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Factors affecting Adoption of E-  
Government: The case of Ethiopian  
Revenue and Customs Authority  
Large Taxpayers Office

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Advisor: Mesfin Fikre (PhD)

By Abraham Adefris Tefera

## DECLARATION

I hereby declared that this thesis entitled “Factors affecting Adoption of E-Government: The case of Ethiopian Revenue and Customs Authority Large Taxpayers Office” is my original work and that all sources of materials have used for this thesis have been duly acknowledged. This has been submitted in partial fulfillment of the requirements for the master’s degree at Addis Ababa University. I declared that the paper has not previously published or written by another person nor material which has been accepted for the aware of any other degree or diploma of the university or other institute of higher learning, except where due acknowledgment has been made in the text.

**Abraham Adefris**

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Candidate’s Name Signature & Date

### **Advisor’s Approval**

This thesis has been submitted for examination with my approval as University advisor.

**Mesfin Fikre (PhD)**

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Advisor’s Name Signature & Date

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Approved by the board of examiners:

\_\_\_\_\_  
(Advisor)

\_\_\_\_\_  
(Signature)

\_\_\_\_\_  
(Date)

\_\_\_\_\_  
(Examiner 1)

\_\_\_\_\_  
(Signature)

\_\_\_\_\_  
(Date)

\_\_\_\_\_  
(Examiner 2)

\_\_\_\_\_  
(Signature)

\_\_\_\_\_  
(Date)

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## Abstract

*Many governments worldwide have been investing heavily in e-Government project as a strategy to provide the best governmental services to citizens, businesses and employees. However, many governments and academic researchers recognized the problem of low-level of users' adoption toward e-Government services. Ethiopian Revenue and Customs Authority (ERCA) is one of Ethiopian government offices that suffer from the lack of users' adoption of its e-Government services. Therefore, this study is dedicated to identify the factors that affect large taxpayers' adoption of ERCA's e-government services using a modified Unified Theory of Acceptance and Use of Technology (UTAUT) model.*

*The research adopted a multi-method approach [combining qualitative (interviews) and quantitative (survey) methods] to explore the efforts done so far by ERCA to implement and diffuse its e-government system and to identify factors that affect actual adoption and use of the e-government system. For primary data collection, an interview is done with three ERCA personnel and 145 survey questionnaires were also distributed to 19 large taxpayer organizations and 104 complete responses were received.*

*The findings of this research revealed that performance expectancy, effort expectancy, awareness and website quality are significant determinants of intention to use e-government. In contrast, social influence didn't show significant impact in determining users' intention to use e-government system. In addition, facilitating conditions and intention to use e-government are found to be significant determinants of actual adoption and use of e-government system. Moreover, the results of this research revealed that there is a significant difference between the gender of the adopters and non-adopters. However the findings didn't show significant difference between the different age groups of the adopters and non-adopters.*

Keywords: UTAUT, Adoption, E-tax, ERCA, E-government, IT

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## List of Acronyms:

AAU: Actual Adoption and Use  
DOI: Diffusion of Innovation Model  
EE: Effort Expectancy  
ERCA: Ethiopian Revenue and Customs Authority  
FCS: Federal Civil Service  
FC: Facilitating Conditions  
G2B: Government to Business  
G2C: Government to Citizen  
G2E: Government to Employee  
G2G: Government to Government  
ICT: Information Communication Technology  
IS: Information Systems  
ITU: Intention to Use  
MM: Motivational Model  
MPCU: Model of PC Utilization  
PCA: Principal Components Analysis  
PE: Performance Expectancy  
SCT: Social Cognitive Theory  
SI: Social Influence  
SIGTAS: Standard Integrated Government Tax Administration System  
TAM: Technology Acceptance Model  
TASS: Tax Administration Support System  
TRA: Theory of Reasoned Action  
TPB: Theory of Planned Behavior  
UTAUT: Unified Theory of Acceptance and Use of Technology  
UNDESA: United Nations Department of Economic and Social Affairs  
UNDP: United Nations Development Program  
VIF: Variance Inflation Factor  
WQ: Website Quality  
WWW: World Wide Web

