ADDIS ABABA UNIVERSITY

COLLEGE OF NATURAL AND COMPUTATIONAL SCIENCES

SCHOOL OF INFORMATION SCIENCE

Assessing E-Payment Adoption Factors: A Service Providers Perspective

By

Ashenafi Yacob

Jun 15, 2023

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Assessing E-Payment Adoption Factors: A Service Providers Perspective

A Thesis Submitted to School of information science of Addis Ababa University in Partial Fulfilment of the Requirements for the Degree of Master of Science in Information Science

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Advisor	signature	date
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Examiner	signature	date
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Examiner	signature	date

Declaration

I, Ashenafi declare this thesis titled **"Assessing E-Payment Adoption Factors: A Service Providers Perspective"** is my original, authentic thesis and all references used are cited. Therefore this thesis is submitted to Addis Ababa University School of information science for in partial fulfilment of the requirements for the Degree of Master of Science in Information Science.

Signature: _____

Ashenafi Yacob

This thesis has been submitted for examination with my approval as an advisor for Addis Ababa University School of Information Science.

Advisor's Signature: _____

Rahel Bekele (Ph.D.)

Dedication

Dedicated to my beloved family. May God give them happy and prosperous life!

Acknowledgment

First and foremost I would like to thank God Almighty for giving me courage and opportunity to start and finish this chapter of my life.

Next I would like to thank my family for their support and motivation with everything they have; my father who is exceptionally kind person Yacob Handiso and the strongest person I know my mother Kidan Belay and my sisters and my brother Yordanos Yacob, Eyerusalem Yacob and Martha Yacob and Zemikael Yacob.

Finally I would also like to thank all my friends for their support and motivation.

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Addis Ababa, Ethiopia

Abstract

E-payment technologies are continuously evolving creating new ways of transaction and money transfer. In developing economies E-payments such as mobile payment technologies are bringing new solutions to low infrastructure development problems. Emerging new innovations in E-payments indicate the need for continuous research and survey. Innovative information technologies such as E-payments are studied in two levels individual/consumer level and organizational/firm level. Most studies conducted in adoption factors identification of E-payments are in individual/consumer level creating a literature gap in the identification of factors affecting adoption of E-payments in organizational level. The purpose of this study is to identify factors affecting the adoption of E-payments in Ethiopian service providing organizations. A cross sectional survey with Innovation Organization Environment framework was adapted for this study. This study was conducted in 4 commercial bank's organizational customers in Ethiopian capital Addis Ababa that use either E-payment or manual deposit for service payment reasons. Confirmatory factory Analysis (CFA) was used to validate the adapted instrument and logistic regression was used to test the hypothesis. According to the findings in this study perceived lack of IS knowledge and perceived security concern affect negatively and top management support affect positively the adoption of E-payments in Ethiopian service providing organizations.

Keywords: E-payment; Organizational Adoption; Electronic Payment; Digital Payment; E-payment Adoption; Organizational E-payment Adoption.

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List of Acronyms

AT	Attitude
ATM	Automatic Tailoring Machine
AVE	Average Variance Extracted
B2B	Business to Business
B2G	Business to Organization
BI	Behavioral Intention
BTCA	Better Than Cash Association
CBE	Commercial Bank of Ethiopia
CEO	Chief Executive Officer
CFA	Confirmatory Factory Analysis
CFI	Comparative Fit Index
CR	Cronbach Alpha
DOI	Diffusion of Innovation
FS	Firm Size
G2B	Government to Business and Development community
G2G	Government to Government
G2P	Government to Person
GDP	Gross Domestic Product
GFI	Goodness of Fit Index
GRES	Government Resource Support
GRS	Government Regulatory support
ICT	Information Communication Technology
IDT	Innovation Diffusion Theory
INP	Industry pressure
IOE	Innovation Organization Environment
IS	Information Systems
IT	Information Technology

NBE	Ethiopian National Bank
PC	Perceived Cost
PDV	Perceived Relative Advantage
PEU	Perceived Ease of Use
PFC	Perceived Financial Cost
PLIK	Perceived lack of IS knowledge
PR	Perceived Risk
PSC	Perceived Security Concern
PT	Perceived Trust
PU	Perceived Usefulness
RMR	Root Mean Square Residual
RMSEA	Root Mean Square Error of Approximation
SME	Small and Medium Enterprises
SWIFT	Society for Worldwide Interbank Financial Telecommunication
TAM	Technology Acceptance Model
TAM2	Technology Acceptance Model 2
TAM3	Technology Acceptance Model 3
TMS	Top Management Support
TOE	Technology Organization and Environment
TPB	Theory of Planned Behavior
TRA	Theory of Reasonable Action
UNDP	United Nation Development Program
US	United States
USFR	United States Federal Reserve
USSD	Unstructured Supplementary Service Data
UTUAT	Unified Theory of Acceptance and Use of Technology

Chapter One

Introduction

1.1 Background

According to BTCA (Better Than Cash Association) an association created by organizations to promote and enhance E-payment technologies in the globe, E-payment is defined as the transfer of value from one payment account to another using digital devices such as mobile phones and computers using digital communication channels such as mobile wireless data channels or SWIFT (Society for Worldwide Interbank Financial Telecommunication). E-payments are payment mechanisms that use electronic media that do not involve cash transfer. Electronic payment systems can also define as a type of inter-organizational information related to transaction systems, linking various associations, and individual clients (S Fatonah et al., 2018).

The history of E-payment is traced back to 1918 when the United States Federal Reserve (USFR) back use telegraph to transfer currency. However modern E-payments are argued to have started in early 90s when all paper base credit card payments are replaced by electronic cards in the United States (US) (Fatonah et al., 2018). Since then, E-payment technologies have been evolving by type and functionality such as mobile payments and internet payment for E-commerce. Some of the common E-payment means identified by the research communities include.

- Mobile payments
- Smart cards
- Electronic Cheque System
- Online credit card payment
- Online Electronic Cash system

According to Yemisrach in 2018 research E-payment technology is believed to have been started in Ethiopia in 2010 when Commercial Bank of Ethiopia deploy the firs Automatic Tailoring

Machine (ATM) machines and distribute the first ATM cards for its customers (Yemisrach, 2018). Currently there are different E-payment means in the country such as mobile payments both with Unstructured Supplementary Service Data (USSD) and mobile apps, different electronic card systems such as ATM and VISA.

Even if E-payments have been in the global market for long time, different new E-payment technologies are still emerging such as mobile payments and mobile application payment systems (He, Duan, et. al, 2008). In addition, developing countries such as countries in Asia, Latin America and Africa are developing new innovative solutions to their context. The continuously evolving E-payemnt technologies in developing countries are regarded as an emerging innovation (Kabir et al., 2017). But the adoption process of these emerging technologies still faces different challenges in developing economies. Different researches are being conducted to identify these challenges that are being faced by service providers of E-payment in developing economies. Those challenges are attributed to different stakeholders, technologies and other external factors according to researchers (He, Duan, et. al, 2008).

The comprehensive understanding of the adoption factors at all levels is crucial for information system innovators and introducers as it focuses their effort in the critical factors the influence the adoption process at all levels. The adoption of innovative information technologies has been studied in two levels individual level and firm level (Oliveira & Martins, 2011). Individual adoption factor studies use models such as Technology Acceptance Model (TAM), Unified Theory of Acceptance and Use of Technology (UTUAT), Diffusion of Innovation (DOI) and some other combined or created frameworks by one's context. The organizational level adoption factors studies utilize different frameworks than the individual level frameworks as they include factors besides the individual and technological factors such as organizational and environmental factors.

E-payments are one of the innovative technologies that are emerging in developing countries, they are revolutionizing how payments are conducted and money is transacted traditionally in the market. As innovative technologies their study follow the same trend as other innovative technologies i.e., they are studied in individual and organizational level (Normasita Sidek, 2015; Patrick Igudia, 2018). However, many scholars distinguish the firms in E-payment studies as financial and non-financial firms (Ayana, 2018; Patrick Igudia, 2018). The distinction comes from

the fact that financial institutions are considered as introducers or innovators (i.e., early adopters) and non-financial institutions are considered as adopters or utilizers.

E-payment adoption in Ethiopia can be also regarded as an emerging new technology like in other developing countries because of the fact that online payment for E-commerce is still not implemented as the technology is not matured and other similar facts which are described in Ethiopian National Bank (NBE) digital strategy report in 2021. Figure 1 shows the Ethiopian digital payment adoption per percentage of the population as compared to other regions around the world from 2014 to 2017.

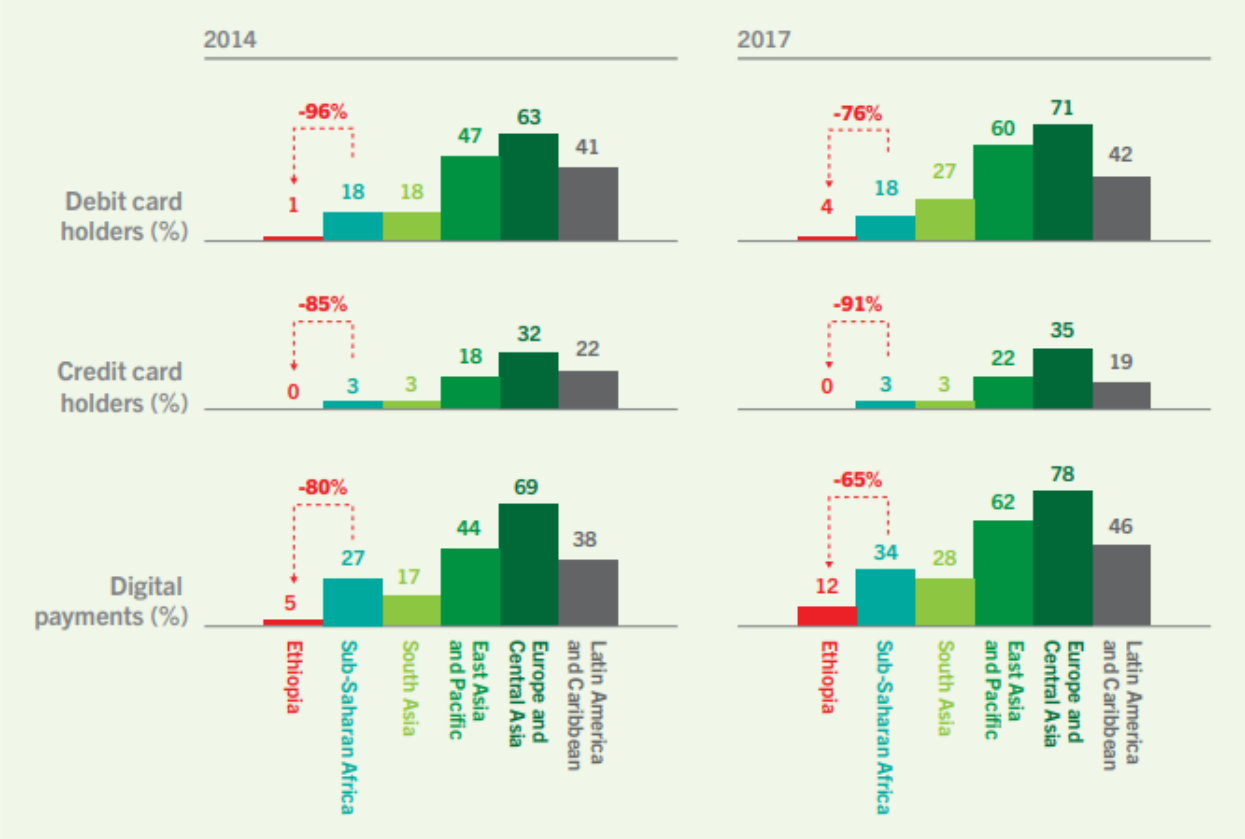

Figure 1. 1 NBE report in 2021 on digital payments adoption of Ethiopia as compared to other regions of the world.

There are no studies conducted at non-financial organization adoption level of E-payments found. This research aims to fill this gap by identifying the factors that influence the adoption of E-payment technologies by service-providing organizations of Ethiopia as E-payments are commonly adopted for service payments. Understanding of the factors influencing E-payment

adoption from all beneficiaries' perspectives creates a comprehensive idea of considerations for E-payment developers, adopters and service providers.

1.2 Statement of the Problem

New E-payment technologies are still emerging by innovators in order to expand the market share of E-payments which is dominated by cash payment exchange. Some of the new technologies are mobile payment systems, mobile application payment systems, and new E-commerce transaction and transaction integration systems (Marco Cangiano, et. al, 2019; He, Duan, et. al, 2008). This regards E-payment technologies as innovative information technologies.

According to different information technology adoption literatures, the study of innovative information technologies adoption is approached from two distinct levels individual-level and firm-level (Lai, 2017; Oliveira & Martins, 2011). Individual-level studies use adoption models such as Theory of Diffusion of Innovations (DOI) (Rogers, 1995), Theory of Reasonable Action (TRA) (Fishbein and Ajzen, 1975), Theory of Planned Behavior (TPB) (Ajzen, 1985, 1991), Technology Acceptance Model (TAM) (Davis, Bogozzi and Warshaw, 1989). These models focus on individual traits and perceptions that affect the adoption of new innovations such as perceived usefulness, perceived ease of use and so no (Oliveira & Martins, 2011).

The firm-level studies use models such as the Technology organization and environment (TOE) (Tornatzky and Fleischer, 1990), diffusion on innovation (DOI) (Roggers, 1995), and a combination of other and these frameworks models (Ilin et al., 2017). The firm-level models focus on the technological, organizational, and environmental factors that affect the adoption of innovation in organizations providing environmental and organizational perspectives to the studies as compared to individual-level models (Oliveira & Martins, 2011).

The beneficiaries of the E-payment technologies include individual consumers' who utilize E-payment for their day-to-day transaction activities or organizations that develop or adopt E-payment technologies to expand or enhance their product or service qualities (Marco Cangiano, et. al, 2019). E-payment technologies are regarded as innovative information technologies and hence their study should be approached from two distinct levels like other information technology

adoption studies individual-level and firm-level. Additionally, the firm-level beneficiaries in E-payment technologies include finical organizations that introduce or provide the E-payment technologies and non-finical organizations that adopt and utilize E-payment technologies.

Few researches are conducted targeting firm-level adoption of non-finical organizations (He, Duan, et. al, 2008) hindering the comprehensive understanding of the adoption factors at firm-level of non-finical organizations.

This study attempts to fill this gap by examining the factors affecting the adoption of E-payment in service-providing organizations of Ethiopia. This Research uses framework constructed from the combination of Diffusion of Innovation (DOI) and Technology Organization Environment (TOE) by Vladimir Ilin, Jelena Ivetić and Dragan Simić in 2017 for E-business adoption to identify the innovative, organizational and environmental factors.

1.4 Research Question

The main objective of the study is to identify the factors that affect the adoption of E-payments in service providing organizations. Therefore the following research question was developed

- What are the factors affecting the adoption of E-payment systems by the service providing organizations of Ethiopia?

1.3 The objective of the study

The main objective of this study is to identify the contextual factors affecting the adoption of E-payment in non-finical organizations specifically service-providing organizations of Ethiopia. Specific objectives include.

- To identify the technological or innovative factors that affect the adoption of E-payment in Ethiopian service-providing organizations.
- To identify the organizational factors that affect the adoption of E-payment in Ethiopian service providing organizations.

- To identify the environmental factors that affect the adoption of E-payments in Ethiopian service-providing organizations.

1.4 Scope and limitation of the study

The research intends to identify factors that affect the adoption of e-payment in Ethiopian service providing organizations. Due to Time and budget constraints only organizations that utilize banks for payment service are included in this study which disregards most organizations that use manual service payment means within the organization. Therefore, the scope of the study is limited only to those organizations that use manual and online payments systems via bank.

The other limitation of the study is geographical limitation; the study is conducted in Addis Ababa Ethiopian capital and those organizations that are not in Addis Ababa are not included in the study. The researcher intends to study sample of all organizations that utilize manual or online payment means via bank in all Banks of Ethiopia due to resource, time and willingness to participate in this study only organizations that are in Addis Ababa the capital of Ethiopia and willing banks with are included.

