbe.gov.et/aboutus/faq.html
O'Mahony, D., Michael, P., & Tewari, H. (2001). *Electronic Payment Systems for E-Commerce* (2nd ed.). Artech House.
Olatokun, W. M., & Igbinedion, L. J. (2009). The Adoption of Automatic Teller Machines in Nigeria: An Application of the Theory of Diffusion of Innovation. *Informing Science and Information Technology*, *6*.
Omotayo, F., & Dahunsi, O. (2015). Factors Affecting Adoption of Point of Sale Terminals by Business Organisations in Nigeria. *International Journal of Academic Research in Business and Social Sciences*, *5*(10), 115–136. http://doi.org/10.6007/IJARBSS/v5-i10/1856
Önce, G. (2000). Service Marketing In Banking Sector and Recent Perceptions in Marketing Thoughts of Services. In *First International Joint Symposium on Business Administration* (pp. 484–488).
Pallant, J. (2005). *Spss Survival Manual: a step by step guide to data analysis using SPSS* (2nd ed.). Allen & Unwin.
Peng, C. J., Lee, K. U. K. L., & Ingersoll, G. M. (2002). An Introduction to Logistic Regression Analysis and Reporting. *The Journal of Educational Research*, *2*(1).
Qayyum, F., & Ali, H. (2012). *Factors Determining Customers' Adoption Of Internet Banking: A Quantitative Study Of Swedish Customers*. Mälardalen University.
Rogers, E. M. (1995). *Diffusion of Innovations*. *Newyork Free Press* (3rd ed.). New York: The Free Press A Division of Macmillan Publishing Co., Inc. http://doi.org/citeulike-article-id:126680
Safeena, R., Date, H., Kammani, A., & Hundewale, N. (2012). Technology Adoption and Indian Consumers: Study on Mobile Banking. *International Journal of Computer Theory and Engineering*, *4*(6), 1020–1024.
Safeena, R., Hundewale, N., & Kamani, A. (2011). Customer ' s Adoption of Mobile-Commerce A Study on Emerging Economy. *International Journal of E-Education, E-Business, E-Management and E-Learning*, *1*(3), 228–233.
Sekaran, U. (2006). *Research Methods for Business: A Skill-Building Approach* (4th ed.). John Wiley & Sons, Inc.
Şeker, M. (2009). *An Empirical Study on Consumers' Choice of E-Commerce Type – B2c and/or C2c*. Lund University.
Shaikh, M. A. (2014). Ethiopian Banker's Perception of Electronic Banking in Ethiopia – A Case of Adama City. *International Journal of Scientific and Research Publications*, *4*(9), 1–7.
Sinha, D. K., Sinha, G., & Andeta, J. A. (2014). E-Banking in Ethiopia and the consequences due to increase in the cyber threats / Crime across the globe: Trends and Concerns. *International Journal of Emerging Technologies in Computational and Applied Sciences (IJETCAS)*, *14*(827), 299–304.

Starkweather, J. (2014). Logistic Regression (Multinomial). Retrieved May 15, 2016, from http://www.unt.edu/rss/class/Jon/SPSS_SC/Module9/M9_MultiNomReg/SPSS_M9_MultiNomReg.htm

Supinah, R., Anis, Z., & Amin, H. (2008). Banking Channels Adoption in Malaysia: An Analysis. *Labuan E-Journal of Muamalat and Society*, *2*, 17–26.

Taddesse, W., & Kidan, T. G. (2005). *e-Payment: Challenges and Opportunities in Ethiopia*.

Takele, Y., & Sira, Z. (2013). Analysis of Factors Influencing Customers' Intention to the Adoption of E-Banking Service Channels in Bahir Dar City: An Integration of TAM, TPB AND PR. *European Scientific Journal*, *9*(13), 402–417.

Tan, M., & S.H.Teo, T. (2000). Factors Influencing the Adoption of Internet Banking. *Journal of Association for Information Systems*, *1*(5).

Tater, B., Tanwar, M., & Murari, K. (2011). Customer Adoption of Banking Technology in Private Banks of India. *International Journal of Banking and Finance*, *8*(3), 73–88.

Taylor, S., & Todd, P. A. (1995). Understanding Information Technology Usage: A test of Competing Models. *Information Systems Research*, *6*(2), 144–176. http://doi.org/10.1287/isre.6.2.144

Techopedia. (2015). Point of Sale Terminal (POS Terminal). Retrieved December 9, 2015, from https://www.techopedia.com/definition/26649/point-of-sale-terminal-pos-terminal

Tejada, J. J., & Punzalan, J. R. B. (2012). On the Misuse of Slovin's Formula. *The Philippine Statistician*, *61*(1), 129–136.

The Research Advisors. (2006). Sample Size Table. Retrieved from http://research-advisors.com/tools/SampleSize.htm

Tiamarumilanzi, C. (2013). *Assessment of the Factors That Influence Adoption of Electronic Banking in Tanzania: The Case of Nmb Customers In Morogoro*. Mzumbe University.

Tollossa, R. (2012). *An Empirical Analysis of Customer Behavioral Intention towards Using Dashen Visa Card (An application of TAM)*. Addis Ababa University.

Trochim, W. M. (2000). *The Research Methods Knowledge Base* (2nd ed.). Atomic Dog Publishing, Cincinnati, OH. Retrieved from http://www.socialresearchmethods.net/kb

Tuli, R., Khatri, A., & Yadav, A. (2012). A comparative study of customer attitude towards ATM of SBI and ICICI bank. *International Journal of Marketing and Technology*, *2*(8), 463–475.

Vazifehdoost, H., Khosrozadeh, S., & Mirzaee far, M. (2014). Investigating the effect of information on mobile banking acceptance barriers. *Management Science Letters*, *4*(9), 2049–2056. http://doi.org/10.5267/j.msl.2014.8.017

Venkatesh, V., & Davis, F. D. (2000). A Theoretical Extension of the Technology Acceptance Model: Four Longitudinal Field Studies. *Management Science*, *46*(2), 186–204. http://doi.org/10.1287/mnsc.46.2.186.11926

Venkatesh, V., & Hillol, B. (2008). Technology Acceptance Model 3 and a Research Agenda on Interventions. *Decision Science*, *39*(2), 273–315. http://doi.org/10.1111/j.1540-5915.2008.00192.x

Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly*, *27*(3), 425–478. http://doi.org/10.2307/30036540

Vogt, W. P., Vogt, E. R., Gardner, D. C., & Haeffele, L. M. (2014). *Selecting the Right Analyses for Your Data* (1st ed.). New York: A Division of Guilford Publications, Inc.

Wahab, Y. A. (2012). *The Adoption and Use of Electronic Payment Systems in Ghana, a Case of E-Zwich in the Sunyani Municipality*. Kwame Nkrumah University of Science and Technology.

Walliman, N., & Baiche, B. (2001). *Your Research Project: a step-by-step guide for the first-time researcher*. (1, Ed.)*The effects of brief mindfulness intervention on acute pain experience: An examination of individual difference* (Vol. 1). SAGE Publications Ltd.

Walliman, N. (2006). *Social Research Methods*. SAGE Publications, Inc.

Wangari, H., & Willy, M. (2014). Factors Affecting Adoption of Mobile Banking In Kenya; Case Study of Kenya Commercial Bank Limuru. *International Journal of Social Sciences Management and Entrepreneurship*, *1*(3), 92–112.

Wells Fargo Bank. (2015). ATM vs. debit cards: The difference. Retrieved December 25, 2015, from http://www.handsonbanking.org/financial-education/adults/atm-vs-debit-cards-the-difference/

Wong, D. H., Loh, C., Turner, B., Bak, R., & Yap, K. B. (2009). Risky Business: Perceived Risk, Trust and the Use of E-Banking, 1–8.