# 1. Introduction

## 1.1 Background of the Study

With the emergence of the concept of e-government, public services around the world have realized the importance of making their services more efficient and available. While citizens have become more Internet aware and experience good electronic services (e-Services) from the private sector, they begin to expect the same high standards from government agencies for their public services. Electronic Government (e-government) promises to emulate the private sector by offering more efficient, transparent and accessible public services to citizens and businesses. Although, the benefits of e-government are well documented, the implementation and adoption of the concept has been sparse in both developed and developing countries. Since the emergence of the e-government concept, there have been many studies which have explored the challenges that influence e-government implementation in various different national contexts (Al-Shafi and Weerakkody, 2008).

The electronic presence globally through the Internet has revolutionized the way businesses are conducted and managed. To expand the markets especially in terms of investments opportunities and improve on productivity, the global appearance is vital today. This is not only making many business entities to create websites but also making governments to rethink on their e-global visibility. In a bid to support government activities, most government bodies have now created their own websites and avail online e-services. The primary justification for the move towards e-governance - an electronic channel of service delivery that has proven tremendously successful in the private sector, is the belief that it holds considerable potential for positively transforming government service delivery (Morgeson and Mithas, 2009).

Carter and Belanger (2003) showed the usage of IT to enhance skillfulness and digital approach to governmental online services related to each stakeholder in Government to Citizen, Government to Employee, Government to Government and Government to Business related online facilities. Governments have recognized the importance of web technologies and assure criticality acclaimed modifications to reuse it for public online services so as citizens can easily use and access them irrespective of their location (Abdulkarim, 2003). E-Government is a proper method for world's governments to use the most progressive IT services and web-based online applications (Fang, 2002). Online applications serve up citizens and modern businesses with more favorable access to

government services and information by improving the quality of services and accommodate more possibilities.

A study conducted by Worku (2016) note that successful E-government implementation has very positive effects on improving public service qualities and promoting good governance in public sectors in Ethiopia. Again the findings of Worku's research revealed that one of the bottlenecks for successful implementation and adoption was poor website design, features and contents. Another research finding by Mekuria (2009) revealed that, the development of the stage of E-Government at the Federal Civil Service (FCS) found at its earliest stage. The study also noted that, Ethiopia has limited e-readiness profile for the adoption of E-Government System. In this regard, the limited Information Communication Technology (ICT) penetration, limited enabling environment, and the lack of information technology professionals and ICT infrastructure including website quality in the public sector are among the major challenges of the E-Government System.

Like any other new technology, the introduction of e-government to a country will also result in a number of challenges for the citizens and the government alike as a lack of access to e-services, security concerns, trust, and individual differences are challenges that can impact on participation and thereby obstruct the usage of e-government services (Khanh, 2014).

The study of adoption, and its usage, is considered to be a mature area of research within the IS discipline (Venkatesh et al., 2003). Over the last three decades, a number of researchers have adopted, modified and validated many theoretical models in order to understand and predict technology acceptance and usage (Venkatesh et al., 2003). The models that have been taken and used from another discipline and developed by IS researchers, include the Theory of Reasoned Action (TRA) (Ajzen and Fishbein, 1980); Theory of Planned Behavior (TPB) (Ajzen, 1985); Technology Acceptance Model (TAM) (Davis, 1989); Model of PC Utilization (MPCU) (Thompson et al., 1991); Motivational Model (MM) (Davis et al., 1992); Social Cognitive Theory (SCT) (Brown, 1999); Extension of the Technology Acceptance Model (TAM2) (Venkatesh and Davis, 2000); Diffusion of Innovation Model (DOI) (Rogers, 2003); and the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al., 2003).

Venkatesh et al., (2003) argue that researchers are able to choose a suitable and favored model and ignore the contributions from alternative models. This led Venkatesh et al., (2003) to review,

discuss and integrate elements across the above eight prominent user acceptance models that resulted in proposing the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al., 2003).