In addition, because the study is limited to those organizations that are regarded as service providing organizations; manufacturing only organizations are not included in this study.

1.5 Significance of the study

E-payment technologies are believed to benefit all stakeholders in various aspects. E-payment technologies benefit organizations and governments by providing better accountability and transparency in financial transaction of organizations and governments. Better service quality by improving customer utilization convenience thereby enhancing customer satisfaction. In addition, online e-payments are playing an important role in the development and implementation of E-commerce, in that the lack of online e-payment could hinder the successful implementation of E-commerce (Joseph & Richard, 2015).

According to United Nation Development Program (UNDP) report in 2015 the service sector accounts for 46% of the Ethiopian Gross Domestic product (GDP) which is the largest portion of the economy. This significant part of the economy is mainly transacted using cash, the Ethiopian government is aiming to increase this cash dominated transaction with digital payment technologies according to digital strategy report of 2021 by National Bank of Ethiopia (NBE). Hence our study will assist this digital transformation strategy by identifying the factors that affects the adoption of E-payment among Ethiopian service providing organizations providing contextual input.

As digital payments are shown to create transparency and accountability to governments and organizations transaction and the fact that Ethiopian government plans to expand the digital payment contribution to the local transactions, this study by examining and identifying the factors that affect the E-payment adoption factors among the Ethiopian service organizations which is the largest portion of the Ethiopian economy will have a significant value among service providers, payment system developers and adopters.

This study also has significant contribution for filling the under-examined part of E-payment adoption among scholars, providing comprehensive understanding of the factors that affect E-payment adoption among all level users (organizational and individual). Hence the comprehensive understanding of the adoption factors of E-payment among all level adopters will enhance and focus the efforts of technology innovators and producers on the critical factors identified by the research.

1.6 Organization of the study

This study is divided in to five chapters' Introduction, Literature review, Research methodologies, Data analysis and discussion and Conclusion. In chapter one the background of the study, the problem statement, objectives of the study, scope and limitations of the study and significance of the study are briefly discussed.

In chapter two the Literature supporting the study are discussed in different separate sections. The overview, information systems technologies and innovation, E-payments, service organizations and related works are included. These sections provide detail literature support for the study.

In chapter three the methodologies and the conceptual frame works selected are discussed in details. Chapter three is organized in two main sections one the conceptual framework which highlights the selected framework and the hypothesis developed. The second section is the methodologies which specifies the research design and methods selected for this study.

In data analysis stage the collected data is analyzed and the findings are discussed. In this chapter the pilot survey for instrument verification (i.e., face and content validity) data analysis and the main survey of the study data analysis which includes reliability and validity analysis, demographic analysis and hypothesis test are discussed in details. Finally, the findings of the study are discussed in details in a separate section.

Finally, the conclusion chapter is organized in three separate sections. First the findings of the research are concluded and discussed. Second the limitation of the research is discussed and finally the implications of the study based on research implications and industry specific implications are outlined.

Chapter Two

Literature Review

2.1 Overview

According Fagerberg research in 2003, innovation is a continuous application of knowledge, skills and resource to commercialize and distribute inventions to individuals and organizations; inventions refer to the newly introduced ideas, products or process. Innovations could be new products, production methods, source of supply, market or business process (Fagerberg et al., 2003). There are two fundamental dimensions forces or driving innovation in different sectors one is individual entrepreneurial motive and the second is organizational motive. Individual motives could be as a solution to a particular problem or social inertia and the organizational co-operative entrepreneurship motive is mainly associated with corporate researches for expansion of market and profit (Fagerberg et al., 2003).

Innovation impacts has been studied in different sectors on social, economic and political perspective both in individual and organizational level. The economic impact of innovation on innovative organizations have been shown in studies to be significant (Fagerberg et al., 2010). The social economic and political impact of different sectors of innovations on adopters has been and is being studied by researchers at different sectors.

The social economic and political impact of innovations could be studied once the innovation is introduced, accepted and used by adopters. The adoption of innovations has been studied in different Analysis levels and approaches such as individual level, group level and organizational level and process and factor approaches (Pichlak, 2015). Individual and group level studies mainly focus on the psychological factors that affect the acceptance of adoption by individual and group adopters. The organizational level studies focus on the factors that affect the adoption of innovation from different perspectives such as organizational, environmental, technological and soon (Pichlak, 2015). The process adoption approach analyzes adoption as a process with different

stages, tasks and decisions that affect the adoption of innovations. The factors approach analyses adoption of innovation as a phenomenon that can be affected by different factors such as individual, organizational, environmental and structural (Pichlak, 2015).

The study of how innovations are adopted in different sectors by individuals and organizations benefits innovators and stakeholders of innovations (I.e., Entrepreneur individuals or organizations) to focus their efforts on the critical factors that affect the adoption process (commercialization of inventions process). Researchers used different adoption models and frameworks in order to assess and understand how innovative technologies are adopted by individuals and organizations.

2.2 IS Innovation

Since the first introduction of the term information technology in 1958 different information technologies have been and are being introduced by entrepreneurs and organizations. According to many researchers the adoption and utilization these technologies is impacting societies around the globe changing how individuals interact with each other, how organizations conduct business and government's policies, regulations, activities, and interactions (Kalu, 2019; Musingafi & Zebron, 2014; Roztocki et al., 2019). The impact of IT innovation on individuals have been and is being studied by specifying the technology and its impact on the day today activities and interaction of an individual form different social and psychological angles (Kariuki Paul, 2015). The impact of IT innovation on organizational structure, management, function and operation is also being studied by different scholars as it indicates the organization's business-sustainability, productivity and competitive advantage (Lakhwani & Omkar, 2020). Additionally, IT innovation also impact different aspects of government such as structure, policies, regulations, economic development and security of a country (Kalu, 2019).

Despite information technology innovations impact argument weather, they are beneficiary or not to individual and the environment in general; Researches indicate that technological innovations are highly correlated with the economic development and competitive advantage of an innovative organizations (Fagerberg et al., 2010; Lakhwani & Omkar, 2020). As a result, a number of studies are being conducted in different perspectives of this phenomenon the adoption of information

technology innovation is one trend as it helps researchers and scholars to understand how technological innovations are introduced, adopted, and utilized among different levels of consumers (individual and firm/organization) level (Lai, 2017; Oliveira & Martins, 2011).

Researches that investigate the consumer's adoption behavior to technological innovation uses theoretical models such as Theory of Diffusion of Innovations (DIT) (Rogers, 1995), Theory of Reasonable Action (TRA) (Fishbein and Ajzen, 1975), Theory of Planned Behavior (TPB) (Ajzen, 1985, 1991), Technology Acceptance Model (TAM) (Davis, Bogozzi and Warshaw, 1989) and Technology Acceptance Model 3 (TAM3) Venkatesh and Bala (2008). These theories include constructs that are focused on individual perceptions, intentions, and factors that affect these traits and perceptions for technological innovation adoption and utilization (Lai, 2017).

On the other hand, researches that investigate firm-level adoption uses theoretical models such as Technology organization and environment (TOE) framework, diffusion on innovation (DOI) framework and a combination of these two frameworks. Those theories on the organizational adoption of technological innovation includes organizational and environmental factors and constructs that differ from individual-level adoption frameworks construct (Oliveira & Martins, 2011).

The information technology innovation adoption and its process at all levels (both individual and firm levels) is therefore examined and studied separately. Hence researchers examine the two adopters with different theoretical models and constructs.

2.2.1 IS Adoption at Individual Level

In order to understand the factors that affect the adoption of Technology by individuals, different models are being used by the research communities; the most common once are TAM (Technology Acceptance Model), TRA (Theory of Reasonable Action), TPB (Theory of Planned Behavior), UTAUT (Unified Theory of Acceptance and Use of Technology), and Various Extension of TAM like TAM2, and TAM3 (Rosario Oliveira Martins et al., 2011). Those theories mainly focus on the factors that affect the individual's attitude towards use and behavioral intention to use some novel technology.

In 1975, Fishbein and Ajzen developed the Theory of Reasonable Action (TRA) which is used as a base for other adoption models. This model states that Attitude and Subjective Norm as determinant for the Attitude of an individual to develop some Behavior (use of some technology) which mainly affected by Behavioral Belies and Normative Belief with Outcome Evaluation and Motivation to Comply as subordinate factors that affect Attitude and Subjective Norm. Ajzen in 1991 then modify TRA and develop the Theory of Planed Behavior (TPB). This model states that Intention affected by Attitude, Subjective Norm and Perceived Behavioral control affect the individual's adoption of some Behavior (Lai, 2017). This models manly focuses on the factors that affect the adoption of an individual towards developing some behavior.

In 1989 by tailoring TRA for information systems and technologies adoption developed Technology Acceptance Model (TAM). In this model Davis states that the actuals system use is determined by the attitude towards using which affected by two main factors Perceived Usefulness (PU) and Perceived Ease of Use (PEU) which are affected by different other variables. This model is modified several times by exchanging the relation between the determinant and the external variables. In 2008 Venkateshand Bala developed the integrated model of technology acceptance model TAM3 by modifying TAM2 to include several external factors such as Subjective Norm, Image, Job Relevance, Output Quality, Result Demonstrability, Computer Self Efficacy, Perception of External Control, Computer Anxiety, Computer Playfulness, perceived enjoyment, Objective Usability, Experience and volunteerism. In 2003 Venkatesh, Morrise and Davis developed UTAUT by identifying factors affecting the Behavioral Intention towards Actual system use which constitutes four main factors and four facilitating factors. The four main factors are Performance expectancy, Effort Expectancy, Social Influence and Facilitating condition. The four facilitating conditions are Gender, Age, Experience and Voluntarism ware included (Lai, 2017). The above explained models mainly focuses on the individual's intention for acceptance and use of novel technology.

2.2.2 IS Adoption at Firm/Organization Level

The adoption and utilization of information technologies have a significant influence on the productivity, operation performance, and service quality of organizations (Chen & Tsou, 2016; Rosario Oliveira Martins et al., 2011). Additionally, the adoption of Information technology

innovations in service organizations is also significant as it enhances or expands the scope of their services and products. The information technology activities in the service sector involve adding new services, expanding existing services, and improving the service delivery process or service process (Chen & Tsou, 2016). The prominent trend in the study of technological innovation adoption at the firm-level uses TOE (technology organization environment), DOI (diffusion of Innovation) and combination of those models construct (Rosario Oliveira Martins et al., 2011).

DOI is theoretical model developed by Roggers in 1995 to examine and model the diffusion of innovation both at individual-level and Firm-level (organizational level). Rogers DOI model abstracts innovation adoption as a new idea diffused among distinct social system through certain social channels and attempts to examine how, why and at what rate this diffusion occurs. Firm-level DOI has three independent variables individual (leader) characteristics), internal organizational structural characteristics and external characteristics of the organization which include different variable abstractions within them to measure or examine organizational innovativeness or organizational innovation adoption as a dependent variable (Ncube et al., 2003).

TOE model developed by Tornatzky and Fleischer in 1990 for Technology innovation adoption of organization define three broad aspects of an organization technological context, organizational context, and environmental context. The introduction of environmental context as compared to DOI makes TOE a more comprehensive framework. Many empirical studies have been conducted since its introduction in 1990 making it most prominent than DIO (Arpaci et al., 2012; Rosario Oliveira Martins et al., 2011).

Some researchers also combine TOE and DOI with each other and with other technology adoption models to understand complex systems adoption processes such as institutional theory, and Lacovou model frameworks are among the prominent ones.

The selection of these models depends on the researcher's decision and justification of whether the selected framework more fits the particular phenomenon under investigation.

2.2.3 Firm level IS Adoption Frameworks

There are two prominent frameworks used to study the adoption of information innovation technologies at organization/firm level the Diffusion of Innovation (DOI) of Rogger's 1995 and the 1990 Tornatzky and Fleischer's Technology Organization Environment (TOE). Rogger in 1995 identified that individual, internal and external structure of an organization as main factors that affect the adoption of innovative information technologies at firm level. On the other hand, in 1990 Tornatzky and Fleischer identified technology, organization and environment aspect of an organization are the critical factors that affect the adoption of innovative information technology at firm level (Rosario Oliveira Martins et al., 2011). Some researchers also use combination and modification of those frameworks in order to achieve a comprehensive framework constituting of commonly identified constructs from both frameworks within the research community (Oliveira & Martins, 2011; Ilin et al., 2017). In the following paragraph DOI, TOE and modified or combined models of those frameworks are discussed in detail.

2.2.3.1 Diffusion of Innovation (DOI)

Diffusion refers to the communication of innovation among individual through some social system (Ncube et al., 2003). Individuals in this framework considered as possessing different degree of willingness to adopt innovations and follow normally distributed overtime (Ncube et al., 2003; Oliveira & Martins, 2011). However, the adoption of innovation in organizations is complex as it faces both supporters and opponent individual in an organization. According to Roggers the adoption of innovative information technologies in an organization mainly affected by individual in an organization and internal and external origination structural factors.

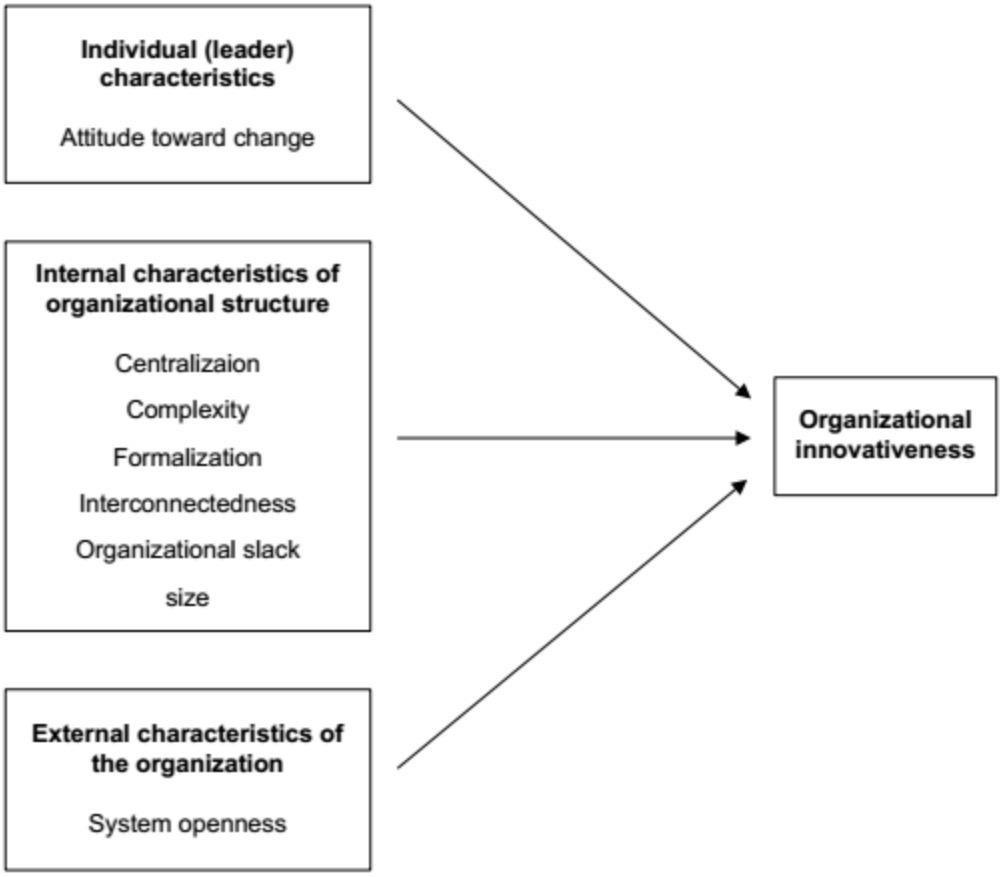

Figure 2. 1 Form Baker, 2012 Roggers 1995 Diffusion of innovation in an organization (DOI) framework.