Worku, G. (2010). Electronic-Banking in Ethiopia- Practices, Opportunities and Challenges. *Journal of Internet Banking and Commerce*, *15*(2), 1–8. http://doi.org/10.1007/978-3-531-92534-9_12

Yeshambel, Y., & Nekahiwot, Z. (2015). *Industry Assessment on E-Payment Services*. Addis Ababa.

Yeshambel, Y., & Nekahiwot, Z. (2016). *E-payment Strategy Implementation Report*. Addis Ababa.

Yohannes, A. (2010). *Key Factors That Determine Adoption of Internet Banking In Ethiopia*. Addis Ababa University.

Zandi, M., Singh, V., & Irving, J. (2013). The Impact of Electronic Payments on Economic Growth. *Moody's Analytics - Economic & Consumer Analytics*.

Zheng, L. N. (2010). *An Empirical Analysis of Factors that Influence the Adoption of Internet Banking in China: A Case Study of Zhengzhou*. Lincoln University.

Appendices

Appendix A: Survey Questionnaire (Amharic)

አዲስ አበባ ዩኒቨርሲቲ ንግድ ስራ ትምህርት ቤት

የድህረ-ምረቃ ፕሮግራም

የገበያ ስራ አመራር ትምህርት ክፍል

<u>በኢትዮጵያ ንግድ ባንክ ደምበኞች የሚሞላ መጠይቅ</u>

ውድ የጥናቱ ተሳታፊ፤

የዚህ ጥናት ተሳታፊ በመሆን ይህንን መጠይቅ ለመሙላት ፍቃደኛ ስለሆኑ ከልብ አመሰግናለሁ። እኔ በአዲስ አበባ ዩኒቨርሲቲ ንግድ ስራ ትምህርት ቤት በገበያ ስራ አመራር (Marketing Management) የድህረ-ምረቃ ፕሮግራም ተማሪ ስሆን ይህ ጥናት በገበያ ስራ አመራር የድህረ-ምረቃ ትምህርትን ለማጠናቀቅ በከፊል ማሟያነት የሚውል ነው። የዚህ ጥናት አላማ የኢትዮጵያ ንግድ ባንክ ደምበኞች የኤሌክትሮኒክ ካርድ ባንኪንግ አገልግሎቶችን እንዲጠቀሙ ወይም እንዳይጠቀሙ የሚያደርጓቸውን ምክንያቶች ለማጥናት ነው። የዚህ መጠይቅ አላማም ቀደም ሲል ለተገለፀው ጥናት ግብአትነት የሚውል መረጃ ለመሰብሰብ ነው።

የኤሌክትሮኒክ ካርድ ባንኪንግ አገልግሎት ማለት የኤሌክትሮኒክ ካርድ (ኤቲኤም ካርድ) ያላቸው ደምበኞች በኤቲኤም እና ፖስ ማሽኖች (POS Terminals) አማካኝነት ሒሳባቸውን እንዲያንቀሳቅሱ የሚያስችላቸው የአገልግሎት አይነት ነው።

በዚህ አጋጣሚ የእርስዎ ትክክለኛ ምላሽ ለዚህ ጥናት ስኬት ወሳኝ መሆኑን እየገለጽኩኝ፤ የሚሰጡት ምላሽ በሚስጥር የሚጠበቅ መሆኑን እና ለጥናቱ ግብአትነት ብቻ የሚውል መሆኑን ላረጋግጥልዎ እወዳለሁ።

አጠቃላይ መመሪያ:

1. **እባክዎ ለጥያቄዎቹ በመልስነት ከቀረቡት አማራጮች ውስጥ የ "X" ምልክት በማድረግ ምላሽዎን ይስጡ**
2. **ይህ መጠይቅ ሁለት ክፍሎች ያሉት ስለሆነ በሁለቱም ክፍሎች የሚገኙትን ጥያቄዎች መመለስ ይኖርብዎታል**
3. **በዚህ መጠይቅ ላይ ስምዎት መፃፍ አስፈላጊ አይደለም**

ለማንኛውም ጥያቄ ወይም አስተያየት በ ስልክ ቁጥሮች 0912-661266 ወይም 0913-009985 መደወል ይችላሉ

ስለ ትብብርዎ በቅድሚያ አመሰግናለሁ!

ክፍል 1: የምላሽ ሰጪዎች የግል መረጃ እና የኤሌክትሮኒክ ካርድ ባንኪንግ አጠቃቀም ባህሪ

1.ፆታ

- ☐ ወንድ
- ☐ ሴት

2.እድሜ

- ☐ ከ 18 በታች
- ☐ ከ 18 – 29
- ☐ ከ 30 – 39
- ☐ ከ 40 – 50
- ☐ ከ 51 – 64
- ☐ ከ 65 በላይ

3.የትምህርት ደረጃ

- ☐ መደበኛ ትምህርት የለኝም
- ☐ አንደኛ ደረጃ ትምህርት ጨርሻለሁ
- ☐ ሁለተኛ ደረጃ ትምህርት ጨርሻለሁ
- ☐ ዲፕሎማ
- ☐ የመጀመሪያ ዲግሪ
- ☐ ማስተርስ እና ከዛ በላይ

4. የስራ አይነት

- ☐ ስራ የሌለው (ስራ ፈላጊ)
- ☐ በመንግስት መስሪያ ቤቶች ተቀጥሮ የሚሰራ
- ☐ በግል ድርጅቶች ተቀጥሮ የሚሰራ
- ☐ የግል (የራሱ) ስራ ያለው
- ☐ ሌላ

5. ወርሀዊ ገቢ (በ ብር)

- ☐ ከ 1,000 ብር በታች
- ☐ ከ 1,000- 2,999 ብር
- ☐ ከ 3,000-4,999 ብር
- ☐ ከ 5,000-9,999 ብር
- ☐ ከ 10,000 -19,999 ብር በላይ
- ☐ ከ 20,000 ብር በላይ

6. የኢትዮጵያ ንግድ ባንክ ኤሌክትሮኒክ ካርድ (የኤቲኤም ካርድ) አልዎት?

- ☐ አለኝ
- ☐ የለኝም

7. የኢትዮጵያ ንግድ ባንክን የኤሌክትሮኒክ ካርድ ባንኪንግ አገልግሎት ምን ያህል ይጠቀማሉ?

- ☐ 1. ፈፅሞ ተጠቅሜ አላውቅም
- ☐ 2. በጣም አልፎ አልፎ እጠቀማለሁ
- ☐ 3. አልፎ አልፎ እጠቀማለሁ
- ☐ 4. ብዙ ጊዜ እጠቀማለሁ

8. የኢትዮጵያ ንግድ ባንክን የ ኤሌክትሮኒክ ካርድ ባንኪንግ አገልግሎቶችን በባንኩ የኤቲኤም ወይም ፖስ ማሽኖች አማካኝነት ተጠቅመው ያውቃሉ?