## 1.2 Problem Statement

It is undisputable fact that e-government plays a significant role in enhancing the web presence and providing a platform for access to relevant information and services for citizens. However, this can be realized when e-government services are created and hosted following some basic quality measures and citizens are aware and utilize them.

Like any other new technology or organizational concept, the introduction of e-government to a country will also result in a number of challenges for the citizens and the government alike as a lack of access to e-services, security concerns, trust, individual differences, awareness, website or service quality, systems easiness to use, ambiguity on usefulness, social influence, and required resource availability, are challenges that can impact on participation and thereby obstruct the adoption of e-government services.

In the 2016 report of United Nations Department of Economic and Social Affairs (UNDESA), Ethiopia is ranked 157<sup>th</sup> out of 193 countries on the E-government Development index (EGDI) (UNDESA, 2016). From this report we can deduct that, the e-government services availability, awareness and usage is at its infant stage and is one of the development areas in the country. Specifically, many Large Taxpayers are complaining about tax paying processes at Large Taxpayers Office of Ethiopian Revenue and Customs Authority (ERCA).

Previous studies made on e-Government at ERCA are very minimal. The only study found was the Master's thesis by Samuel Eshetu. Eshetu (2015) assessed the challenges of E-government at ERCA large taxpayers' office from implementation and availability of the services point of view. This study revealed that in terms of the stage of e-Government, ERCA is found at its emerging stage where most of its e-Services are informational (static) than transactional. In this study the overall level of satisfaction of large taxpayers on ERCA's website as a primary source of one-stop-shopping portal is also found to be only 52% (Eshetu, 2015).

Another study referred was a Master's thesis by Mekuria (2009) on the challenges and practices of e-Government in Ethiopia at Federal Civil Service Organizations including ERCA. This

research also addresses E-government challenges from implementation perspective. In this research Information Communication Technology (ICT) penetration, limited enabling environment, and the lack of information technology professionals and ICT infrastructure in the public sector are the major identified challenges of the E-Government System (Mekuria, 2009).

The field of E-Government is growing considerably and many research areas are being studied in order to provide scientific insights (Al-Adawi, et al., 2005; Alghamdi & Beloff, 2014). One of the most important elements of implementing E-Government systems is the adoption and utilization by users, who are the main target when implementing such systems. If implemented systems are not utilized, implementing such systems by spending a lot of money is a loss.

The researches referred above (Mekuria, 2009; Eshetu, 2015) focused on challenges of E-government from implementation and availability point of view. Whereas this research focuses on the factors that affect the adoption of E-government once the services are available. To my knowledge, there are no studies exist that examine factors that influence Ethiopian businesses' adoption of e-government services. Given this context, this study attempts to address this gap in an Ethiopian perspective adapting the constructs from the Unified Theory of Acceptance and Use of Technology (UTAUT). Therefore, this research will investigate and analyze factors that could affect the adoption and utilization of e-Government services of ERCA (E-tax), which will then lead to better understanding, ensuring that e-Government has a high level of success. In addition, it will assess the level of adoption and utilization of E-government service of ERCA.

### 1.3 Research Questions

Considering the wider consensus on the contribution of e-Government for a nation development endeavors, and the contribution that large taxpayers have in the economy of the country the study aims to get answer to the basic research question: "What are the factors affecting large taxpayers to accept and use e-government services of Ethiopian Revenue and Customs Authority?"

To further analyze on the research problem statement, the following related questions were followed:

- What are the efforts done so far to avail and promote e-government services to Large Taxpayers?

- What are the key factors that influence large taxpayers' adoption of e-government services that Ethiopian Revenue and Customs Authority provides?

Considering the high contribution of Large Taxpayers to the national domestic income, ERCA opened a separate office to Large Taxpayers called Large Taxpayer Office (LTO). This study targeted Large Taxpayers based on this merit.