The individual leader characteristics in individual factor has one determinant the attitude of an individual or a leader in an organization towards change. The internal organizational structure factor in Roggers 1995 model has six determinants centralization, complexity, formalization, interconnectedness, organizational slack, and size. In this model the degree to which power is concentrated among few individuals referred as centralization. Complexity refers to the degree an organization's member possess Knowledge and expertise. Formalization is the degree to which an organization directs its employees to follow rules and procedures. Interconnectedness refers to an organization's unit linkage by interpersonal network. The uncommitted resources availability degree is referred as organizational slack and the number of employees in an organization is referred as size in the internal structural factor. The external organizational structure determinant has one construct system openness (Oliveira & Martins, 2011). Roggers 1995 organizational adoption model covers wide range of attributes that are connected to organizational aspects.

2.2.3.2 Technology Organization Environment (TOE)

In 1990 Tornatzky and Fleischer developed Technology Organization Environment framework (TOE) to identify factors affecting organization adoption. This framework has three main determinant factors of adoption in organizational context Technological factors, organizational factors, and environmental factors (Arpaci et al., 2012; Baker, 2012). The technological factor in TOE refers to the relevant technologies for the organization both available inside the organization and available in the market place but not in use by the organization. The organizational factors in this framework refers to the characteristics and resources of an organization that affect the adoption of innovation. The Environmental factors those factors associated with arena in which the organization conducts its business (Baker, 2012).

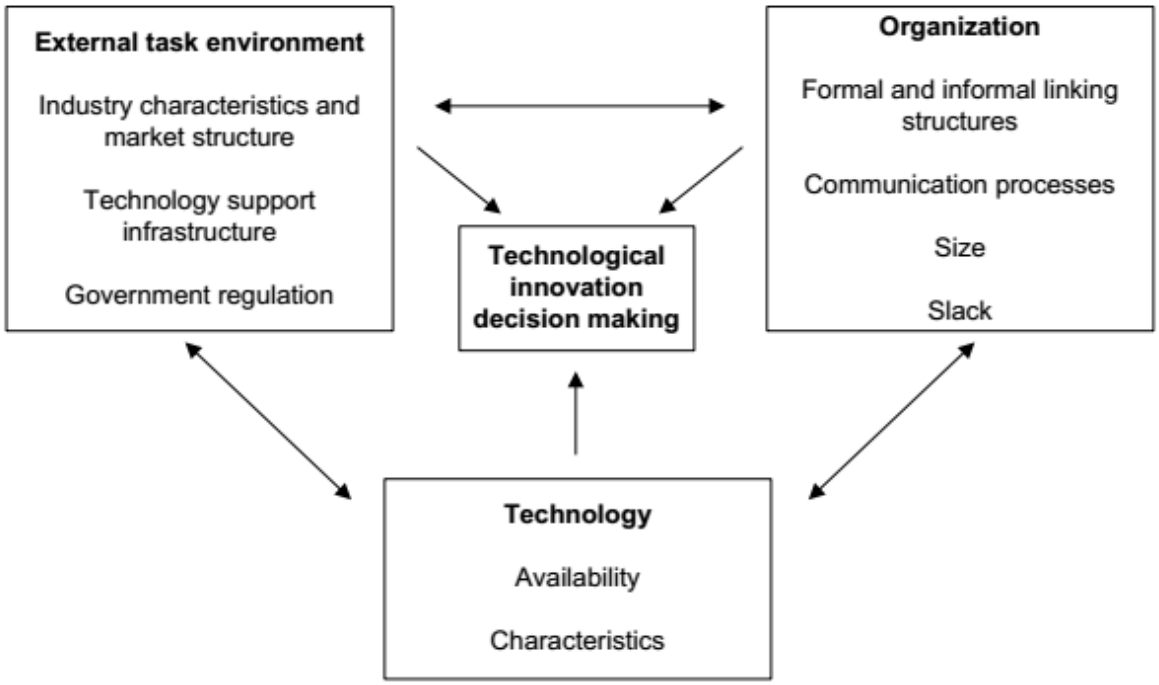

Figure 2. 2 Form Baker, 2012 Tornatzky and Fleischer 1990 TOE framework.

The technology factor in TOE refers to the relevant technologies' availability in the organization both internal and external. The Technology construct in this framework has two factors availability refers to the availability of external and internal technologies and characteristics construct refers to how the technology characteristics itself influences the adoption process. The organizational

factor in TOE refers to the organizational characteristics that include firm size, structure, formal and informal link, communication process and organizational slack. The environmental factor in this framework refers to business environment including the characteristics of the industry, business market environment, and dealing with the government such as regulations (Baker, 2012).

2.2.3.3 Modified and Combined Frameworks of TOE and DOI

Among the combined models used in the research community Institutional Theory by Scott and Christensen of 2001 and Innovation Organization Environment (IOE) by Vladimir Ilin, Jelena Ivetić and Dragan Simić of 2017 are some of the frameworks used for organizational adoption inquiries. The institutional theory emphasizes on the institutional intra environment of similar organizations which states that institutions with similar businesses tend to follow similar culture due to competitive pressure from partners, suppliers and compotators. Therefore, the constructs in the institutional model adds external pressure to environmental context of TOE which is a combination of pressure from compotators and trading partners.

On the other hand, the Innovation Organization Environment model of Vladimir Ilin, Jelena Ivetić and Dragan Simić is combination of DOI of Roggers and TOE of Tornatzky and Fleischer. After rigorous literature review of Utilization of DOI and TOE in researches conducted in developing countries, the researchers extract constructs from both frameworks and created Innovation Organization Environment framework for E-business adoption. E-businesses are defined as electronic enabled business transactions along the value chain extending from purchasing to selling which includes upstream suppliers to downstream customers (Ilin et al., 2017). From this definitions e-business is a more general concept that includes transactions extending from upstream supply chain to downstream customers. The figure below shows the combined framework of Vladimir Ilin, Jelena Ivetić and Dragan Simić for E-business adoption in developing countries.

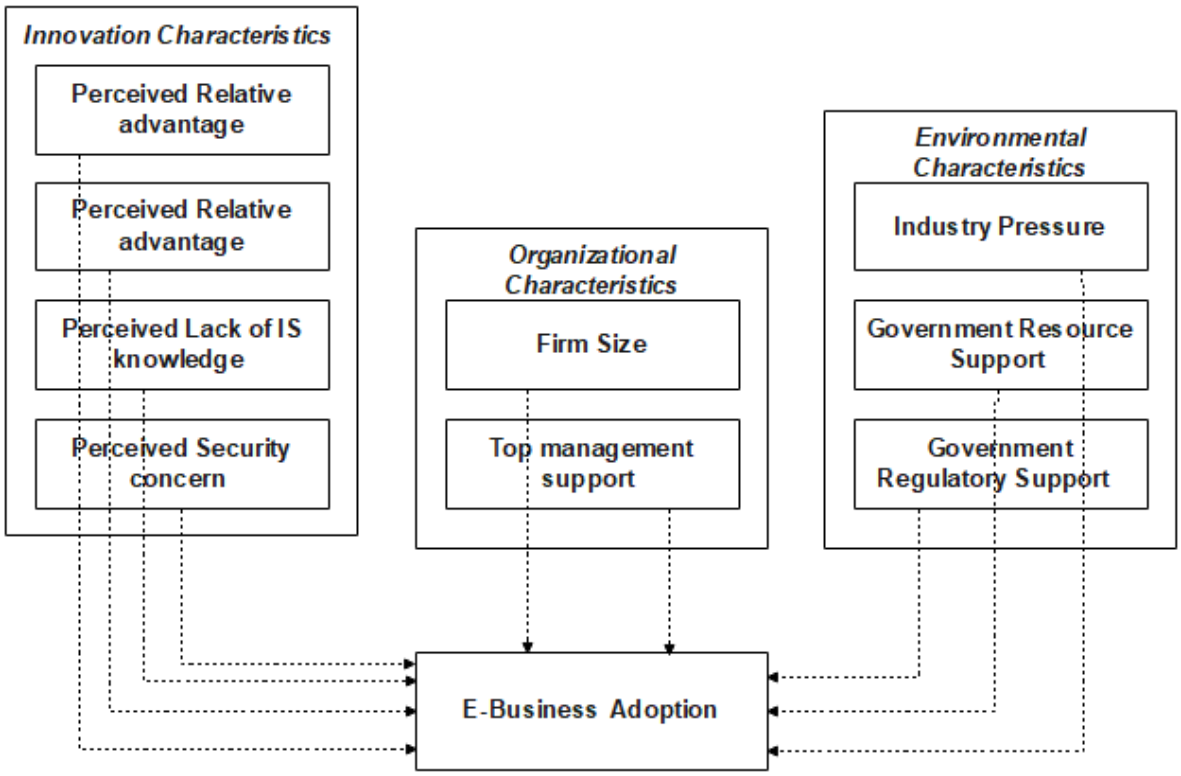

Figure 2. 3 Combined Model of DOI and TOE by (Ilin et al., 2017).

2.2.3.4 Comparing DOI, TOE and Combined Models

TOE and DOI have many similarities in the technological and organizational factors as they are common for both models. And the individual factor in the DOI model is included in organizational and technological factors in TOE. In addition, the environmental factor of TOE model makes the framework more comprehensive (Oliveira & Martins, 2011). According to Researchers TOE has many empirically studies conducted with different innovation technologies in the research community (Oliveira & Martins, 2011).

Oliveira & Fraga Martins in their systematic review in 2011 concluded that for intra-firm innovation technologies it's better to use TOE as it constitutes environmental factor which is not included in DOI. However, for more complex emerging innovative technologies they suggested that it is better to use combined frameworks.

This research adapted and used a combined framework due to the reason that E-payments can be considered as emerging and complex technologies because of their variations and intra-organizational operation characteristics (i.e., sending and receiving bill and payment details to and from service provider to E-payment provider and soon.) (Marco Cangiano, et. al, 2019; He, Duan, et. al, 2008).

2.3 E-Payments

A digital payment (Electronic Payment) refers to the transfer of value from one payment account to another using digital devices such as mobile phones and computers with digital communication channels such as mobile wireless data channels or SWIFT (Society for Worldwide Interbank Financial Telecommunication). This includes payments made with bank transfers, mobile money and payment cards including credit, debit, and prepaid cards (BTCA (Better Than Cash Alliance), 2021). BTCA is an organization formed in 2012 by a number of organizations promoting digitalization of payments worldwide.

The adoption of E-payment provides wide range of advantages for all stakeholders in E-payment service ecosystem such as better security for recipients it could be individuals or organizations who adopt E-payment. Better efficiency and accuracy in reaching financially excluded zones and providing a broad range of financial services. Significant saving of resources such as time and human (Marco Cangiano, et. al, 2019).

2.3.1 Types of E-Payments

According to researchers the history of E-payments is trace back to 1918 when the United States Federal Reserve bank utilize telegraph to transfer currency since then the E-payment evolved by technology, type and functionality. In 1990 paper-based credit payments fully transformed to electronic card system in the US (Fatonah et al., 2018). Today there are different types of E-payment systems. Even though there are different types of E-payment systems available in the global market, mobile payment is the most prominent payment system in developing countries due to their cheaper solution for wide type of good and service market exchange (Eelu & Nakakawa, 2018). Some of the E-payment systems are listed and described below.

1. Mobile payments: the utilization of mobile for financial transaction and payments of services and goods such as internet service payments, mobile banking and utility bill payments.
2. Smart cards: an integrated circuit card providing authorization and functionality for providing transactions using Automatic Teller machine (ATM), pose machine and swiping machine.
3. Electronic cheque System: making payment using scanned copy of the cheque with digital signature and authorization.
4. Online credit card payment: credit provided by Card such as master card and visa card to provide credit payments based on the payee potential to pay.
5. Online Electronic Cash system: enables online transaction for goods and services using Electronic Data Interchange (EDI)

2.3.2 Stakeholders of E-payment

E-payment service provide financial transaction for different stakeholders that utilize the technology. According to Better than Cash alliance (BTCA) an association promoting the utilization of E-payment across the globe; stakeholders of E-payment systems include governments, individuals, business and Development communities (Cangiano et al., 2003). Below shows the payment grid of E-payment systems.

		Payee		
		Government	**Business**	**Person**
Payer	**Government**	**G2G** Budgetary allocations, funding	**G2B** Grants, payments for goods and services	**G2P** Welfare programs, salaries, pensions
	Business	**B2G** Taxes, fees for licenses	**B2B** Payments for goods and services	**B2P** Salaries and benefits
	Person	**P2G** Taxes, utilities	**P2B** Purchases	**P2P** Remittances, gifts
	Development Community	**D2G** Taxes	**D2B** Payments for goods and services	**D2P** Cash transfers

Figure 2. 4 From Cangiano et al., 2003 Payment grid of E-payment systems.

The payment grid shows transactions between government to government called by G2G, government to individual/person G2P, government to Business and Development community G2B and G2D. Development communities in this context refers to NGOs and nonprofit organizations. These transactions are held due to different reason for example business to business (B2B) can occur for exchange of goods and services. Business to organization (B2G) and Development community to Government can occur for taxes, fees and license services and so on.

2.3.3 E-Payment Technology as IT Innovation

New innovative technologies are still being developed recently long after the introduction of E-payment systems such as mobile payment systems, and new mobile application technologies such as bar code reader smartphone payment systems. Additionally, the emergence and expansion of E-commerce are forcing the development of new systems to system integration technologies and new payment systems (Marco Cangiano, et. al, 2019; He, Duan, et. al, 2008).

Additionally, in developing countries such as countries located in Africa and Asia E-payments are still in emerging stage. Most developing countries market is still dominated by cash transaction payments (Kabir et al., 2017).

Therefore, considering the emergence of new payment systems, how they are transforming the old money and value transaction of the market exchange systems, and developing countries adoption stage; it is reasonable to assume that E-payments are still innovative technologies and their adoption among different levels adopters is subjected for studies using innovative information systems adoption models.

2.3.4 E-Payment Technology Adoption

E-payments are still regarded as innovative technologies hence the study of the adoption of E-payment technologies is still being conducted in developing countries such as in Asia and +Africa with different focus. The focus of studies conducted in Asian countries are concerned with the Perception and Satisfaction of E-payment services by different consumers. On the other hand, the focus of studies in Africa are concerned with users' acceptance of E-payment systems indicating

the level of the technology in Africa as emerging compared with Asian countries (Kabir et al., 2017).

Studies in the adoption of E-payment also follow the trends and approaches of information technologies as they are conducted in individual and firm level perspectives (Normasita Sidek, 2015; Patrick Igudia, 2018). However, the firm/organization level studies conducted in the adoption of E-payments distinguishes financial institutions adoption form non-financial organizations that adopt and utilize E-payments for their product and service value exchange (Bultum, 2014; Elizabeth Maroko Mbwayo, 2017; Normasita Sidek, 2015). Distinction between Financial and non-financial organizations come from the fact that financial organizations are considered to be service providers or initial adopters of the technology on the contrary non-financial organizations/ firms are considered to be adopters or utilizers of the technology.

As E-payments are considered to be innovative information systems currently in developing countries such as Ethiopia, their study follows the same trend as other Information technologies such as ERP, E-Commerce and others. This means that the Adoption of E-payments can be studied both in consumer/ individual level or organization/firm level.

2.3.4.1 E-Payment Adoption in Consumer/Individual Level

Most studies conducted on E-payments adoption in developing countries such as countries in Africa mainly focuses on the users or consumers acceptance of E-payments technologies (Kabir et al., 2017). This indicates that in developing countries such as countries in Africa, E-payment is still an emerging technology novice for most of the population. The empirical studies conducted in developing countries uses theoretical frame woks such as TAM, UTAUT, TRA, TPB, DOI and some combination of those frameworks. Furthermore, the commonly used variables in those studies include Usefulness, Ease of use, Trust, Security, Cost Benefit, Convenience, Awareness, Attitude, IT skills and flexibility appear dominantly (Kabir et al., 2017).