- ☐ ሁሉንም የ ኤሌክትሮኒክ ካርድ ባንኪንግ አገልግሎቶችን ጭራሽ ተጠቅሜ አላውቅም
- ☐ የ ኤሌክትሮኒክ ካርድ ባንኪንግ አገልግሎትን የምጠቀመው **በኤቲኤም (ATM) ማሽኖች ላይ ብቻ ነው**
- ☐ የ ኤሌክትሮኒክ ካርድ ባንኪንግ አገልግሎቶችን **በኤቲኤም ማሽኖች እንዲሁም በፖስ ማሽኖች (POS Terminals) ላይ እጠቀማለሁ ወይም ተጠቅሜ አውቃለሁ**

ክፍል 2፡ ደምበኞች የኤሌክትሮኒክ ካርድ ባንኪንግ አገልግሎቶችን እንዲጠቀሙ ወይም እንዳይጠቀሙ በሚያደርጓቸው ጉዳይዎች ዙሪያ የተዘጋጁ ጥያቄዎች

አባከዎ ቀጥሎ ከቀረቡት አረፍተ ነገሮች ጋር ያልዎትን የስምምነት ወይም ያለመስማማት መጠን ከእያንዳንዱ አረፍተ ነገር ፊት ባሉት ሳጥኖች የ "X" ምልክት በማድረግ ይግለጹ

(1= በጣም አልስማማም፣ 2= አልስማማም፣ 3= አስተያየት የለኝም፣ 4= እስማማለሁ፣ 5= በጣም እስማማለሁ)

አረፍተ ነገር	መለኪያ				
	1	2	3	4	5
PU					
1. የኤሌክትሮኒክ ካርድ ባንኪንግ አገልግሎቶች በቀን ውስጥ ለ 24 ሰአት እና ባለሁበት ቦታ ሆኜ ለመጠቀም ምቹ ናቸው					
2. የባንክ አገልግሎት ለማግኘት ወደ ቅርንጫፎች በአካል ከመሄድ ይልቅ የኤሌክትሮኒክ ካርድ ባንኪንግ አማካኝነት የባንክ አገልግሎቶችን ማግኘት የተሻለ ነው					
3. የኤሌክትሮኒክ ካርድ ባንኪንግ አገልግሎቶች ጊዜን ይቆጥባሉ					
4. የኤሌክትሮኒክ ካርድ ባንኪንግ፤ የባንክ አገልግሎቶችን በቀላሉ ለማግኘት አያስችልም ®					
5. የኤሌክትሮኒክ ካርድ ባንኪንግ አገልግሎቶች የሒሳብ (Account) እንቅስቃሴን በፈጠነ ሁኔታ ለመከታተል ያስችላሉ					
6. በአጠቃላይ የኤሌክትሮኒክ ካርድ ባንኪንግ አገልግሎቶች ጠቃሚ ናቸው					
PEOU					
1. የኤቲኤም ወይም ፖስ ማሽኖችን አጠቃቀም ለመማር ወይም ለማወቅ ቀላል ነው					
2. የካርድ ባንኪንግ አገልግሎቶች ለመጠቀም ከፍተኛ የአዕምሮ ብቃት ይጠይቃል ®					
3. በኤቲኤም ወይም ፖስ ማሽኖች ላይ ያሉት የአጠቃቀም መመሪያዎች የኤሌክትሮኒክ ካርድ ባንኪንግ አገልግሎቶች ቀላል እና ግልጽ እንዲሆኑ አድርገዋል					
4. በአጠቃላይ የኤሌክትሮኒክ ካርድ ባንኪንግ አገልግሎቶች ለመጠቀም ቀላል ናቸው					
PR					
1. የኢትዮጵያ ንግድ ባንክ የኤሌክትሮኒክ ካርድ ባንኪንግ አገልግሎቶች በአግባቡ ስለሚሰሩ በባንክ ሒሳቤ ላይ ችግር ሊፈጥሩ ይችላሉ ብዬ አልሰጋም ®					
2. የኢትዮጵያ ንግድ ባንክ የኤቲኤም ወይም ፖስ ማሽኖች በአግባቡ ላይሰሩ ስለሚችሉ በጥሬ ገንዘብ መገበያየትን እመርጣለሁ					
3. የኢትዮጵያ ንግድ ባንክ የኤሌክትሮኒክ ካርድ ባንኪንግ አገልግሎቶችን ደህንነት ለመጠበቅ የዘረጋው ስርአት (Security System) ጠንካራ ስላልሆነ የባንክ ሒሳቦችን ለዘራፊዎች (Hackers) ሊያጋልጥ ይችላል ብዬ እሰጋለሁ					
4. የኢትዮጵያ ንግድ ባንክ የኤሌክትሮኒክ ካርድ ባንኪንግ ሲስተም የባንክ ሒሳቤን ለመረጃ ጠላፊዎች ሊያጋልጥ ይችላል					
5. የኢትዮጵያ ንግድ ባንክ የኤሌክትሮኒክ ካርድ ባንኪንግ አገልግሎቶችን ከተጠቀምኩኝ ጊዜዬን አባክናለሁ ብይ እሰጋለሁ። ምክንያቱም የባንኩ የኤቲኤም እና ፖስ ማሽኖች በኔትወርክ እና በተለያዩ ምክንያቶች ላይሰሩ ይችላሉ ብዬ እሰጋለሁ					
6. የኢትዮጵያ ንግድ ባንክ የኤሌክትሮኒክ ካርድ ባንኪንግ አገልግሎቶችን በምጠቀምበት ወቅት ሲስተሙ ሒሳቤ ላይ ስህተት ቢፈጥር እና ገንዘብ ቢቀንስ ባንኩ ገንዘቤ ላይመልስልኝ ይችላል ብዬ እሰጋለሁ					
SI					
1. ከቴክኖሎጂ ጋር የተያያዙ እቃዎችን በምገዛበት ወቅት ከራሴ አመለካከት በላይ የቤተሰቦቼን እና የጓደኞቼን አስተያየት አልቀበልም ወይም አላምንም ®					
2. የኤሌክትሮኒክ ካርድ ባንኪንግ አገልግሎቶችን መጠቀሜ በ ቤተሰቦቼ፣ በጓደኞቼ እና ሌሎች በቅርቤ ባሉ ሰዎች ዘንድ እንደ ዘመናዊ ሰው እንድታይ ያደርገኛል ብዬ አስባለሁ					

ክፍል 2፡ ደምበኞች የኤሌክትሮኒክ ካርድ ባንኪንግ አገልግሎቶችን እንዲጠቀሙ ወይም እንዳይጠቀሙ በሚያደርጓቸው ጉዳይዎች ዙሪያ የተዘጋጁ ጥያቄዎች

አባከዎ ቀጥሎ ከቀረቡት አረፍተ ነገሮች ጋር ያልዎትን የስምምነት ወይም ያለመስማማት መጠን ከእያንዳንዱ አረፍተ ነገር ፊት ባሉት ሳጥኖች የ "X" ምልክት በማድረግ ይግለጹ

(1= በጣም አልስማማም፣ 2= አልስማማም፣ 3= አስተያየት የለኝም፣ 4= እስማማለሁ፣ 5= በጣም እስማማለሁ)