## 1.4 Objective of the Study

### 1.4.1 General Objective

The general objective of the study is to identify and capture factors that affect e-Government services' adoption and usage and analyze and measure the adoption or usage level of e-government services provided by Ethiopian Revenue and Customs Authority. In addition, the study will explicate the effort done so far towards promoting e-government services of ERCA.

### 1.4.2 Specific Objective

The above general objective leads to the formulation of a conceptual model that can be used as a frame of reference by government institutions which seek to implement and adopt e-government systems in Ethiopia. It is hoped that this conceptual model will contribute to the field of e-government by helping to establish a better understanding among the research community of the concept of e-government, and in particular the issues surrounding adoption in Ethiopian context. Further, it is proposed that this conceptual model could serve as a decision-making framework for practitioners in their efforts to implement and diffuse e-government services in Ethiopia. The conceptual model is based on the well-established theory the unified theory of acceptance and use of technology (UTAUT).

The specific objectives of this research are:

- Analyze and measure adoption and usage level of e-government services of Ethiopian Revenue and Customs Authority
- Assess the effort done so far for the promotion of e-government services of ERCA and identify the progress made thus far, in promoting the e-government services by using interview with relevant ERCA personnel.
- Explicate factors influencing large taxpayers' adoption of e-government services of ERCA, using survey research approach.

- Empirically examine factors affecting e-government adoption that are relevant to the large tax-payers.

### 1.5 Significance of the Study

This research presents a number of significant contributions to the field of e-government adoption. The first one is to build a model that can inform e-government adoption in a developing country like Ethiopia. In addition to this, the research will check on identifying the gaps that exist between governments' efforts to diffuse e-government and citizens' expectations for adoption and use.

### 1.6 Scope of the Study

The study has the following scopes:

- E-Government is comprehensive ICT solution constituting varying modalities. According to the National ICT Policy and Strategy of Ethiopia (2009), the E – Government strategy of the country is expected to target Government to Government (G2G), Government to Business (G2B), Government to citizen (G2C) and Government to Employee (G2E) programs. The scope of this study focuses on the modality of Government to Business (G2B) where e-interaction is made between government and businesses.
- The technical aspect such as hardware and software infrastructure of ERCA is out of the scope of this research.
- ERCA is providing its service to the business community in the areas of Foreign Trade (customs and duties service for import and export) and Domestic Tax Administration. The focus of the study is on the domestic tax administration front end e-Service by ERCA (E-tax).

### 1.7 Limitations of the Study

As with any research, this research has also encountered some limitations. The first limitation was lack of willingness to provide full data with a pretext of “confidentiality” of the data as well as availability of up-to-date and comprehensive primary data on the study variable. Another limitation was, getting timely response from large taxpayers. The researcher tried to reach out to more than thirty large taxpayer organizations but succeeded to get positive response to conduct the survey only from 19 of them.

This research was conducted with only one case study (ERCA's E-tax system), and hence it is hard to decide whether the conceptual model proposed is applicable in other e-government implementations and whether it could be applied in the context of Ethiopia.

The survey protocol utilized a convenient sampling method by selecting to distribute the questionnaire in the mentioned volunteer large taxpayer organizations, yet distributed the survey to all personnel who are working on tax related job. This was possible due to personal contact in all the selected organizations. Hence, a complete random sampling and larger sample size would have been strengthen the findings and conclusion of this research.

### 1.8 Organization of the Paper

This thesis is organized in to five major chapters. Chapter I is Introduction. In this chapter, the basic framework of the study including Background, Statement of the Problem, Objectives, and Research Questions are discussed. Chapter II is concerned with Methodology. In this chapter, the basic guides that to be followed in the study is outlined. Literatures are reviewed in Chapter III. The literatures reviewing comprise both theoretical and empirical studies. Empirical data are analyzed presented and interpreted in chapter IV. The findings of the research are discussed in chapter V. Conclusion, future work and limitations of the study are presented in chapter VI, VII, and VIII respectively.