In their research Tesfaye and Regasa in 2019 develop a conceptual framework from empirical studies of other researches with three main constructs that determine the E-payment utilization. The three constructs of that ware found from empirical studies include demographic related factors, institutional related factors and customers related factors that determine E-payment

utilization of Commercial Bank of Ethiopia customers. After conducting an explanatory quantitative survey of 258 systematically selected respondents they found that from demographic factors education and income positively, from institutional related factors network interruption and service charge negatively and from customer related factors perceived usefulness and willingness also affect the utilization of E-payment. The research tries to identify the factors that affect the utilization of E-payments with framework developed from literature review and researcher's exploratory study instated of using standard frameworks such as TAM and UTAUT which limits the research capability of identifying the basic factors that are known on literatures and tested by different technologies and times.

The other research in the topic of E-payment adoption in individual level is by Shentema Weldesenbet in 2019 which is conducted on the 390 customers of Ethiopian Productivity safety net program. The researcher uses a combined conceptual framework with four main constructs credibility and trust, convenience (with Perceived Ease of Use (PEOU) and Perceived Usefulness (PU)), Perceived Risk and Relative Advantage which determines the adoption of E-payment mobile payment called M-Birr. The researcher finds out that convenience and relative advantage to have significant positive influence, Perceived Risk to have negative influence and trust having no significant relationship on the adoption of M-Birr. This research also does not use standard adoption frameworks that limits the researches capability of identifying standard variables factor like in the previous research.

In 2019 Frehiwot Abebe and Lemma Less using ORS (2018) model and Yemisrach Desta using UTAUT2 studied the factors affecting the adoption of Mobile Payment in agents and E-banking adoption in customers respectively. In their research Frehiwot and Lemma founds out that relative advantage, ease of use, usefulness, attitude, trust, risk/security and cost are factors affect mobile payment adoption positively and significantly and compatibility to have insignificant influence. Additionally, Yemisrach conducted a survey on 329 respondents using UTAUT2 model founds out that performance expectancy, habit, hedonic motivation, price value, and facilitating conditions are the main influential factors of customers' behavioral intention for the adoption E-banking systems in Ethiopia. The use of standard framework makes the identified factors standard and understandable by the research community.

Dinkisa Merga in 2017 using customer oriented UTAUT2 model on Commercial Bank of Ethiopia (CBE) mobile payment users identified that Performance expectancy, Effort expectancy and price value as major influencing factors of behavioral intention whereas social value, facilitating conditions and hedonic motivation were found to have insignificant effect on behavioral intention of customers for mobile banking adoption. In the same year Ebsa Beyene conducted a mixed method research using TAM and Innovation Diffusion Theory (IDT) identified the challenges that affect the adoption of Mobile payment called Hello-cash on corporate Bank of Oromia which are perceived risks, trust reliability, lack of legal frame and government support, lack of ICT infrastructure, electricity and telecommunications. In 2018 and 2019 Henos Demeke and Bezaalem Abebe studied the factors affecting the Mobile payment adoption in Customers of CBE, Dashen Bank and M-Birr mobile users separately. Henos in his research uses a model built from TAM and other constructs to identify to identify the factors affecting the adoption of Mobile payment in customers of CBE and M-Birr. Henos identifies that bank service charge and cost reduction of Agent banking has a positive impact on the actual usage, Perceived usefulness construct has statistically significance weight and positive impact on actual usage, trust to be statistically insignificant to actual use and vulnerability to Errors indicator has significant negative impact on users' intention to actual use. Finally, Bezaalem in his research identities that Perceived Trust (PT) and Perceived Risk (PR) are found to be positively and significantly and Perceived Cost (PC) positively but insignificantly, Attitude (AT) and Behavioral Intention (BI) are found to be positively and significantly affecting customers' adoption of mobile payment.

Studies conducted in Ethiopia utilize non-standard and different combined frameworks to identify the adoption factors of digital payment systems. Additionally, studies conducted in relation with E-payment systems adoption focuses on the adoption of Mobile payment systems by consumers which indicates that Mobile payment systems are continuously emerging and expanding in the country.

2.3.4.2 E-payment Adoption in Organizations/Firm Level

E-payment is main component of modern organizations such as companies engaged in ecommerce. Organization's role in E-payments technologies is not limited to providing the E-payment service like financial organizations they also adopt this technology and utilizes it for their service and

business. However, the adoption of E-payments by organizations is overlooked by researchers and scholars (He, Duan, et. al, 2008). Some of the studies conducted in organization/ firm level adoption of E-payments distinguishes between non-financial organizations and financial organizations (Bultum, 2014; Elizabeth Maroko Mbwayo, 2017; Normasita Sidek, 2015).

Qile in 2008 conducted research in the adoption of E-payment by China's companies using Rogers DOI to identify the factors affecting the adoption of E-payment by China's companies and suggested that future researches to conduct this kind of research using TOE in order to comprehensively understand the factors that affect the adoption of E-payments. Another research conducted in Nigeria's small and medium enterprises (SME) 2018 using modified TOE to identify the critical factors affecting the adoption of E-payments in Nigeria's SMEs found that all the factors that are in the framework have some contribution to the adoption of E-payments in Nigeria's SMEs with varying significance (Patrick Igudia, 2018). Studies conducted in the non-financial organizations perspectives uses Rogers DOI, Tornatzky and Fleischer's TOE and some modified or combined framework between DOI and TOE. These studies of organizational adoption of E-payments are under looked by Researchers.

In 2014 Ayana conducted a study that affect the adoption of electronic banking adoption in Ethiopian banking industry. The study conducted in three private owned and one state owned Ethiopian banks using a mixed methods approach. In his study Ayana uses Tornatzky and Fleischer's TOE to identify the factors that affect the adoption of electronic banking adoption by Ethiopian banks. This study identifies that from technological related factors perceived risk to be the critical factor, form organizational related factors financial and skilled manpower resources, and form environmental factors lack of legal and regulatory frameworks, lack of adequate infrastructure, and lack of competition among the factors that affect the adoption of E-banking in Ethiopian banking sectors. The study shows that financial organizations of Ethiopia face different challenges during adoption of novice technologies.

In 2017 Elizabeth Maroko conducted descriptive research on the factors that affect the adoption of E-payment in 43 Kenyan commercial banks. With literature review the researcher identifies the critical factors that affect E-payment adoptions then construct conceptual framework relating those factors with adoption of electronic payments. Critical factors identified by the researcher include

Information security, Technology, Infrastructure, Top management support and regulatory frameworks are used in the framework developed. All those factors affect and have a positive correlation with adoption of Electronic Payments by Kenyan banks. The adoption of novel E-payments systems by financial organizations is being studied by different scholars in developing countries such as Ethiopia and Kenya those factors are multidimensional (i.e., includes all technological, Organizational, and environmental factors).

Most researches in E-payment systems adoption are conducted in E-payments acceptance of an individual consumers creating a literature gap on the comprehensive understanding of the factors that affect the adoption of E-payments in all level adopters therefore this research aims to fill this gap by examining the factors that affect the adoption of E-payments from non-finical organizations perspective particularly service providing organizations using a combined framework developed by Vladimir Ilin, Jelena Ivetić and Dragan Simić in 2017 for the adoption of E-business in developing countries. The reasons for the selection this framework are.

- According to Oliveira & Fraga Martins 2011 literature review of innovation adoption frameworks by organization's; utilization of combined frameworks of DOI and TOE for studies of complex and emerging technologies adoption by organizations is advantageous as the frameworks model the phenomenon more accurately rather than using either DOI or TOE individually. E-payments on the other hand are considered complex and emerging according to Marco Cangiano, et. al, 2019 and He, Duan, et. al, 2008 studies as a result the study utilize the combined framework.
- The similarity between the technologies; E-business is a more general concept which utilize information systems for intra-organizational operation of transactions and business activities between suppliers, sellers and customers and E-payments are transactions conducted using information system technologies between business, organization, individual and governments which includes operation between organizations for service and product bill and payment detail exchange.
- Additionally, the framework developed by Vladimir Ilin, Jelena Ivetić and Dragan Simić is the result of rigorous systematic literatures of developing countries context of different technologies such as ERP, E-commerce and EDI.

- The Development time of the framework which in 2017 makes the model capable of capturing recent phenomenon among the research communities.

2.4 Service Organizations

There are different service definitions in the literature; according to service management and marketing literatures services are acts, deeds or performance of that are mostly intangible one. Another definition of service is an activity involving exchange of objects of some economic value benefit between customer and supplier (Baida et al., 2005). From these definitions service organizations definition can inferred as an organization involved in the act of exchange of objects some economic value. Some of the organizations include hotels, healthcare organizations, telecommunications, electric power and clean water providers, insurances and banks.

For this study excluding manufacturing organizations any governmental and non-governmental organization that are involved in providing of some sort of service in exchange for payment are included.

2.5 Related Works

The stakeholders of E-payment systems include E-payment providers, service providers or organizations that use E-payment for their services and products payment, E-payment customer's users that utilize E-payment for various payment of service or product bill and governments that collect online payment taxes. Organizations as a stakeholder of the E-payment system their adoption characteristics and the factors that affect this process benefits all stakeholders and the service provided in general. Some studies have been conducted in this area such as ICT adoption in organizations as in general innovation technology and E-payment and E-banking adoption as a specific technology in different stakeholders.

In 2014 Yohannes conducted Information Communication Technology (ICT) adoption among Ethiopian Banking industry in her study she identifies 20 factors that hinder the adoption of ICT in Ethiopian banking industries. In her research the most significant factors that hinders the adoption of ICT in Ethiopia banking industries are ICT costs and security and privacy concerns.

Girmanesh, in 2015 also conducted a study which can be regarded as Mixed method study to understand the factors affecting organizational IS innovation adoption in Ethiopian governmental organizations and propose successful IS adoption framework. In her study after conducting IS adoption research using TOE the researcher proposed a successful IS adoption implementation framework for reasons that are not clear. Regardless of the major flaw in this research that is tailoring IS adoption factors identification framework for successful IS innovation adoption framework in organizations without substantial support for the connection of the variables the researcher identified some critical factors that affect the adoption of IS innovation in the data collection phase of the study. According to the researcher initial qualitative finding top management support, organizational readiness and competitive advantage have a positive influence on IS adoption, while organizational size has no effect.

Additionally, Qile in 2008 conducted the adoption of E-payment system in Chinese companies and suggested that the adoption of E-payment needs a comprehensive understanding form multidimensional perspective including technological, organizational and Environmental perspective. Some of the studies related with non-financial organization E-payment adoption are presented below. Qile and other four researchers in 2008 conducted an empirical analysis of the factors that affect the adoption of online E-payments in Chinese companies with managerial perspective using Rogers's relational framework. The researchers use an online questioner developed from Rogers 1995 model and collected 48 usable responses. The researchers identify that Chinese company's E-payment adoption is mainly influenced by perceived compatibility. Chinese companies are more likely to adopt an E-payment which is compatible with their existing practices. Furthermore, the researchers recommended that the comprehensive understanding of the E-payment adoption framework including the organizational, and environmental factors could be achieved using different framework such as TOE.

Another Research conducted in organizations adoption of E-payment is conducted by Patrick Igudia 2018 in 239 small and medium business (SME) of Nigeria. In this research Thong 1999 Modified TOE is used. Thong's 1999 modified TOE model separates Chief Executive Officer (CEO) construct from organizational factor for small and medium business because for small and medium business the owners are usually the mangers and their influence is substantial as it is supported by previous studies (Patrick Igudia, 2018). The study identifies that from technological

factors all the variables perceived complexity, perceived benefits, perceived security, and perceived trust significantly influenced the adoption of E-payment systems in Nigerian SMEs. Additionally, from organizational factors firm's IT infrastructure only affect the adoption of E-payments in Nigerian SMEs. Lack of government support and competitive pressure from environmental factors identified as inhibitors for E-payment adoption while culture and physical infrastructure do not have any effect. The researcher recommended the study of this factors for further study. The demographic variables of the CEO's factors such as age, IT knowledge and Education level identified to affect the adoption of E-payments significantly. IT knowledge and educational levels are facilitators whereas older age is inhibitors of E-payment adoption. Perceived benefit found to be the critical factor with highest influence on the adoption in Nigeria SMEs. This study benefits E-payment service providers in order to focus their efforts on the critical factors identified by the research on the adoption of E-payments in Nigeria's SMEs.

Bultum in his research about factors affecting adoption of electronic banking system in Ethiopian banking industry in 2014 which is regarded as financial organizations perspective only study. In his mixed method research using TOE framework which include four banks three private and one state owned bank identifies that security risk, lack of trust, lack of legal and regulatory framework, Lack of ICT infrastructure and absence of competition between local and foreign banks as a critical factor that hiders the adoption of E-banking in Ethiopian banking service industries.

As seen from the E-payment literature reviews above there are very few studies conducted from non-finical organizations perspective this will hinder the comprehensive understanding of adoption factors at all levels of E-payment adoption. This research aims to fill this gap by examining the factors that affect the adoption of E-payments from non-finical organizations perspective specifically service providing organizations using a combined framework of Vladimir Ilin, Jelena Ivetić and Dragan Simić.

Chapter Three

Research Model and Methodology

Research is a systematic way of finding new things, ideas and additional information about a particular phenomenon. The systematic nature of research indicates it is a planned and procedural activity done by researchers and scholars. Below we will describe the systematic procedures followed by this research starting from theoretical framework development to research methodologies and design.

Research Methodology

The purpose of this study is to identify the factors that affect the adoption of E-payment in Ethiopian service providing organizations. The E-payment technologies used by organizations in Ethiopia is mainly provided by the commercial banks or other private finical organizations created by collaborating with commercial banks and telecommunication organizations. The adoption of E-payment by Ethiopian service organizations is an under looked topic by researchers and scholars of Ethiopia. This study seeks to identify the factors using a combined framework of Vladimir Ilin, Jelena Ivetić, and Dragan Simić for organizational adoption of E-business.

A quantitative descriptive approach with survey method is used in this study. An empirical survey method with structured instrument was adapted from a framework which is a combination of DOI and TOE (Ilin, et al 2017) for e-business adoption factor study.

3.2.1 Research Design

A cross sectional survey method is used for this study to identify the factors that affect the adoption of E-payments by service providing organizations of Ethiopia. A cross sectional survey with structured instrument is used from the framework developed by Vladimir Ilin, Jelena Ivetić, and

Dragan Simić. The Research aims to investigate the factors that affect the adoption of E-payment in Ethiopian service providing organization for their service fees payment.

The researcher identity's four types of organizations in Ethiopia one that do not use bank for their service fee payment and use manual within the organization payment means for their service fees, two organizations that use manual bank payment means depositing in their bank account, third that utilize banks E-payment means for their service fee payment and fourth that use both manual and E-payment means for their service fee payment. The third and fourth types of organizations mainly implement some sort of bill data exchange system to upload customer bills and to receive payment confirmation to and from the bank.

Because the objective of this study is to identify the factors as a general weather organization adopt or not; the main target population of this research includes all types of those organizations listed below;

1. Organizations that use bank's manually for their service fee payment (non-Adopters),
2. Organizations that do not use banks manual and E-payment technologies (non-Adopters),
3. Organizations that use bank's E-payment technology and have some sort of bill and payment exchange system technology in side their organization (Full Adopters) and
4. Organizations that use both manual and bank's E-payment technology for their service fee (Partial Adopters).

Due to the time and budget constraints of the study and the fact that there are no central databases available that store service providers in Ethiopia and in the capital Addis Ababa a population frame or research population was defined which is feasible and accessible (He et al., 2008; Ilin et al., 2017). The population frame developed for this study includes organizations that use only bank manual deposit for their service fees, organizations that use only E-payment for their service fees and organizations that use both manual and E-payment as a way of payment for their service. The first types of organizations are declared as non-adopters and the second organizations are declared as adopters.

A cross sectional survey with structured instrument adapted from the DOI and TOE combined framework by Vladimir Ilin, Jelena Ivetić, and Dragan Simić in 2017 is used to collect the data.

Five scale Likert scale instrument adapted from the framework was utilized to collect data from adopter and non-adopter organizations. After coding the collected data; the coded data then analyzed for testing the hypothesis developed from the framework using logistic regression.