አረፍተ ነገር	መለኪያ				
	1	2	3	4	5
3. ቤተሰቦቼ እና ጓደኞቼ የኤሌክትሮኒክ ካርድ ባንኪንግ አገልግሎቶችን መጠቀም እንዳለብኝ ያምናሉ ወይም ያስባሉ					
4. የኤሌክትሮኒክ ካርድ ባንኪንግ አገልግሎቶችን በኤቲኤም ወይም ፖስ ማሽኖች አማካኝነት የምጠቀመው የቅርቤ የምለው ሰው ስለ ጥቅሙ ከነገረኝ ወይም እንድጠቀም ከመከረኝ ብቻ ነው					
MC					
1. የኢትዮጵያ ንግድ ባንክ የኤሌክትሮኒክ ካርድ ባንኪንግ አገልግሎቶችን ወይም ኤቲኤም እና ፖስ ማሽኖቹን በተመለከተ በቴሌቪዥን፣ በሬዲዮ፣ በጋዜጣ፣ በመፅሔት እና በሌሎች የማስታወቂያ ዘዴዎች የሚያስተላልፋቸው ማስታወቂያዎች ስለ አገልግሎቱ በቂ ግንዛቤ ሰጥተውኛል					
2. በምገለገልባቸው የኢትዮጵያ ንግድ ባንክ ቅርንጫፎች ውስጥ ያሉ የባንኩ ሠራተኞች ስለ ባንኩ የኤሌክትሮኒክ ካርድ ባንኪንግ አገልግሎቶች፣ ስለ ኤቲኤም ወይም ስለ ፖስ ማሽኖች መረጃ በመስጠት በቂ ግንዛቤ እንዳገኝ ረድተውኛል					
3. የኢትዮጵያ ንግድ ባንክ ስለ የኤሌክትሮኒክ ካርድ ባንኪንግ አገልግሎቶቹ፣ስለ ኤቲኤም እና ስለ ፖስ ማሽኖቹ አጠቃቀም በቂ መረጃ ሰጥቶኛል ብዬ አስባለሁ					
4.የኢትዮጵያ ንግድ ባንክ የኤሌክትሮኒክ ካርድ ባንኪንግ አገልግሎቶቹን በተመለከተ በቴሌቪዥን፣ በሬዲዮ፣ በጋዜጣ ፣ በመፅሔት እና በመሳሰሉት የሚያስተላልፋቸው ማስታወቂያዎች ሰዎች አገልግሎቱን ለመጠቀም ወይም ላለመጠቀም በሚወስኑት ውሳኔ ላይ ትልቅ ተፅዕኖ አላቸው					
5. የኢትዮጵያ ንግድ ባንክ ቅርንጫፍ ሠራተኞች ስለ ኤሌክትሮኒክ ካርድ ባንኪንግ አገልግሎቶች ጥቅም ግንዛቤ መፍጠራቸው እና ማግባባታቸው ሰዎች አገልግሎቱን ለመጠቀም ወይም ላለመጠቀም በሚወስኑት ውሳኔ ላይ ትልቅ ተፅዕኖ አለው					
CP					
1. የኤሌክትሮኒክ ካርድ ባንኪንግ አገልግሎቶች ከ አጠቃላይ የስራዬ ባህሪ ጋር የሚጣጣሙ ናቸው					
2. የኤሌክትሮኒክ ካርድ ባንኪንግ አገልግሎቶች ከእኔ የአኗኗር ዘይቤ (lifestyle) ጋር የሚጣጣሙ አይደሉም ®					
3. የኤሌክትሮኒክ ካርድ ባንኪንግ በቅርንጫፎች አማካኝነት የሚሰጠውን መደበኛ የባንክ አገልግሎት መስጠት ይችላል					
4. የኤሌክትሮኒክ ካርድ ባንኪንግ አገልግሎቶች አሁን ካለሁበት አጠቃላይ ሁኔታ ገር የሚጣጣሙ ናቸው					

መጠይቁ ተጠናቋል! በድጋሚ ስለ ጊዜዎ እና ትብብርዎ በጣም አመሰግናለሁ !!!

Appendix B: Survey Questionnaire (English)

Addis Ababa University

School of Commerce Post Graduate Program

Department of Marketing Management

Questionnaire to be completed by the customers of

The Commercial Bank of Ethiopia

Dear respondent,

Thank you for your willingness and cooperation to complete questionnaire.

I am a student at Addis Ababa University School of Commerce. This research undertaking is for the partial fulfillment of the Requirements for the Degree of Master of Arts in Marketing. The purpose of this study is to analyze the factors that affect electronic card payment technologies' adoption Decision. The aim of this questionnaire is to gather data for the said research.

Electronic Card Payment technologies enables electronic card (ATM Card) holders to access their account through Automatic Teller Machine (ATM) and Point of Sale Terminal (POS terminal).

At this juncture I would like to remind you that your genuine response is vital to the success of this research and your response will be kept with utmost confidentiality.

General Instructions:

1. **Please put circle or "X" mark on the item of your choice**
2. **This questionnaire has two parts, please complete both**
3. **No need to write your name**

For any inquiry you can reach the researcher via cell phone number

0912-661266 or 0913-009985

Thank you for your cooperation!

Section I: Profile of the Respondent and Electronic Card Banking Usage Behavior

1.Gender

- Male
- Female

2.Age

- Below 18
- Between 18 – 29
- Between 30 – 39
- Between 40 – 50
- Between 51 – 64
- Above 65

3.Educational level

- No Formal education
- Primary school completed
- Secondary School completed
- College Diploma
- First degree
- Masters degree and above

4. Occupation

- No job (Job seeker)
- Government employed
- Private sector employed
- Self-employed
- Other

5. Monthly Income (in birr)

- Below 1,000
- 1,000- 2,999
- 3,000-4,999
- 5,000-9,999
- 10,000-19,999
- More than 20, 000

6. Do you have electronic card (ATM card)?

- Yes
- No

7. How frequently do you use CBE's ATM card for your banking needs?

- Never
- Almost never
- Occasionally
- Almost every time

8. Have you ever used CBE's electronic card on ATM machines and/or POS terminals?

- I have never used CBE's Card Banking Service on either ATM machine or POS terminal
- I have used CBE's Card Banking services Only on ATM machines
- I have used CBE's Card Banking services on both ATM machines and POS terminals

Section II: Questions regarding the determinants for ECPT adoption Decision

Please Put 'X' mark in front of each statement based on your level of agreement

(1= Strongly disagree, 2= Disagree, 3= No Opinion, 4= Agree, 5= Strongly agree)

Items	Scale				
	1	2	3	4	5
Perceived Usefulness (PU)					
1. Electronic Card Banking services give flexibility to conduct banking transactions 24 hours a day.					
2. Electronic Card Banking services are more convenient than going to branches physically to get banking services					
3. Electronic Card Banking Services save time.					
4. Electronic Card Banking Services makes banking difficult. ®					
5. Through mini-statement and balance enquiry Electronic Card Banking services helps to follow-up the status of bank account faster.					
6. Overall, Electronic Card banking services are useful					
Perceived Ease of Use (PEOU)					
1. Learning to operate or use the ATM machine and/ or POS terminal is easy.					
2. Card banking services require a lot of mental effort in order to operate or use.®					
3. The Electronic card banking system is user-friendly and the Instructions in the Card banking system are clear and understandable.					
4. Overall, the card banking services are easy to use.					
Perceived Risk (PR)					
1. CBE's Card Banking system performs well and creates no problems with my Bank account.®					
2. I prefer to transact through cash because I am afraid that the ATMs or POS terminals of the CBE might not work properly.					
3. The security systems built into the Electronic Card Banking System of the CBE are not strong enough to protect customers' accounts.					
4. CBE's Electronic Card Banking system might expose to hackers and the information about bank account might be compromised.					
5. I fear that I might lose a considerable amount of time in case I used CBE's card banking systems because there might be a network failure or the ATMs or POS machines might not function properly.					
6. When transaction errors that affect my account balance occur while using CBE's Electronic Card Banking System, I worry that I may not get compensated by the CBE.					
Social Influence (SI)					
1. When purchasing new technology products, I do not trust family and friends than my own judgment. ®					
2 I think using Electronic Card banking services would make me seen as modern person by those who are close to me (like family, relatives and friends).					
3. My family and friends think that I should use Card Banking Services.					
4. I would only consider using Card Banking Services if someone important to me recommended it to me					

Section II: Questions regarding the determinants for ECPT adoption Decision

Please Put 'X' mark in front of each statement based on your level of agreement

(1= Strongly disagree, 2= Disagree, 3= No Opinion, 4= Agree, 5= Strongly agree)

Items	Scale				
	1	2	3	4	5
Marketing Communication Influences (MC)					
1. The advertisement of the CBE in local media such as Television, Radio, newspaper and magazines about its Card Banking services (ATM machines and/or POS terminals) has given me enough information about the service.					
2. The staffs of the CBE in branches has approached me to aware me about the card banking services (about CBE visa/ATM card, ATM machines and POS Terminals).					
3. I think CBE has provided me enough information about the services under card banking services.					
4. I think my or other's Decision to use or not to use Card Banking services of the CBE is influenced By the CBE Staffs Personal Selling activities.					
5. I think my or other's Decision to use or not to use Card Banking services of the CBE is influenced By CBE's advertisement about card banking services over Television, Radio, newspaper and magazines.					
Compatibility (CP)					
1.Card banking Services are compatible with all aspects of my work					
2.Card banking Services are not compatible with my lifestyle ®					
3.Card banking Services can provide similar services as services provided by branches (by going physically)					
4. Card banking Services is compatible with my current overall situation.					

The Questionnaire is Completed

Thank you for your Cooperation!!!

Appendix C: Measurement of Constructs

Table 0-1 Conceptual Definition and operationalization of Constructs

Constructs	Conceptual Definition	Number of Items	Source of Questionnaire Items
Perceived Usefulness (PU)	The degree to which a person believes that using a particular system would enhance his or her job performance (Davis, 1989).	6	(Davis, 1993; Safeena et al., 2011; Tollossa, 2012)
Perceived Ease of Use (PEOU)	The degree to which a person believes that using a particularly system would be free of effort (Davis, 1989).	4	(Davis, 1993; Moore & Benbasat, 2001)
Perceived Risk (PR)	**Perceived risk** refers to the risk or uncertainty that consumers perceive in using of a new technology (Vazifehdoost et al., 2014).	6	(Featherman & Pavlou, 2003; M. Lee, 2008)
Social Influence (SI)	**Social Influence** is the degree to which an individual perceives that important others belive he or she use the new system (Venkatesh et al., 2003).	4	(Alagheband, 2006; Venkatesh et al., 2003)
Marketing Communication (MC)	is a set of promotional messages used by organizations to make their products known, enhance their brand, and influence adoption (Chinakidzwa, 2014).	5	(Du, 2011; Safeena et al., 2011; Zheng, 2010)
Compatibility (CP)	The degree to which a new technology is perceived as consistent with the existing values, past experiences, and needs of potential adopters (Rogers, 1995)	4	(Alagheband, 2006; Moore & Benbasat, 2001)
ECPT Adoption	**Non-Adopters:** Customers of the CBE, both Electronic card holders and non holders that have not tried or used the Electronic Card Banking System of the CBE on ATMs or POS terminals not even for a single time.	1	Researcher's own definition
	Partial-Adopters: Customers of the CBE and Electronic card holders, which have used the Electronic Card Banking Technology of the CBE on ATMs only.	1	Researcher's own definition
	Full-Adopters: Customers of the CBE and Electronic card holders, which have used the Electronic Card Banking System of the CBE on both ATMs and POS terminals.	1	Researcher's own definition

Source: *Various authors and researcher's own definition*

Table 0-2 Measurement Scale and Notations of Dependent and Independent Variables

Types of Variables	Research Variables	Measure	Notation
Dependent	**ECPT Adoption Decision**	Nominal Scale	ECPTAD (Y)
Dimensions	**Perceived Usefulness (PU)**	5 Point Likert Scale (Interval)	PU(X_1)
	Perceived Ease of Use (PEOU)	5 Point Likert Scale (Interval)	PEOU (X_2)
	Perceived Risk (PR)	5 Point Likert Scale (Interval)	PR(X_3)
	Social Influence (SI)	5 Point Likert Scale (Interval)	SI(X_4)
	Marketing Communication (MC)	5 Point Likert Scale (Interval)	MC(X_5)
	Compatibility (CP)	5 Point Likert Scale (Interval)	CP (X_6)

Source: *Researcher's own definition*

Appendix D: Statistical Outputs

Appendix D1: Outputs of Descriptive Statistics

Table 0-3 Descriptive Statistics of Perceived Usefulness

Items	N	Min.	Max.	Mean	Std. Deviation
Electronic Card Banking services give flexibility to conduct banking transactions 24 hours a day	396	1	5	3.74	1.129
Electronic Card Banking services are more convenient than going to branches physically to get banking services	396	1	5	4.12	1.002
Electronic Card Banking Services save time	396	1	5	4.13	1.074
Electronic Card Banking Services makes banking Easy	396	1	5	3.81	1.144
Through mini-statement and balance enquiry Electronic Card Banking services helps to follow-up the status of bank account faster	396	1	5	3.98	1.109
Overall, Electronic Card banking services are useful	396	1	5	4.28	.904
Valid N (listwise)	396				

Source: *Survey Result (2016)*

Table 0-4 Descriptive Statistics of Perceived Ease of Use

Items	N	Min.	Max.	Mean	Std. Deviation
Learning to operate or use the ATM machine and/ or POS terminal is easy	396	1	5	2.81	1.241
Card banking services does not require a lot of mental effort in order to operate or use	396	1	5	2.81	1.352
The Electronic card banking system is user-friendly and the Instructions in the Card banking system are clear and understandable	396	1	5	3.40	1.284
Overall, the card banking services are easy to use	396	1	5	3.30	1.343
Valid N (listwise)	396				

Source: *Survey Result (2016)*

Table 0-5: Descriptive Statistics of Perceived Risk

Items	N	Min.	Max.	Mean	Std. Deviation
CBE's Card Banking system may not performs well and creates problems with my Bank account	396	1	5	2.94	1.280
I prefer to transact through cash because I am afraid that the ATMs or POS terminals of the CBE might not work properly	396	1	5	2.86	1.262
The security systems built into the Electronic Card Banking System of the CBE are not strong enough to protect customers' accounts	396	1	5	2.71	1.189
CBE's Electronic Card Banking system might expose to hackers and the information about bank account might be compromised	396	1	5	2.83	1.266
I fear that I might lose a considerable amount of time in case I used CBE's card banking systems because there might be a network failure or the ATMs or POS machines might not function properly	396	1	5	2.77	1.314
When transaction errors that affect my account balance occur while using CBE's Electronic Card Banking System, I worry that I may not get compensated by the CBE	396	1	5	2.71	1.324
Valid N (listwise)	396				

Source: *Survey Result (2016)*

Table 0-6: Descriptive Statistics of Social Influence

Items	N	Min.	Max.	Mean	Std. Deviation
When purchasing new technology products, I trust family and friends than my own judgment	396	1	5	3.36	1.288
I think using Electronic Card banking services would make me seen as modern person by those who are close to me (like family, relatives and friends)	396	1	5	3.02	1.332
My family and friends think that I should use Card Banking Services	396	1	5	3.32	1.204
I would only consider using Card Banking Services if someone important to me recommended it to me	396	1	5	2.34	1.252
Valid N (listwise)	396				

Source: *Survey Result (2016)*

Table 0-7: Descriptive Statistics of Marketing Communication Influences

Items	N	Min.	Max.	Mean	Std. Deviation
The advertisement of the CBE in local media such as Television, Radio, newspaper and magazines about its Card Banking services (ATM machines and/or POS terminals) has given me enough information about the service	396	1	5	3.07	1.305
The staffs of the CBE in branches has approached me to aware me about the card banking services (about CBE visa/ATM card, ATM machines and POS Terminals)	396	1	5	3.29	1.316
I think CBE has provided me enough information about the services under card banking services	396	1	5	3.32	1.261
I think my or other's Decision to use or not to use Card Banking services of the CBE is influenced By the CBE Staffs Personal Selling activities	396	1	5	3.32	1.318