3.2.2 Research Methods

Research methods are specific procedures for collecting and analyzing data. The following headings describe the specific producers used collecting and analyzing this inquery data.

3.2.2.1 Sample Design

3.2.2.1.1 Target Population and Defined Population

The initial target population under this study includes all organizations that use manual payment systems via bank or by themselves and organizations that use some information technology for digital data exchange with bank to enable E-payment fully or partially. Because of time and budget resources constraint and the fact that there is no available central database with the list of service providing organizations in Ethiopia or in Addis Ababa, accessible population for the study was defined. The defined population includes those organizations that use manual bank deposit only, E-payment only and those organizations that use both Manual deposit and E-payments as a means of payment for their service fees within commercial banks of Ethiopia (He et al., 2008; Ilin et al., 2017).

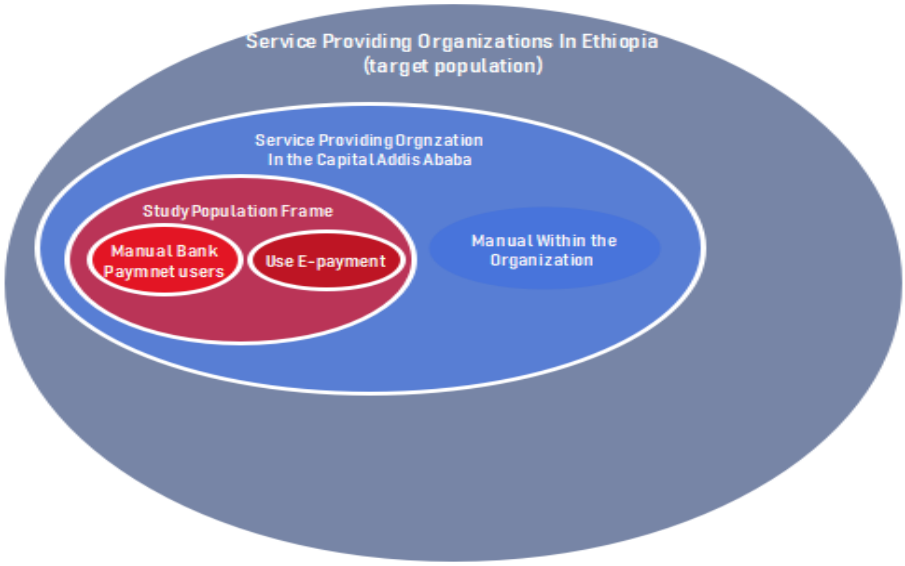

Figure 3. 1 The universal target population and the defined population of the study under the red background

Out of 18 commercial Banks the researcher contacted only 4 commercial banks were willing to participate in the study, three of whom are private owned share companies and one is state owned bank. Organization types included in this study are.

I. Organizations that use manual bank account deposit payments within the banks that are willing to participate in the survey for service fee related reasons (payment related details are communicated manual by the customer or by the organization requesting bank statements manually).
II. Organizations that use E-payment only for service fee related payments, this organizations send and receive payment details such as bills and payment transaction details through information technology data exchange systems.
III. Organizations that use both manual deposit inside bank or within the organization and E-payment technology for service fee payment related reasons are the defined populations of the study form the participated sources.

Manual payment needs payment confirmation manually but digital payment does not need manual confirmations. In this study the total population are organization's that make any kind of payment via bank manually or digitally for their service fees or that use both manual and digital payments.

Manual payment users via bank ask payment confirmation manually after the customer deposited the fee or the payment in the bank, the confirmation is done manually to the organization due to no means of technological connectivity between the bank and the organization. Those types of organizations are considered non adopters.

E-payment enabling interface adopters that use some information technology to communicate payment details to and from the bank to enable E-payment fully or partially are considered as an adopter in this study. For those types organizations manual deposit or payment confirmation is not needed as the bank and the organization exchange payment details via some sort of technology interface. Those organizations are considered adopters for this study whether they implemented partially or fully.

3.2.2.1.2 Sampling Method

The defined accessible population is established which includes manual only non-adopters, E-payment only adopters and both manual and E-payment adopter's organizations that are taken form the banks willing to participate in the research. that use manual bank deposit only or E-payment only or that use both manual within the organization and E-payment as a means for service fee related payments from the 4 banks willing to participate are included in this research. Form the willing 4 banks as a defined population source 733 unique organization's list of email and phone contacts ware collected.

Table 3. 1 Defined population frame.

No.	Selected Financial institutions	Organizational list Amount
1.	Commercial bank of Ethiopia	479
2.	Abyssinia Bank	119
3.	Awash Bank	136
4.	Dashen Bank	124
	Total gross	858

Common in all, two or three of them	278
Total (Unique)	733

After collecting the organizational list, the list was filtered to include only 733 unique organizations contact 278 of whom are common for more than one Banks. The population sample is calculated using the following formula, inserting N=733 the population and e=0.05 for the error margin; the sample size becomes 259 organizations rounding 258.78. A systematic random sampling is used in order to create equal chance for each respondent.

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

n= sample

N= population

e= error margin (0.05)

3.2.2.2 Data collection method

A structured instrument is adapted from the framework developed Vladimir Ilin, Jelena Ivetić, and Dragan Simić for e-business adoption factors identification. The adapted instrument measures the perception of the representatives of the organizations on the questions of the items on the instrument in 5 level Likert scale. The randomly selected representatives of the organizations were first asked if their organization is willing to adopt E-payment or continue to use E-payment for service payment reasons as a dependent variable. Additionally, the representatives of the organization were asked if they actually use E-payment or not for their service fee payments reasons. The adapted instrument for measuring the likely adoption of E-payment in Ethiopian service providing organizations and the factors that affect the likely adoption of E-payments; construct, dimensions and items are shown in the table 3.2.

Table 3. 2 Adapted Instrument's Dimensions, Constructs and Items.

Dimension	***Constructs***	***Variables***	***Items***
Innovation		PDV1	Improve operational efficiency

	Perceived relative advantage	PDV2	Reduce operational costs
		PDV3	Improve customer service
		PDV4	Improves relationship with business partners
	Perceived financial cost	PFC1	E-payment has setup costs
		PFC2	E-payment has high running and training cost
		PFC3	E-payment has High maintenance and disposal cost
	Perceived lack of IS knowledge	PLIK1	Low employees' expertise in supporting E-payment
		PLIK2	Low employees experience in supporting E-payment
	Perceived security concern	PSC1	Concern about the security of data and transactions during E-payment adoption
		PSC2	Concern about the security of data and privacy during E-payment adoption
Organization	Firm Size	FS1	Total number of employees (log transformed)
	Top management support	TMS1	Awareness of top management about advantages which E-payment brings
		TMS2	Top management influences on the awareness of E-payment advantage for the future of the success of the firm
Environment	Industry pressure	INP1	Recommendation of Business to adopt E-payment
		INP2	Request of Business partners to adopt E-payment
		INP3	Firms experienced competitive pressure to adopt E-payment.
		INP4	Firms competitive disadvantage if E-payment is not adopted
		GRS1	Legislator support for E-payment

	Government Regulatory support	GRS2	E-payment legislation transparency
		GRS3	Firms' legal protection during E-payment transaction
	Government resource support	GRES1	Educational assistance about E-payment for all stakeholders
		GRES2	Consulting assistance about E-payment for all stakeholders
Likely Adopt	Likely to adopt or continue to adopt	Adopt	Likely to adopt or continue to adopt E-payment

The instrument developed for the survey is modified for E-payment adaption to send for the representatives of the organizations to fill the questionnaire on behalf of their organization as shown in the table above. The data collection in this research is done in two steps.

1. One because the adapted instrument is modified for e-payment, verification survey is collected by distributing for the willing to participate banks representatives and asked for their feedbacks.
2. Then the verified instrument is distributed to the sample organizations via email and final response data was collected.

The first survey was conducted online via mail in order to identify the modified instrument still measures the intended variables form February 1, 2022 to February 7, 2022 for 1 week duration. The instrument that was adapted from the (Ilin et al., 2017) for e-business adoption research is modified for E-payment technology adoption, this modification may create some ambiguity in the meaning of the original intended purpose of the instrument therefore this research conducts some preliminary survey from experts in the IS field of the representatives of 4 data source banks. The data collected from IS qualified Employees of the 4 banks that were sources of the data collection was used as pilot survey as feedback to modify the adapted instrument accordingly for face and content validity.

Following the first instrument verification survey, the questionnaire was sent online via mail for all the 259 sample contacts found from the participant banks identified as a representative of the organizations to fill it on behalf of the organization. The data collection that was started on February 11 2022 was continued until May 20, 2022 because of time constraint of the research. After completing the data collection stage, the collected data was prepared for data analysis.

3.2.2.3 Data Analysis Method

The data analysis used in this research have two steps one the instrument verification stage for face and content validity and the other is for organizational adoption survey. In first case the collected data was analyzed for face and content validity, the respondents answer was used to modify and adjust the instrument based on the respondent's feedback in order to check that the adapted instrument still measures the intended purpose based on expert judgment as a pilot study (Creswell, 2014).

The second survey analysis is based on the verified instrument survey for organizational adoption of the 259 organizational lists collected. Online questionnaire was used to collect the data and the collected data was prepared for analysis. In data preparation stage the collected data was first detected for blank responses and invalid inputs. Then the invalid responses and blank response of the respondents are removed from the list of the collected data. After filtering the data, the response of the respondents was coded for data analysis.

After the data is filtered and coded, the filtered and coded data is analyzed in three distinct stages. The three distinct data analysis used in this study are listed below.

1. Analysis for reliability and validity
2. Demographic analysis
3. Hypothesis test analysis

The reliability and validity of the instrument has to be established again as it was adapted for different population and technology. Confirmatory factory analysis with maximum likelihood estimate (CFA) is used in order to create the model fit for the data hence establishing the reliability and the convergent and discriminate validity (He, Duan, et. al, 2008; Said, 2019).

The demographic analysis is done using a frequency and percentage analysis in the respondent's demographic response. This analysis gives an understanding about the demographics of the respondents and their organization. The respondent's demography for their profession and level of education was analyzed. Additionally, the organizational demographics that shows details of the respondent's organization type and the service they provide was analyzed.

The purpose of the study is to analyze the factors affecting the adoption of E-payments by service providing organizations of Ethiopia using the adapted framework of Vladimir Ilin, Jelena Ivetić, and Dragan Simić in 2017. Using this framework hypothesis ware developed, in order to test those hypothesis Logistic Regression ware used. The respondents were asked for their assumption about the likelihood of their organization future adoption of E-payment or continue to use E-payment. The variables in the model ware used as a determinate factors of likely adoption of E-payments or continual use of E-payments. Based on the findings in the data analysis conclusions ware drown from the discussion that follows the analysis.

3.2.3 Ethical consideration

Ethical considerations identified and implemented during the survey from the Cresswell's book in 2014 are listed below (Creswell, 2014).

1. Confidentiality of the respondent's identity and their response
2. The nature of the topic and its follow up conflicts of interest with some groups
3. Consents that must be stated

The confidentiality of the respondent's identity and their responses is much secured because their group response is mainly needed in the research not the individual and the group they belong too. Second the information gathered form the survey will be first coded by Id before further investigation.

At this time there are no identified conflicts that could arise after the research is conducted because the research is concerned in the subject of E-payment not particular E-payment technology which could belong to some owner therefore it is unlikely that this research could create conflict of interest.

The instrument and the frameworks that are used in this research are properly cited. Additionally, the researcher specifically encouraged other researchers to adopt and conduct the Innovation, Organization and Technology framework in other technologies other than E-business (Ilin et al., 2017).

Research Model

3.1.1 Conceptual model

The conceptual model adapted for this study is developed by Vladimir Ilin, Jelena Ivetić, and Dragan Simić in 2017 for the study of adoption factors for e-business by combining DOI and TOE frameworks. The adapted framework has three dimensions Innovation, Organization and Environment dimensions. The innovation dimension includes perceived relative advantage, perceived financial costs, perceived lack of IS knowledge, and perceived security concerns as a measurement construct. The organizational dimension includes constructs such as firm size and top management support. And finally, the environment dimension includes constructs of industry pressure, government resource support, and government regulatory support.

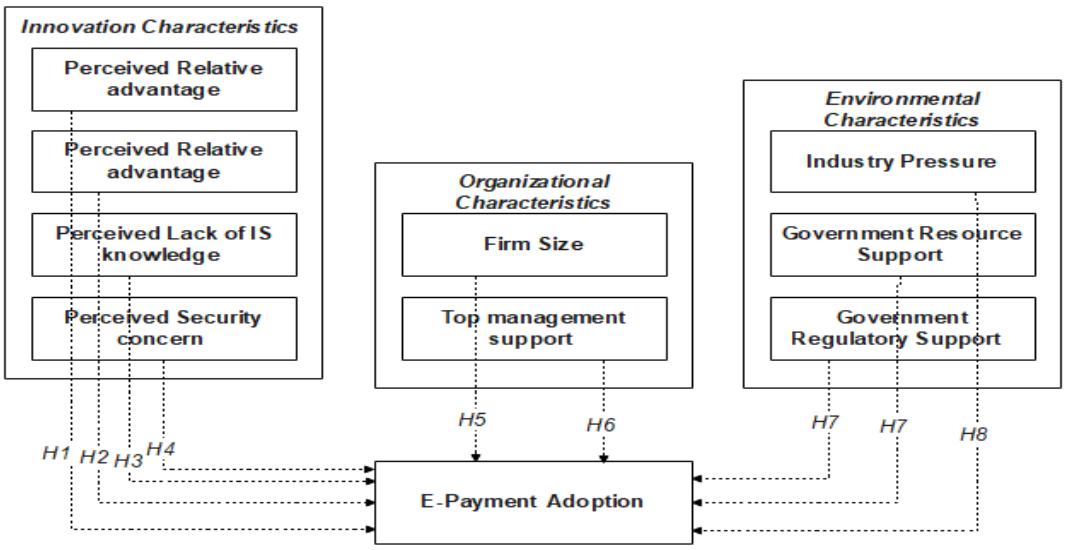

Figure 3. 2 The adapted Innovation, organization and Environment framework.

3.1.2 Hypothesis Development

3.1.2.1 Innovation

The innovation construct in this combined model includes variables about the perceived opinions and beliefs of employees and managers about different aspects of an innovative technology under inquiry. The perceived relative advantage of the innovative technology by employees and managers of the organizations a common parameter among all adoption studies (Bultum, 2014; He et al., 2008; Patrick Igudia, 2018). The perceived financial cost of the innovation by the organization managers and employees is also used in the following E-payment adoption by organization studies (Auwal Kabir et al., 2015; Bultum, 2014). The perceived lack of IS knowledge by employees and managers within the organization is being studied as factor because the organization may implement some sort of technology for exchange of bill and bill payment information from and to the organization (Auwal Kabir et al., 2015; Bultum, 2014). The perceived security concern is also one of the factors that affect the adoption of E-payments by organizations (Auwal Kabir et al., 2015; Patrick Igudia, 2018). The hypothesis developed for this construct includes.

- H1. The adoption of E-payment is dependent on perceived relative advantage of using E-payments.
- H2. The adoption of E-payment is dependent on perceived financial costs of using E-payments.
- H3. The adoption of E-payment is dependent on perceived lack of IS knowledge.
- H4. The adoption of E-payment is dependent on perceived security concerns from using E-payments.

3.1.2.3 Organization

The organization characteristics include variables that describe the organization in terms of size and the support E-payment get from managers. The size of the organization which is described by employee number is one factor in the organizational dimension (Patrick Igudia, 2018). As Patrick in 2018 studied only small and medium size organizational adoption of E-payment in Nigerian SME's refers that, studies should consider the size of the organization as one factor. The support from the mangers that the E-payment gets is the other factor that is included in the organizational dimension of the combined framework that is measured by awareness and perceived influence by employees about the leadership role of the managers (Patrick Igudia, 2018). Patrick in 2018 study outlined that the managers and owners influence in the adoption of the E-payment is crucial as he studies this construct with separate dimension. The hypothesis developed for organization dimension from the adapted framework are listed below.