I think my or other's Decision to use or not to use Card Banking services of the CBE is influenced By CBE's advertisement about card banking services over Television, Radio, newspaper and magazines	396	1	5	3.49	1.336
Valid N (listwise)	396				

Source: *Survey Result (2016)*

Table 0-8: Descriptive Statistics of Compatibility

Items	N	Min.	Max.	Mean	Std. Deviation
Card banking Services are compatible with all aspects of my work	396	1	5	3.67	1.275
Card banking Services are compatible with my lifestyle	396	1	5	3.62	1.299
Card banking Services can provide similar services as services provided by branches (by going physically)	396	1	5	3.31	1.302
Card banking Services is compatible with my current overall situation	396	1	5	3.57	1.284
Valid N (listwise)	396				

Source: *Survey Result (2016)*

Appendix D2: Output of Pearson Correlation

Table 0-9 Pearson Correlation

		Perceived Usefulness	Perceived Ease of Use	Perceived Risk	Social Influences	Marketing Communication Influences	Compatibility
Perceived Usefulness	Pearson Correlation	1	.372**	-.285**	.183**	.391**	.464**
	Sig. (2-tailed)		.000	.000	.000	.000	.000
	N	396	396	396	396	396	396
Perceived Ease of Use	Pearson Correlation	.372**	1	-.588**	.082	.611**	.450**
	Sig. (2-tailed)	.000		.000	.105	.000	.000
	N	396	396	396	396	396	396
Perceived Risk	Pearson Correlation	-.285**	-.588**	1	-.047	-.528**	-.383**
	Sig. (2-tailed)	.000	.000		.347	.000	.000
	N	396	396	396	396	396	396
Social Influences	Pearson Correlation	.183**	.082	-.047	1	.250**	.276**
	Sig. (2-tailed)	.000	.105	.347		.000	.000
	N	396	396	396	396	396	396
Marketing Communication Influences	Pearson Correlation	.391**	.611**	-.528**	.250**	1	.582**
	Sig. (2-tailed)	.000	.000	.000	.000		.000
	N	396	396	396	396	396	396
Compatibility	Pearson Correlation	.464**	.450**	-.383**	.276**	.582**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	
	N	396	396	396	396	396	396
**. Correlation is significant at the 0.01 level (2-tailed).							

Source: *Survey Result (2016)*

Appendix D3: Outputs of Factor loading (To Check Dimensionality)

Table 0-10 Factor Loading Perceived Usefulness

	Initial	Factor Loading
Electronic Card Banking services give flexibility to conduct banking transactions 24 hours a day	1.000	.415
Electronic Card Banking services are more convenient than going to branches physically to get banking services	1.000	.567
Electronic Card Banking Services save time	1.000	.619
Electronic Card Banking Services makes banking Easy	1.000	.038
Through mini-statement and balance enquiry Electronic Card Banking services helps to follow-up the status of bank account faster	1.000	.377
Overall, Electronic Card banking services are useful	1.000	.646

Source: *Survey Result (2016)*

Table 0-11 Factor Loading Perceived Ease of Use

	Initial	Factor Loading
Learning to operate or use the ATM machine and/ or POS terminal is easy	1.000	.529
Card banking services does not require a lot of mental effort in order to operate or use	1.000	.597
The Electronic card banking system is user-friendly and the Instructions in the Card banking system are clear and understandable	1.000	.539
Overall, the card banking services are easy to use	1.000	.677

Source: *Survey Result (2016)*

Table 0-12 Factor Loading Perceived Risk

	Initial	Factor Loading
CBE's Card Banking system may not performs well and creates problems with my Bank account[a]	1.000	.354
I prefer to transact through cash because I am afraid that the ATMs or POS terminals of the CBE might not work properly	1.000	.495
The security systems built into the Electronic Card Banking System of the CBE are not strong enough to protect customers' accounts	1.000	.543
CBE's Electronic Card Banking system might expose to hackers and the information about bank account might be compromised	1.000	.696
I fear that I might lose a considerable amount of time in case I used CBE's card banking systems because there might be a network failure or the ATMs or POS machines might not function properly	1.000	.598
When transaction errors that affect my account balance occur while using CBE's Electronic Card Banking System, I worry that I may not get compensated by the CBE	1.000	.595

Source: *Survey Result (2016)*

Table 0-13 Factor Loading Social Influences

	Initial	Factor Loading
When purchasing new technology products, I trust family and friends than my own judgment	1.000	.827
I think using Electronic Card banking services would make me seen as modern person by those who are close to me (like family, relatives and friends)	1.000	.714
My family and friends think that I should use Card Banking Services	1.000	.647
I would only consider using Card Banking Services if someone important to me recommended it to me	1.000	.355

Source: *Survey Result (2016)*

Table 0-14 Factor Loading Marketing Communication Influences

	Initial	Factor Loading
The advertisement of the CBE in local media such as Television, Radio, newspaper and magazines about its Card Banking services (ATM machines and/or POS terminals) has given me enough information about the service[a]	1.000	.573
The staffs of the CBE in branches has approached me to aware me about the card banking services (about CBE visa/ATM card, ATM machines and POS Terminals)	1.000	.686
I think CBE has provided me enough information about the services under card banking services	1.000	.716
I think my or other's Decision to use or not to use Card Banking services of the CBE is influenced By the CBE Staffs Personal Selling activities	1.000	.693
I think my or other's Decision to use or not to use Card Banking services of the CBE is influenced By CBE's advertisement about card banking services over Television, Radio, newspaper and magazines	1.000	.584

Source: *Survey Result (2016)*

Table 0-15 Factor Loading Compatibility

	Initial	Extraction
Card banking Services are compatible with all aspects of my work	1.000	.720
Card banking Services are compatible with my lifestyle	1.000	.168
Card banking Services can provide similar services as services provided by branches (by going physically)	1.000	.596
Card banking Services is compatible with my current overall situation	1.000	.747

Source: *Survey Result (2016)*

Appendix D4: Outputs of Logistic Regression Assumption Tests

1. Linearity Test

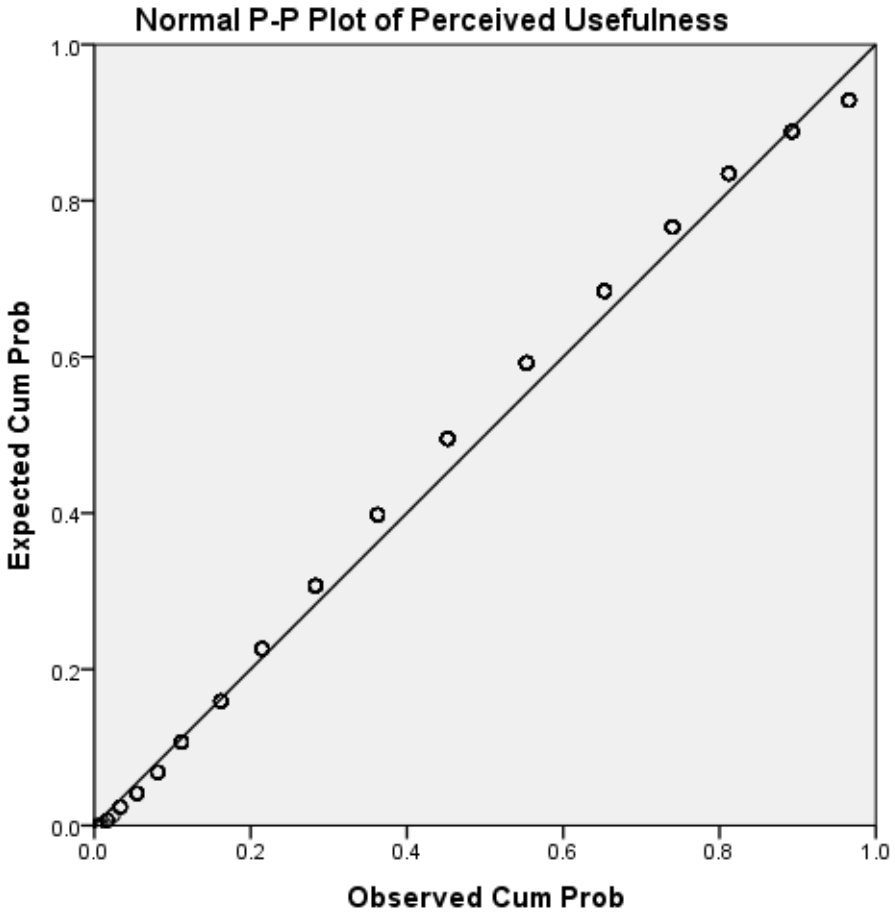

Figure 0:1 Linearity test of Perceived Usefulness

Source: *Survey Result (2016)*

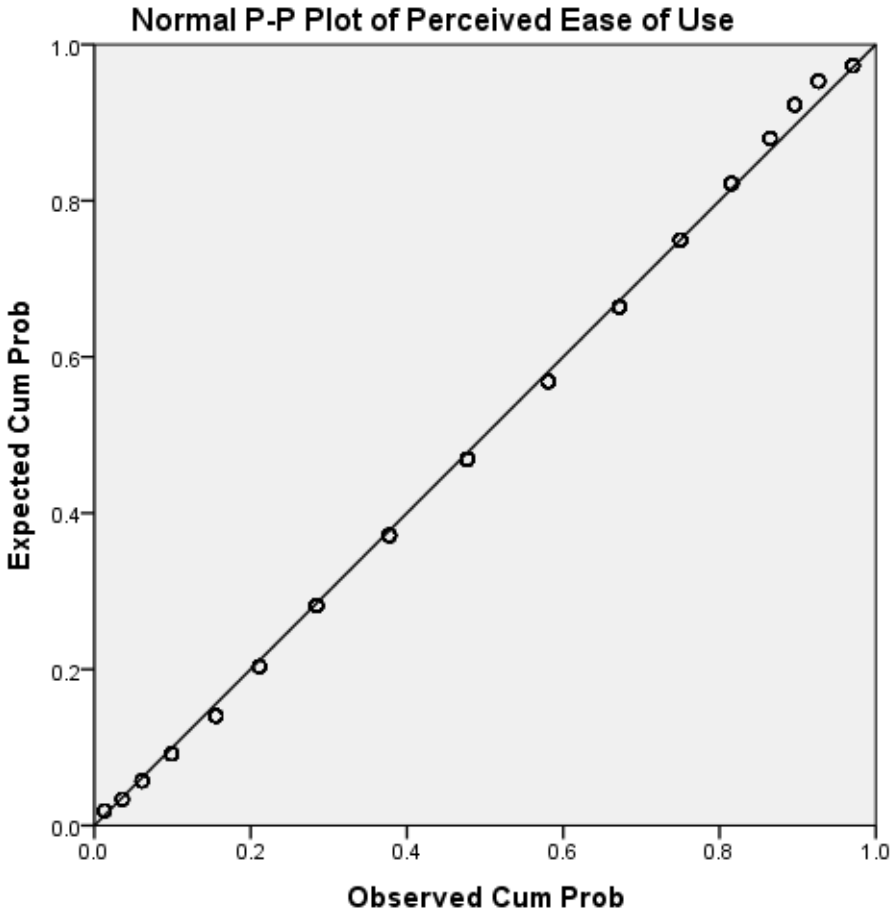

Figure 0:2 Linearity test of Perceived Ease of Use

Source: *Survey Result (2016)*

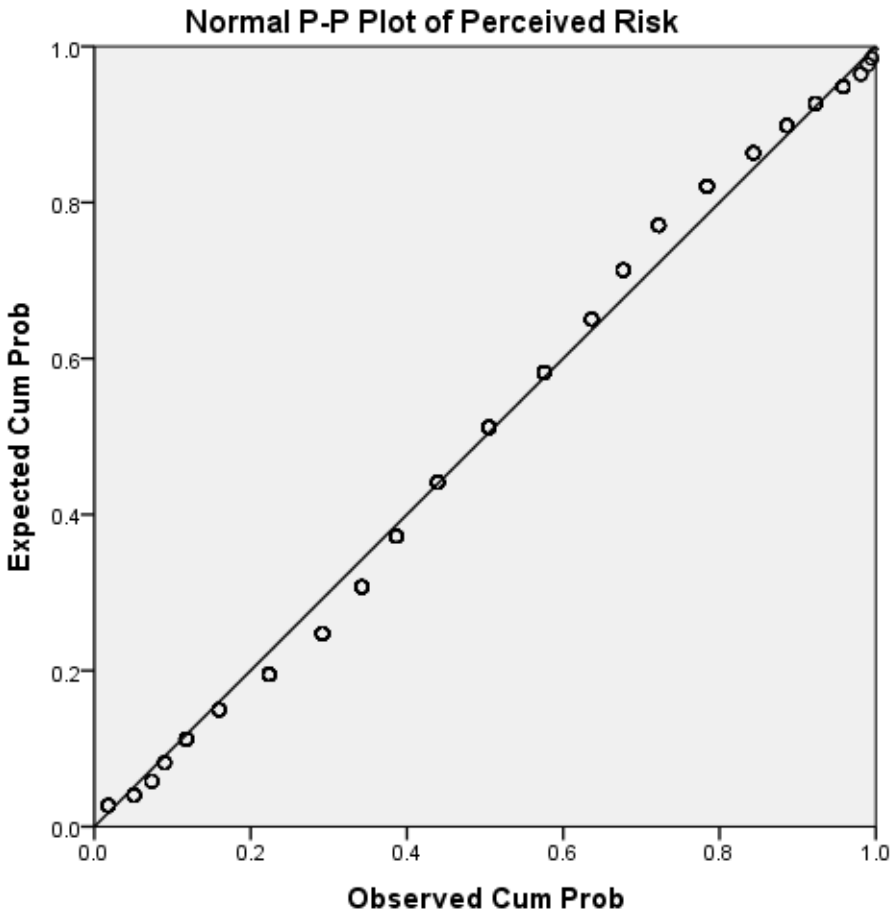

Figure 0:3 Linearity test of Perceived Risk

Source: *Survey Result (2016)*

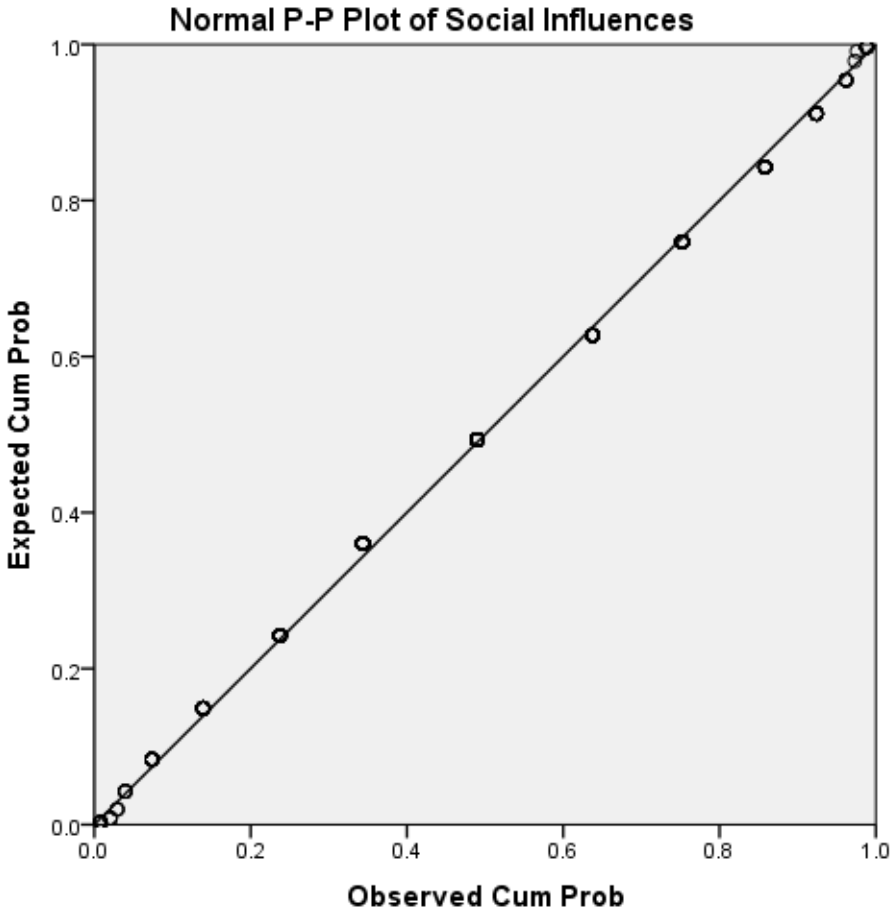

Figure 0:4 Linearity test of Social Influences

Source: *Survey Result (2016)*

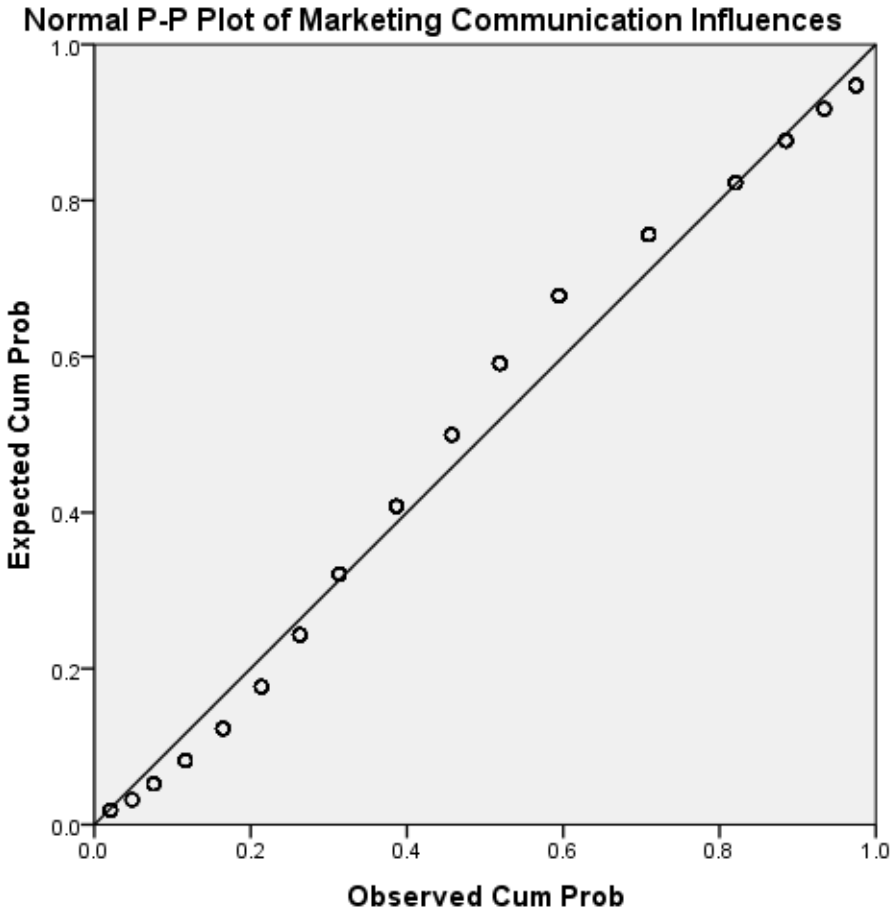