- H5. The adoption of E-payment is dependent on firm size.
- H6. The adoption of E-payment is dependent on top management support.

3.1.2.4 Environment

The environment dimension which includes constructs that are outside the boundaries of the organization such as industry pressure, government resource and regulatory support are included in the combined framework. The industry support which is measured by business partner's support and perceived competitive advantage from the technology is one component of this framework (Bultum, 2014; Patrick Igudia, 2018). The government resource is also stated as one of the critical factors by Bultum's study in Ethiopian E-banking adoption (Bultum, 2014) and the regulatory supports which are included in this framework also constitute the environmental dimensions outside the organization's boundary (Bultum, 2014; Patrick Igudia, 2018). Hypothesis developed for environment dimension.

- H7. The adoption of E-payment is dependent on Industry pressure.
- H8. The adoption of E-payment is dependent on Government resource support.
- H9. The adoption of E-payment is dependent on Government regulatory support.

Chapter Four

Data Analysis and Discussion

The data collection in this research is conducted in two stages for two purposes. Initially the instrument verification survey for the purpose of face and content validity was conducted in order to identify and correct; ambiguity, clarity and misalignments that could occur during the adaption process. This survey was collected from IS professionals of the participant banks in the study for their feedback on the instruments purpose and the instrument's items to measure the intended purpose. Therefore, the initial survey is used for face and content validity. The questionnaire distributed in this stage has the instrument and the purpose of the study, after the respondent reads the instrument's item and the purpose of the study, the respondent was asked for ambiguity, clarity and misalignment of the adapted instrument with the intended purpose. The collected data and its findings will be discussed in the following topics.

The second survey was conducted on organizational representatives' lists found from the participant banks to fill their understanding about the items in the questionnaire in five level Likert scale on behalf of their organization. This representatives in the list ware then asked if they would like to adopt E-payment or continue to use E-payment for their service fee with yes or no category. The collected survey was then filtered and coded for further analysis. The main objective of the study is to identify the factors that affect the adoption of E-payments by the adapted frame work of Vladimir Ilin, Jelena Ivetić, and Dragan Simić in 2017 of Innovation Organization Environment. The first analysis at this stage aims to establish the validity and reliability of the adapted instrument. Then the demographics of the respondents and their organization is analyzed. Finally, the hypothesis test was conducted using logistic regression analysis. The analysis result and the following discussion is presented in the following topics below.

4.1 Data Analysis

The data analysis in this research is presented in two categories first instrument verification survey for face and content validity analysis is presented then the organizational adoption survey analysis for construct reliability and validity, demographics and hypothesis test are presented next.

4.1.1 Instrument Verification Survey Analysis

In this survey feedback questionnaire was distributed for 10 IS professionals form the 4 participant banks representatives. Starting from February 1, 2022 to February 7, 2022, 8 responses were collected after that the collected data was analyzed for any feedback.

The questionnaire asks respondents for finding any ambiguity or misalignment they found on instrument's items based on the intended purpose explained on the verification survey. If they found any misalignment they will tick yes and then state the founded ambiguity or misalignment in the space left in the instrument.

Table 4. 1 Demographic Analysis of the Instrument Verification Respondents.

Variables	**Categories**	**Frequency**	**Percentage (%)**
Age of respondents	Below 25	-	-
	26-35	6	75
	36-40	2	25
	Above 40	-	-
Gender	Male	5	62.5
	Female	3	37.5
Profession	IS	8	100
	Non-IS	-	-
Educational level	Degree	7	87.5
	Masters	1	12.5
	Above masters	-	-

As shown from the table 4.1 all of our respondents are information system professional with ages between 25 and 36 accounting for 75 percent of the respondents and ages between 36 and 40 accounting for 25 percent of respondents. This survey is conducted with the intension of collecting important feedbacks as weather the adapted instrument measures the intended purpose or not to evaluate face and content validity according to IS professionals in the field. The respondents first read the explained intension of the study and observe the instrument items and measurement value then the respondent is asked for identifying any misalignment or unclear items in the instrument. If the respondent finds out unaligned or unclear question they will select yes and write down the unclear questions number and then the reason for their claim.

The respondents response show that 80 percent of the respondents 8 out of 10 agreed that the instrument is clear and aligned with purpose of the study and 20 percent 2 out of 10 respondents answers they are neutral about the subject matter. Therefore, the initial adapted instrument is used for the next survey without any modification from the respondents. The face and content validity are done using the participant banks representatives in the field.

4.1.2 E-payment Organizational Adoption Survey Analysis

After the instrument is verified for face and content validity, it is distributed for all the 259 contact lists that are found from the participant 4 banks using systematic random sampling. Starting from February 11 2022 to May 20, 2022, 76 responses were collected which is 30% response rate. According Ilin, Vladimir Ivetić, Jelena Simić and Dragan 2017 study 10% response rate is used for studies of similar nature as their response rate was 13.80% for organizational adoption of E-business. Additionally, Qile He study in 2008 of online E-payment adoption by Chain's companies used 7.3% response rate with 56 respondents in his study confirming the low response rate of studies of similar nature.

The collected data is then filtered for blank and unqualified responses. The filtered data is then coded before entering the data in to SPSS data analysis tool. The data analysis result for the organizational adoption of E-payment's survey is presented in three distinct topics one validity and reliability of the model using confirmatory factory analysis for reliability, convergent and

discriminate validity, two demographic analysis of the respondents and their organization, and three the hypothesis test analysis using logistic regression.

4.1.2.1 Reliability and Validity

Adaption of instrument from developed model requires establishment of validity and reliability due to different reasons such as translation, study population variation, time variation and accuracy of changes the adaptation changes outcome therefore the reliability and validity of the construct must be established again (Creswell, 2014). Therefore, first the confirmatory factor analysis is used for checking the model fit values and the corresponding outer loadings of the variables on the constructs of the Vladimir Ilin, Jelena Ivetić, and Dragan Simić 2017 adapted framework for E-payment in Ethiopian service providing organizations.

In order to establish the reliability and construct validity of the adapted framework confirmatory factory analysis (CFA) is used with maximum likelihood estimation with SPSS Amos 26.0.0 version. The analysis result was checked for model fit against the acceptable values such as chi-square divided by degree of freedom (X^2/df), Comparative Fit Index (CFI), Goodness of Fit Index (GFI), Root Mean Square Residual (RMR) and Root Mean Square Error of Approximation (RMSEA) (Fornell & Larcker, 1981). In this analysis if the evaluated results of the model are different from the accepted threshold adjustments will be made by removing item variables with small item loading values, repeating this analyze and remove small item loading values until the model fit indexes mentioned above becomes in the acceptable range will give us acceptable model for further analysis or it will give as the model's variable and constructs are not measuring the intended values.

After performing confirmatory model fit analysis with maximum likely hood estimation for adapted model; firm size (FS) construct, Perceived Improvement of organization's customer service (PDV3), Firm experience competitive pressure (INP3), Firm experienced competitive disadvantage (INP4) and Firms legal protection on online purchase (GRS3) are removed because they have less than 0.6 item loading. The final confirmatory factory analysis with acceptable values of the model fit indices is shown in the figure 4.1.

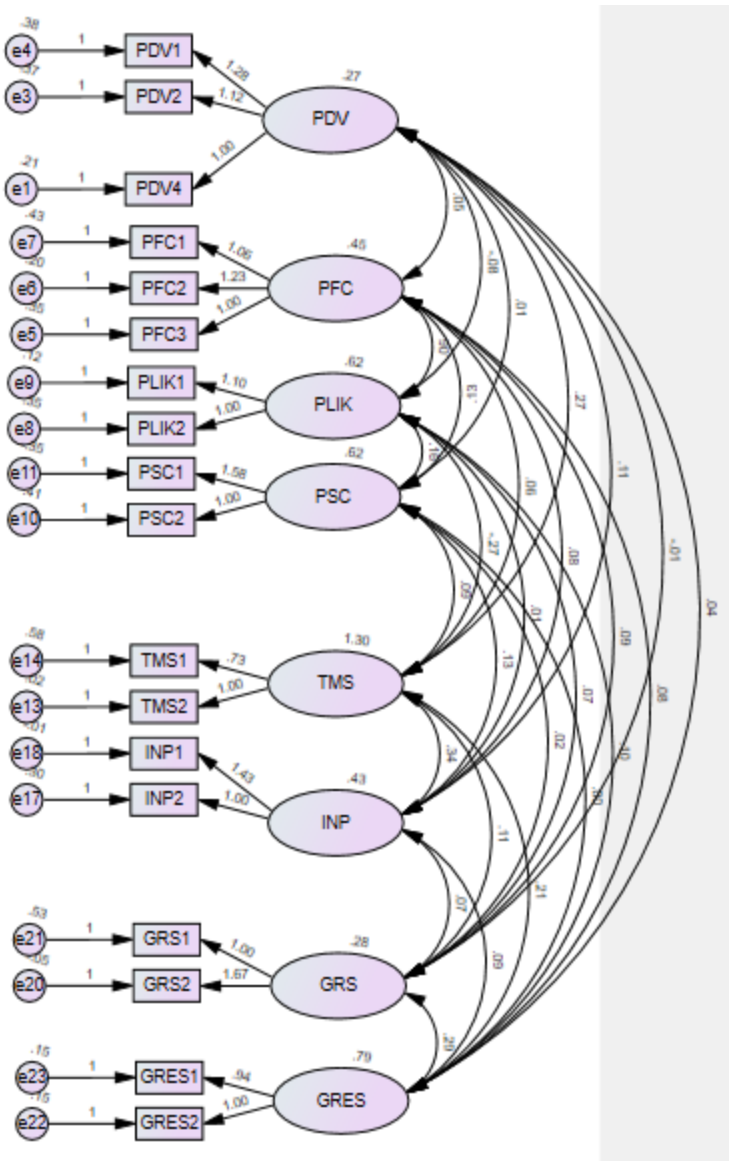

Figure 4. 1 Refined model by repeated model fit.

After the adjustment made the model fit indices become in the acceptable range the chi-square per degree of freedom (X^2/df) becomes 1.129 less than the required threshold which is 3. The Goodness of fit index (GFI) becomes 0.861 which is in the acceptable range. Except for GFI which is in the acceptable range all the model indices are in the excellent range. The overall summary of the refined model is shown in the table 4.2.

Table 4. 2 Evaluated model fit indices and their corresponding threshold.

No.	Model indices	Evaluated Indices value	Required and acceptable indices value range
1.	Chi-square per degree of freedom (X^2/df)	1.129	Excellent < 3, acceptable <5
2.	RMR	0.056	Excellent <0.05, and acceptable around 0.05
3.	GFI	0.861	Excellent >0.9 , >0.85 acceptable
4.	CFI	0.979	Excellent >0.9 , >0.85 acceptable
5.	RMSEA	0.041	Excellent <0.05, around 0.05 acceptable

4.1.2.2 Reliability

The reliability of an instrument is a measure of internal consistency in which the instrument give consistent measure during test retest or can be indicated by the extent measure of items free from random error. Cronbach alpha greater than 0.7 is generally accepted for latent variable construct (Gliem, 2003). The Cronbach alpha values of the refined model's latent variable constructs is demonstrated in the table 4.3.

Table 4. 3 The reliability and validity indicator indices.

	CR	**AVE**	**MSV**	**MaxR(H)**	**GRS**	**PDV**	**PFC**	**PLIK**	**PSC**	**TMS**	**INP**	**GRES**
GRS	0.816	0.705	0.379	1.063	**0.839**							
PDV	0.770	0.528	0.203	0.772	-0.019	**0.727**						
PFC	0.832	0.624	0.069	0.854	0.263	0.138	**0.790**					
PLIK	0.857	0.751	0.092	0.889	0.171	-0.191	0.111	**0.867**				
PSC	0.972	0.947	0.064	1.526	0.055	0.029	0.244	0.253	**0.973**			
TMS	0.865	0.766	0.208	0.982	0.181	0.451	0.077	-0.303	0.096	**0.875**		
INP	0.888	0.802	0.208	1.016	0.193	0.315	0.173	0.013	0.253	0.456	**0.896**	
GRES	0.910	0.834	0.379	0.910	0.616	0.083	0.142	0.136	-0.005	0.207	0.153	**0.914**

All the Cronbach alpha values of the model's latent variable constructs are demonstrated to be greater than 0.7 which indicates the refined model's items internal consistency. The minimum value of the latent construct's Cronbach value is measured in PDV which is 0.770.

4.1.2.3 Validity

The validity of an instrument is a combined complex concept with the intention of measuring how much the instrument items measure the intended variable (Creswell, 2014). The two main categories of validity in social sciences research are content validity which indicates the item's accuracy in measuring what they are supposed to measure which can be identified by pilot survey from the subject matter experts and the construct validity which includes convergent validity and discriminate validity. The content validity which includes content validity and face validity is demonstrated in the pilot survey conducted on IS experts of the data source bank's representatives.

Convergent validity is an estimate of an instrument's measurement consistency across multiple factors and it is demonstrated by Fornell and Larcker (1981) criteria. Fornell and Larcker (1981) criteria includes three set of evaluations in order to demonstrate convergent validity. First all factors item loading should be greater than 0.5, second construct reliability should be greater than 0.7 and finally the average variance extracted (AVE) from each construct should be greater than 0.5 (Ilin et al., 2017). As shown in the table 4.4 the items loadings of all the constructs is greater than 0.5. In addition, the reliability of the refined model's items constructs exceeds 0.7 as shown in table 4.3. Finally, the average variance extracted (AVE) value as shown in table 4.3 is greater than 0.5 which indicates the model's convergent validity is established. The values greater than 1 in the items loading are explained due to correlations happening with other items during maximum likelihood estimation.

Table 4. 4 Items loading estimate values

			Estimate
PDV4	<---	PDV	.750
PDV2	<---	PDV	.692
PDV1	<---	PDV	.737
PFC3	<---	PFC	.748

PFC2	<---	PFC	.880
PFC1	<---	PFC	.734
PLIK2	<---	PLIK	.801
PLIK1	<---	PLIK	.928
PSC2	<---	PSC	.776
PSC1	<---	PSC	1.137
TMS2	<---	TMS	.991
TMS1	<---	TMS	.741
INP2	<---	INP	.767
INP1	<---	INP	1.008
GRS2	<---	GRS	1.030
GRS1	<---	GRS	.590
GRES2	<---	GRES	.917
GRES1	<---	GRES	.910

Discriminate validity is indicated by the extent of the multiple item's factors diverge from each other. According to Fornell and Larcker (1981) this measure is demonstrated by evaluating the cross loadings of item's factors to be less than 0.5. Except for GRES and GRS which have 0.616 cross loading all the other constructs have less than 0.5 cross loading with the highest cross loading of 0.456 this is because of the correlations occurred due the similarities of the constructs underlined concept with this analysis the model's discriminate and convergent validity is demonstrated. The Amos summary of the model fit is shown in the table 4.5.

Table 4. 5 Amos model fit summary

No.	Model fit summary	Values
1.	Chi-square	120.788
2.	Degree of freedom	107
3.	Probability value	0.171

4.1.2.4 Demographic Analysis

In this study the demographic analysis contains two categories one respondent's demography and two the organizational demography. First the respondents were asked for their gender, age, profession and educational level then the respondents were are asked to fill the organizational demographic which they are listed as contact in the participant 4 banks. The respondent's demographic analysis shows the highest age group with 65% of the respondent's age is between 25 and 35 years of age. In addition, about 71% of the respondents are male, 92 % of the respondents are IS and IS related professionals and about 69% of them holding degree. The summary of the respondent's profile is shown in the table 4.6.

Table 4. 6 Respondents Demography

Demographic variable	Category	Frequency	Percent (%)
Age	18-25	5	6.6
	26-35	50	65.8
	36-45	20	26.3
	46 above	1	1.3
Gender	Male	22	28.9
	Female	54	71.1
Profession	IS and IS related	70	92.1
	Non IS	6	7.9
Educational level	Below degree	2	2.6
	Degree	53	69.7
	Masters	20	26.3
	Above Masters	1	1.3

In addition to personal profiles respondents also asked to fill their organizational demography. The organizational demography includes organization type, sector and services provided by the organization. Service sector is a non-categorical variable the researcher categorizes based on the respondents answer for the service provided the organization. Table 4.7 and table 4.8 presents summary of organizational demography.