Figure 0:5 Linearity test of Marketing Communication Influences

Source: *Survey Result (2016)*

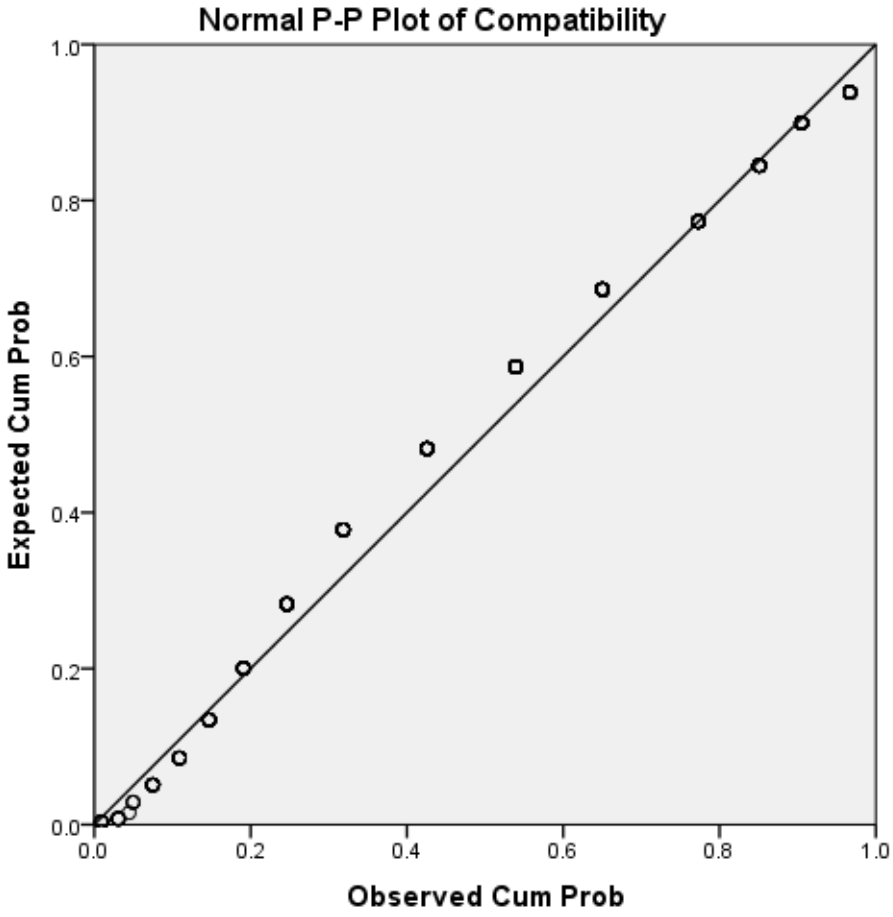

Figure 0:6 Linearity test of Compatibility

Source: *Survey Result (2016)*

2. Independence of Errors

Table 0-16 Durbin–Watson Statistic for Independences of Errors

Model Summary[b]					
Model	**R**	**R Square**	**Adjusted R Square**	**Std. Error of the Estimate**	**Durbin-Watson**
1	.843[a]	.710	.706	.393	1.955
a. Predictors: (Constant), Compatibility, Social Influences, Perceived Risk, Perceived Usefulness, Perceived Ease of Use, Marketing Communication Influences					
b. Dependent Variable: Adoption Decision					

Source: *Survey Result (2016)*