Table 4. 7 Organizational Demography.

Demographic variables	Category and Compiled categories	Frequency Number	Percent (%)
Organization type	Governmental	18	23.7
	Non-Governmental	58	76.3
Organization sector	Service	74	97.4
	Manufacturing and service	2	2.6
	Others	0	0
Service sectors	Utilities	5	6.6
	Entertainment industries	2	2.6
	Tour and ticket offices	2	2.6
	Other Government services	14	18.4
	Educational institutions	20	26.4
	Micro finance and other financial institutions	15	19.7
	Super markets and retails	9	11.8
	Betting and some IT companies	6	7.9
	Transportation service providers	3	4

Table 4. 8 Actual organizational adopters and non-adopters

No.	Distributed institutions category	Total	Actual adopters	Non adopters
1.	Utilities	5	5	-
2.	Entertainment industries	2	1	1
3.	Tour and ticket offices	2	2	-
4.	Other Government services	14	2	12
5.	Educational institutions	20	3	17
6.	Micro finance and other financial institutions	15	4	11
7.	Super markets and retails	9	9	-
8.	Betting and IT companies	6	4	2
9.	Transportation service providers	3	1	2
	Total	76	31	45

4.1.2.5 Hypothesis test

The instrument in this survey askes the organizational representative respondent's whether they would like to adopt E-payment or continue to use E-payment with yes or no categorical answer on behalf of their organization. Since the dependent variable is dichotomous it is appropriate to use logistic regression (He, Duan, et. al, 2008; Ilin et al., 2017). In this research binary logistic regression analysis is used to determine what factor affect the adoption of E-payments in Ethiopian service providing organization.

In this binary logistic regression analysis likely adopters and adopters that will continue to adopt responded "yes" or "1" and non-adopters and unlikely to adopt or that will quite adoption responded "no" or "0". Therefore, the null hypothesis against the alternate hypothesis listed in chapter 3 sub section 3.1.2 is that the probability of E-payment adoption is independent of the underlining corresponding construct attributes such as perceived advantage, perceived cost, perceived lack IS of knowledge and so on. The alternate hypothesis and their corresponding null hypothesis are listed below.

- **H_1**: The adoption of E-payment is dependent on Perceived relative advantages of using E-payments.

  H_0: The probability of E-payment adoption is independent of the perceived relative advantages of using E-payment.
- **H_2**: The adoption of E-payment is dependent on Perceived financial costs of using E-payments.

  H_0: The probability of E-payment adoption is independent of the perceived financial costs of using E-payments.
- **H_3**: The adoption of E-payment is dependent on Perceived lack of IS knowledge.

  H_0: The probability of E-payment adoption is independent of the perceived lack of IS knowledges.
- **H_4**: The adoption of E-payment is dependent on Perceived security concerns from using E-payments.

  H_0: The probability of E-payment adoption is independent of the perceived security risk from using E-payments.
- **H_5**: The adoption of E-payment is dependent on Firm size.

  H_0: The probability of E-payment is adoption is independent of the size of the firm.
- **H_6**: The adoption of E-payment is dependent on Top management support.

  H_0: The probability of E-payment adoption is independent of the top managements support
- **H_7**: The adoption of E-payment is dependent on Industry pressure.

  H_0: The probability of E-payment adoption is independent of the industry pressure.
- **H_8**: The adoption of E-payment is dependent on Government resource support.

  H_0: The probability of E-payment adoption is independent of the government resource support
- **H_9**: The adoption of E-payment is dependent on Government regulatory support.

  H_0: The probability of E-payment adoption is independent of the government regulatory support.

To test the hypothesis with binary logistic regression three preconditions must be checked first, in order to validate the results weather they come by chance or by scientific inquiry.

1. The response variable or the dependent variable must be dichotomous.
2. Finally, multicollinearity must not be present in the independent variables or there must not be strong correlation between the independent variable and dependent variable.
3. There must be no outliers in the data.

The response variable as described above is dichotomous with likely adoption and continue to adopt represented by “yes” or “1” and not likely to adopt and quitting adoption represented by “no” and “0”. As shown in table 4.9 the model does not have multicollinearity issue as the independent variables have VIF less than 10 and tolerance indices greater than 10% or 0.1.

Table 4. 9 Multicollinearity indices for the model.

	Tolerance	VIF
PDV	0.810	1.235
PFC	0.807	1.239
PLIK	0.837	1.195
PSC	0.810	1.234
TMS	0.651	1.536
INP	0.735	1.360
GRS	0.650	1.539
GRES	0.715	1.399

The case-wise list plot of the SPSS binary logistics regression concludes there are no significant outlier presents in the model as it fails to produce Case-wise plot of significant outliers.

Predicting Model Summary Analysis

After computing the binary logistic regression; SPSS produces predicting model summary, these summaries are discussed and interpreted first before analyzing the binary logistic regression output. The general null hypothesis for the model is that adding the independent variables such as perceived relative advantage, perceived financial cost, perceived lack of IS knowledge and the rest of the independent variables do not significantly increase the ability to predict the decision made

by the respondents about the dependent variable. Analyzing the omnibus test of model coefficients of SPSS output suggested that the model have significant prediction performance with value <0.05 as shown in the table 4.10 Sig. column.

Table 4. 10 Omnibus tests of model coefficients form SPSS

Omnibus Tests of Model Coefficients			
	Chi-square	Df	Sig.
Step	37.827	8	0.000
Block	37.827	8	0.000
Model	37.827	8	0.000

Additionally Hosmer and Lemeshow's model fit test shows that model is appropriately fit for the data with = 0.704 much greater than the threshold which is above 0.05 and chi-square value 5.489.

Table 4. 11 Hosmer and Lemeshow's model fit test

Hosmer and Lemeshow Test			
Step	Chi-square	Df	Sig.
1	5.489	8	.704

Finally, the overall summary of the model by SPSS shows that the model explains about 39.2% to 52.7% of the sample date as shown in the table 4.12.

Table 4. 12 SPSS model summary

Model Summary			
Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	65.628[a]	0.392	0.527

Hypothesis test

The model analysis and summary output of the binary logistic regression analysis is shown in the table 4.13. From the analysis output table, we can conclude that **H_1** (Perceived relative advantages) with ρ = 0.834 value, **H_2** (Perceived financial costs) with ρ = 0.429 value, **H_7** (Industry pressure) with ρ = 0.191 value, **H_8** (Government resource support) with ρ = 0.198 value and **H_9** (Government regulatory support) with ρ = 0.19 value are rejected. In addition, the inquiry also could not conclude any rejection or acceptance about the **H_5** (firm size) as the construct could not fit to the data as it is removed in the confirmatory factory analysis.

Table 4.13 Binary logistic regression output with SPSS.

	B	S.E.	Wald	Df	Sig.	Exp(B)	95% C.I.for EXP(B)	
							Lower	Upper
PDV	0.105	0.498	0.044	1	0.834	1.11	0.418	2.949
PFC	0.357	0.451	0.627	1	0.429	1.429	0.59	3.459
PLIK	-1.022	0.427	5.743	1	0.017	0.36	0.156	0.83
PSC	-0.93	0.398	5.472	1	0.019	0.394	0.181	0.86
TMS	1.088	0.418	6.783	1	0.009	2.97	1.309	6.737
INP	0.571	0.437	1.706	1	0.191	1.769	0.752	4.164
GRS	0.638	0.496	1.655	1	0.198	1.894	0.716	5.008
GRES	-0.526	0.401	1.716	1	0.19	0.591	0.269	1.298
Constant	-1.23	2.74	0.201	1	0.654	0.292		

In addition, the inquiry also accepts the **H_3** (Perceived lack of IS knowledge) with ρ = 0.017 value, **H_4** (Perceived security concerns) ρ = 0.019 value and **H_6** (Top management support) with ρ = 0.009 value. Their meaning and their interpretation are discussed in the following sections.

4.3 Findings and Discussion

The descriptive analysis of the respondent's response show that out of 76 organizations 31 organizations which is about 41% organizations that participate in the survey are actual adopters and 45 organizations which is 59% organizations are non-adopters. Details of each organizations type and their service sector is shown in table 4.7.

The respondents in this survey were asked the likelihood of their organization adoption of E-payment or continue to use E-payment for their service fee payment as a dependent variable of whom 58% (44 organizational respondents) says "Yes" and 42% (32 organizational respondents) says "No". This response was used as dependent variable for the factors affecting E-payment adoption in Ethiopian service providing organizations. The findings of the binary logistic regression analysis in this research shows that in Ethiopian service providing organizations main factors affecting the adoption of E-payments include Perceived lack of IS knowledge, Perceived security concerns and Top management support. Details of their analysis based on their construct group in the adapted framework is discussed below.

4.3.1 Innovation

The innovative factors form the adapted framework of Vladimir Ilin, Jelena Ivetić, and Dragan Simić in 2017 for adoption of E-business have perceived relative advantages, perceived financial costs, perceived lack of IS knowledge and perceived security concerns as a latent construct. The collected data shows that perceived lack of IS knowledge with ρ = 0.017 and perceived security concerns with ρ = 0.019 are accepted and the rest are rejected as shown in table 4.13.

Perceived lack IS knowledge is shown to be the critical factor that affect E-payment adoption in Ethiopian service providing organization this finding is also consistent with finding of Bultum, 2014 E-banking adoption study in Ethiopian Banks. As banks are considered to be early adopters or innovators this result explains the Ethiopian organizations still consider lack of IS knowledge as factor for adoption of innovative technologies. The odds exp(b) value of perceived lack of Is knowledge is 0.36 as shown in table 16 which indicates that the probable adoption of E-payment

in organizations that perceive they have lack of IS knowledge is 64% lower than those that do not perceive they have lack of IS knowledge.

Perceived security concern is one of the factors accepted by the survey with ρ = 0.019. This finding is also consistent with other developing countries such as Ethiopia and Nigeria (Bultum, 2014; Patrick Igudia, 2018). The exp(b) value for perceived security concern is 0.394 as shown in the table 16 the organizations that perceive E-payment creates security concern for their organization have 60.6% lower probable adoption of E-payment than organizations that do not perceive E-payment adoption brings security concern.

In Ethiopian service providing organizations the perceived advantages of E-payment are not a significant factor as it demonstrated in the table 4.13 with ρ = 0.834 which can be explained with the alternate hypothesis that sates; there is no perception difference between likely adopters and unlikely adopter about the perceived advantages of E-payment. This result is not consistent with other similar results such as such as studies by Bultum, 2014 and Yohannes, 2010 about E-banking adoption and ICT adoption in Ethiopian banking industry respectively. The frequency analysis for perceived advantage items mean, median and mode shows it is close to 5 within the range of agree and strongly agree. This indicates there is no verifiable difference between the likely adopters and unlikely adopters of E-payment with advantages of E-payment.

Table 4. 14 Mean, Median and Mode values of Perceived relative advantage construct.

	Perceived organization's operational efficiency. (PDV1)	Perceived operational cost (PDV2)	Perceived Improvement of organization's relationships with business partners (PDV4)
Valid	76	76	76
Missing	0	0	0
Mean	4.47	4.32	4.47
Median	5.00	5.00	5.00
Mode	5	5	5

Std. Deviation	.916	.852	.702

Perceived financial cost is found to be insignificant among Ethiopian service providing organizations which is consistent with Bultum's findings, in 2014 in E-banking adoption by Ethiopian banking industry that identifies financial cost as insignificant factors that affect E-banking technologies adoption. This study also did not find perceived financial cost as one of the factors that affect E-payment adoption by Ethiopian service providing organizations. The mean, median and mode of the perceived financial cost for the 3 measurement items shows that it is around 3 as shown in table 4.15 neutral which indicates that the research could not make any claims about the construct.

Table 4. 15 Mean Median and Mode of the Perceived financial cost construct items.

	Perceived set up cost. (PFC1)	Perceived running and training cost. (PFC2)	Perceived maintenance and deposal cost. (PFC3)
Valid	76	76	76
Missing	0	0	0
Mean	3.18	3.07	3.01
Median	3.00	3.00	3.00
Mode	4	2	2
Std. Deviation	.976	.943	.902

4.3.2 Organization

The organizational dimension in this research includes top management support and firm size. The research finds out that top management support is critical in the adoption of E-payment by Ethiopian service providing organizations with value $\rho = 0.009$ this is also consistent with the findings of Yohannes, 2010 for the adoption of ICT in Ethiopian banking industries. Yohannes finds out that a total of 20 factors that affect ICT in Ethiopian banking industries top management support and the firm size are found to be one of those factors. The study suggested that service

organizations with top management support are likely to adopt E-payment for their service payment.

In this study the firm size hypothesis could not be verified as it was discarded during model fit nor the null hypothesis for this construct is verified. Firm size was rejected during the E-business adoption study by Vladimir Ilin, Jelena Ivetić, and Dragan Simić in 2017 whom the study for this framework was adapted.

4.3.3 Environment

The environmental dimension in the adapted framework has three constructs. The industry pressure, government regulatory support and government resource support. All the three constructs hypothesis was rejected by the survey. The industry pressure with $\rho = 0.191$ seams significant but fails to pass the threshold less than 0.05 this is also inconsistent with other similar studies such as Bultum, 2014 which finds competitive pressure as one of the factors for the adoption of E-banking in Ethiopian banking sector. Even though the significant factor is very small the descriptive statistics shows that median of the items answer is close to 4 which suggests that industry pressure have some influence that cannot be verified by this study.

Table 4. 16 Mean, Mode and Median of the industry pressure construct.

	Business partners recommended the adoption of E-payment (INP1)	Firm experience competitive pressure to adopt E-payment (INP2)
Valid	76	76
Missing	0	0
Mean	3.95	3.57
Median	4.00	4.00
Mode	4	4
Std. Deviation	.937	.869

The research also rejects the government resource support as a significant factor for the adoption of E-payment with $\rho = 0.198$ which is inconsistent with other similar studies. Bultum, 2014

identifies government support as significant factor for the adoption of E-banking in Ethiopian Banking industry. Additionally, Yohannes, in 2010 in her ICT adoption factors among Ethiopian banking industries identified that lack of government incentive as a barrier for the adoption of ICT among Ethiopian banking industry. The mean, median and mode of the government resource support construct shows that they have values around 3 indicating a neutral value therefore the research does not make any other conclusions.

Table 4. 17 The mean, median and mode values of the government resource construct.

	Government assists stakeholders by education and training about E-payment development (GRES1)	Government assists stakeholders by consulting about E-payment development (GRES2)
Valid	76	76
Missing	0	0
Mean	2.79	2.92
Median	3.00	3.00
Mode	3	3
Std. Deviation	.928	.977

The research also could not verify government regulatory support construct with ρ = value 0.19 which is inconsistent with other similar studies such as Yohannes's study in 2010 ICT adoption in banking industries finds out that unreliable legal ground for ICT investment is a significant factor for banks ICT adoption. The mean, median and mode of the descriptive statists this survey shows the values are close to 3 neutral values therefore the research also cannot verify the null hypothesis.

Table 4. 18 Mean, Median and Mode of Government regulatory support.

	The country's legislation support E-payment (GRS1)	The country's legislation about E-payment is transparent (GRS2)
Valid	76	76
Missing	0	0
Mean	3.18	2.88

Median	3.00	3.00
Mode	3	3
Std. Deviation	.905	.864

Chapter Five

Conclusions and Implications

In this chapter the survey findings and their implications and limitations are discussed in three separate section conclusion, limitations and implications.

5.1 Conclusions

The main objective of the study as it is outlined in the research question is to identify the factors that affect the adoption of E-payments in service proving organizations of Ethiopia specifically the Innovative, Environmental and organizational factors that affect the adoption of E-payments in Service providing organizations. The study identifies three significant factors for the adoption of E-payment among Ethiopian service providing organizations those are Perceived lack of IS knowledge, Perceived security concerns and Top management support.

The perceived lack of IS knowledge as it is demonstrated is significant factor among Ethiopian service proving organization E-payment adoptions. Organizations who perceive they have lack of IS knowledge among their employees are less likely to adopt E-payments for their service than those organizations that perceive they have the necessary IS knowledges among their employees. This finding is also consistent with Yohannes's 2010 study about ICT adoption among Ethiopian banking service providers. Yohannes in her study suggested that one of the barriers for ICT adoption among Ethiopian banking service is qualified personnel are expenses which can be interpreted as a lack of IS knowledge among the existing employees within the organization.

Perceived security concern is also a significant factor among organizational E-payment adopters in Ethiopia according to the findings. Developing countries studies shows that perceived security concern is one of the factors that hinders the adoption of ICT innovations (Bultum, 2014; Patrick Igudia, 2018). This study shows that service organizational adopters are less likely to adopt E-payment if they perceive it creates security risk for their organization.

Top management support is also critical in the adoption of E-payment for Ethiopian service providing organizations. Some studies emphasize the management's roles especially in small and medium organizations and create a separate dimension called owners or managers which measures the owner or manager profile impact on E-payment adoption (Patrick Igudia, 2018). This study identifies top management support as critical factor that influence positively the adoption of E-payment among Ethiopian service providing organizations.

There is no difference about the perception of service providing organizations in Ethiopia about the advantages of E-payment technologies it is demonstrated by mean, median and mode values of the perceived advantage items. The perceived operational efficiency improvement item in the perceived advantage has a mean value of 4.47, median value of 5.00 and mode value of 5 which is agree and strongly agree. This indicates that there is no difference about the perceived advantages of E-payment for operational efficiency improvement between E-payment likely adopters and not likely adopters. Additionally, the perceived operational cost improvement item with mean value 4.32, median value 5.00 and mode value of 5 and the perceived improvement of relationship with business partners with E-payment adoption with mean value of 4.47 and median value of 5.00 and mode value of 5 is also is similar between likely adopters and not likely adopters in Ethiopian service providing organizations. This finding is inconsistent to the study of Yohannes, in 2010 in ICT adoption among banking industries which identifies lack perception of Economic advantages of ICT's adoption as a significant factor that hinders ICT adoption among Ethiopian banking service providers. In conclusion likely adopters and not likely adopters of service provider's organizations in Ethiopia perception about the advantages of E-payment is similar and positive as per this study finding.

The industry pressure construct which is measured by two items variables after model fit with CFA do not have detectable significant influence on Ethiopian service providing organizations as per this this survey findings. The items used to measure this construct which are business partners recommend the adoption E-payment and firm experience competitive pressure if they do not adopt E-payment have above 3 mean, median and mode value. Business partner's recommendation have mean value of 3.95, mode value of 4.00 and median value of 4. Shows that there is some positive influence on the likely adoption of E-payment among Ethiopian service proving organizations. This is also identical for competitive pressure item which have mean value of 3.57 and median

value of 4.00 and mode value of 4 which is in agree and strongly agree range. Even though the = value 0.191 is insignificant for accepting the positive relationship hypothesis between industry pressure and E-payment adoption. There is a positive relation between likely adoption E-payment and industry pressure based on the mean, median and mode values which are close to 4. This finding is inconsistent with findings of Bultum in 2014 which identifies lack of competition and industry pressure as one of the hindering factors for E-banking adoption this is due to the fact that most banks are highly influenced by Government as the government owns majority share in Ethiopian banking industry. The inconsistency in the findings is mainly due to the sample strata difference on the studies.

The research did not find any relationship between likely adoption of E-payment and the perceived financial cost of E-payment adoption for their organizations which is consistent with Bultum's finding with E-banking adoption in banking industries of Ethiopia despite their population strata difference of the studies.

The research did not find any relationship between likely adoption of E-payment and Government resource and regulatory support which is inconsistent with other similar studies in Ethiopia such as by Bultuma and Yohannes in 2014 and 2010 respectively in different technologies. Both researchers find that government resource support and incentives as a significant factor ICT adoption among banking service industries in Ethiopia.

In this study firm size construct is rejected as the study drops it during confirmatory factory analysis (CFA). Firm size is also rejected in the Vladimir Ilin, Jelena Ivetić, and Dragan Simić in 2017 study of E-business adoption.

In this study from Innovation dimension only Perceived lack of IS knowledge and Perceived security concern are found to be significant inhibitors of E-payment adoption among Ethiopian service providing organizations. Perceived advantage shows no difference among likely adopters and not likely adopter organizations. Perceived financial cost does not have significant value based on this study on likely adoption and not likely adoption of E-payments by Ethiopian service organizations.

From organizational dimension only top management support found to be critical and positive for likely adoption of E-payment among Ethiopian service proving organizations. Firm size is not supported by this study therefore it is rejected.

Form environmental dimensions all the three constructs could not be identified as a significant factor. There is some positive relation which is not significant for conclusion by this study of industry pressure and likely adoption of E-payments. Government regulatory support and government resource support are not significant and do not have positive or negative relationship in Ethiopian service providing organizations likely adoption of E-payment.

5.2 Limitations

One of the limitations of this study is the response rate even though it is well above similar studies response rate which 10% (Ilin., 2017; He, Duan, et. al, 2008). This could prevent the study from identifying some other important discoveries about the E-payment adoption among the Ethiopian service providing organizations.

The other limitation of the study is that it does not include manual payment user within the organizations which could not be found since the survey's population frame is crated from banks. This could prevent the study from identifying other significant factors that could contribute to the likely hood adoption of E-payment. The population frame is created because of the lack of common accessible data source and the time and resource limitations of the study.

This research could not analyze the difference between the actual adopters and non-adopters of E-payment due to small and unbalanced sample of adopter and non-adopters.

In this type of research organizational perceptions must be checked with non-IS professions in order to check for professional bias. This research is limited to only IS professional only in the representative organizations due to time and resource limitations future researches should include other profession commonly found in organizations such as human resources and finance departments and compare their findings against IS professional response in order to identify account professional bias.

5.3 Recommendations

5.3.1 Recommendations for further study

This research could be used as a reference for future researches to include these verified constructs in the future studies and compare their findings with the study.

Additionally, the study creates baseline framework for future researches of E-payment organizational adoption that could be modified and enhanced based on literature and qualitative studies.

Future researches could create different strata to identify the difference between likely adopters and not likely adopters such as government and non-government service organizations, actual adopters and non-adopters of E-payment, SMEs and Large organizations and so on to identify sector specific factors that affect the adoption of E-payments.

In order to avoid professional bias future researches should include non-IS professionals in the survey and verify the existence of E-payment such as financial professional.

5.3.2 Recommendations for Stakeholders

The stakeholders of E-payment include governments, innovators, organizational adopters and individual adopters. In order to improve the adoption rate of E-payments each stakeholder should play its role as E-payments are shown to be vital for service improvement and satisfaction.

Based on the findings of this study; innovators such banks and E-payment service providers should create awareness about the security performance and the security measure that could be taken to create better security perception among adopters as it is found to be significant in this study.

Government and E-payment service providers should also create information system awareness among their organizational customers in order to improve adoption among E-Ethiopian service providing organizations as lack or IS knowledge is identified as a significant factor in this survey.

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Appendix

Appendix A: Questionnaire

Organizational E-Payment Adoption Factors Survey
This Questioner is intended to identify and measure the factors that affect the adoption of E-payment among Ethiopian service providing organizations. E-payment in this context refers to some sort of system owned by service providing organizations for exchange of service bill and payment detail information's to and from Banks. For example services in the mobile app of commercial bank of Ethiopia such as utility payments for water, electricity, DStv, Guzogoo, Ethio-telecome and others which provides online payment means for their services using different Bank's platform (such as Mobile App, USSD). Other system from other banks include like private Banks and third party payment platforms.

The respondents information in any way is confidential and would not be used other than this research. Please attempt all questions to your ability.

---

* Required

1. Email *

This is the respondents detail section

Respondent's Demography

2. Your Age

Mark only one oval.

- 18-25
- 25-35
- 35-45 45-
- 55 above
- 55

3. Gender

Mark only one oval. male

- Female
- 4. Your education Field *

Mark only one oval.

- Information system and other related subjects
- None Information System subject

5. Educational level

Mark only one oval.

- Below Degree
- Degree
- Masters
- Above masters

Organization's Demography

This are organizational related information

6. Name of the organization?

_____

7. Type of Organization *Mark only one oval.*

- Service Manufacturing
- service and Manufacturing
- other

8. Services provided by the organization if any?

9. Type of Payment used for the service provided by your organization

Mark only one oval.

- using Manual with in the organization's cashier using Bank
- manual Deposit using E-payment (mobile app, USSD any other
- similar technology) Using E-payment and manual bank Payment
- deposit other

10. If your answer is other, for the above question please describe the payment means.

_____

_____

_____

_____

11. Is your organization likely to adopt E-payment for service fee/will your organization continue to use E-payment for service fee?

Mark only one oval.

- Yes
- No

12. Does your organization adopted Banks E-payment for service payment reasons currently?

Mark only one oval.

- Yes
- No

13. When does your organization start E-payment?

Example: January 7, 2019

14. Organization Type *

Mark only one oval.

- Government
- Non-Government

Technology related factors

Innovation Factors

15. E-payment improves the organization's operational efficiency. *

Mark only one oval.

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

16. E-payment reduces the organization's operational cost. *

Mark only one oval.

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

17. E-payment improves the organization's customer service. *

Mark only one oval.

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

18. E-payment improves the organization's relationships with business partners. *

Mark only one oval.

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

19. E-payment has high set up cost. *

Mark only one oval.

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

20. E-payment has high running and training cost. *

Mark only one oval.

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

21. E-payment has high maintenance and deposal cost. *

Mark only one oval.

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

22. Employee's expertise in supporting e-payment is low. *

Mark only one oval.

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

23. Employee's experience in supporting e-payment is low. *

Mark only one oval.

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

24. The utilization of E-payment's data and transaction over internet; creates * high information security risk for the organization *Mark only one oval.*

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

25. The utilization of E-payment's over internet; creates high information security * privacy risk for the organization. *Mark only one oval.*

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

organizational Related factors

Organizational Factors

26. How many number of employees has your organizations? *

Mark only one oval.

- less than 50 50-
- 250
- 250-500 500-
- 1000 above
- 1000

27. Organization's top management are aware of the advantages that E- * payment can bring for the future success of the firm.

Mark only one oval.

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

28. Organization's top management influence employees to increase awareness * of the advantages that E-payment can bring for the future success of the firm.

Mark only one oval.

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

Environmental Factors

Environmental related factors.

29. Business partners such as (Banks and suppliers) recommended the adoption * of E-payment.

Mark only one oval.

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

30. Business partners such as (Banks and suppliers) requested the adoption of * E-payment.

Mark only one oval.

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

31. Firm experience competitive pressure to adopt E-payment. *

Mark only one oval.

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

32. Firm would have experienced competitive disadvantage if E-payment has * not been adopted. *Mark only one oval.*

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

33. The country's legislation support E-payment. *

Mark only one oval.

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

34. The country's legislation about E-payment is transparent. *

Mark only one oval.

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

35. Firms are legally protected during purchase on the internet. *

Mark only one oval.

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

36. Government assists stakeholders by education and training about E- * payment development. *Mark only one oval.*

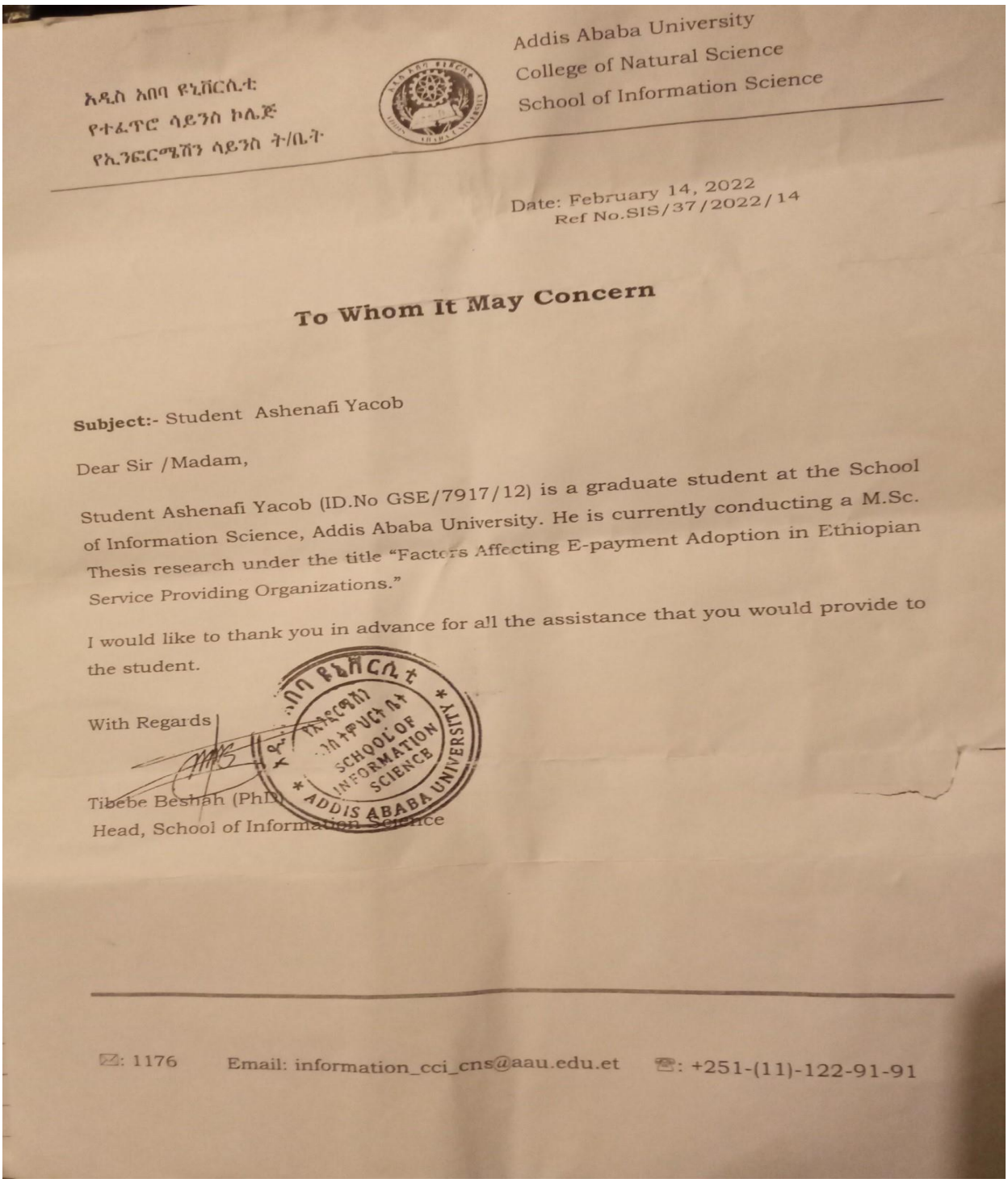
- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

37. Government assists stakeholders by consulting about E-payment * development.

Mark only one oval.

- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

Appendix B: Support letter from AAU



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Addis Ababa University
College of Natural Science
School of Information Science

Date: February 14, 2022
Ref No.SIS/37/2022/14

To Whom It May Concern

Subject:- Student Ashenafi Yacob

Dear Sir /Madam,

Student Ashenafi Yacob (ID.No GSE/7917/12) is a graduate student at the School of Information Science, Addis Ababa University. He is currently conducting a M.Sc. Thesis research under the title "Factors Affecting E-payment Adoption in Ethiopian Service Providing Organizations."

I would like to thank you in advance for all the assistance that you would provide to the student.

With Regards

Tibebe Beshah (PhD)
Head, School of Information Science

SCHOOL OF INFORMATION SCIENCE
ADDIS ABABA UNIVERSITY

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