### 1.9 Operational Definition of E-government

The terms e-Government, e-Service, and online service delivery are discussed in the literature of this study and also are found in various related studies, with no comprehensive definition but under the broad domain of e-Government. The commonly used are, however, e-Government and e-Service which are accorded close similarity concept, principle, and practice. Therefore, for common understanding and avoiding confusion by readers from its technicality, the terms e-Service, e-Government and online service are used interchangeably to primarily mean electronic delivery of services over the Internet.

## 2 Literature Review

### 2.1 E-Government

#### 2.1.1 Definition of E-Government

Yildiz (2007) defined e-government as “utilizing the Internet and the World-Wide-Web for delivering government information and services to citizens”. Akesson and Edvardsson (2008) introduced e-government as “the use of information and communication technologies (ICTs) in public administrations, combined with organizational change and new skills, in order to improve public services and democratic processes and to strengthen support for public policies.

Ebrahim and Irani, (2005) in their inquiry defined e-government as conducting the public sector which has been modernized by a special strategy to reduce the costs and layers of business processes in order to interact with citizens and businesses efficiently. In addition, (Tsai et al., 2009) revealed E-government as an electronic business which is special and includes particular objectives and characteristics. Actually, it is possible to say that e-government provides a wide variety of information to citizens and businesses via internet (Ebrahim & Irani, 2005).

While Yildiz (2007) claimed there is not any universally accepted definition of the e-government concept, similarly (Hu et al., 2009) concluded that E-government is a young, rapidly expanding field and everybody talks about e-government, but all have different interpretations.

In public administration, e-government acts as a popular event with the ability of covering all the functions like service delivery, efficiency and effectiveness, interactivity, decentralization, transparency and accountability (Yildiz, 2007). Moreover (Hu et al., 2009), in their definitions about e-government concluded that it consists in delivering directly government information and services via Internet and World-Wilde-Web to the customer during 24 hours and within 7 days of the week.

In defining e-government, literature highlights that the interpretation of e-government is based on *technology* (e.g. the use of ICT for delivery of government services electronically), *process* (e.g. processes of transaction and transformation of e-government services), *benefits* (e.g. benefits for delivery of government services electronically for the public), *citizen* focus (e.g. citizenry and their desires as a focal viewpoint), *single point access* (e.g. delivery of government services electronically through a single point of access), and *phenomenon* (e.g. e-government as a phenomenon and alternative way to deliver government service). Choudrie and Weerrakody

(2007) also stated that e-government encompasses a broad spectrum of activities (e.g. the capture, management, use, dissemination and sharing of seamless information) that are offered using ICT.

### 2.1.2 Emergence of E-Government

It is widely acknowledged that the emergence of the e-government discipline has been due to the requirement of developing local and national government operational and process efficiencies, as well as providing accessibility to citizens and other involved stakeholders. Like many other ideas that have arisen during the emerging stages of the internet age, e-government is a concept that is seemingly in a constant state of development.

Heeks (2007) highlights that the —electronic government‖ phrase first became eminent while undertaking the 1993 United States (US) National Performance Review, and the —e-government expression gradually propagated from 1997. Tat-Kei (2002) notes that e-government emerged thanks to electronic mail and the World Wide Web (WWW) to deliver end-to-end services and information to citizens. This was also manifested by e-government projects which are collectively known as the *government modernization agenda* undertaken by several governments around the world in the late 1990s, in order to provide seamless information and services to citizens and businesses (Irani et al., 2006).

### 2.1.3 Forms of E-Government

E-Government offers services to those within its authority to transact electronically with the government. These services differ according to users' needs, and this diversity has given rise to the development of different type of e-government. E-government services can be classified into four main categories.

**Government-to-citizen (G2C):** The majority of government services come under this application, towards providing citizens and others with comprehensive electronic resources to respond to individuals' routine concerns and government transactions. Government and citizens will continuously communicate when implementing e-government, thus supporting accountability, democracy and improvements to public services. The primary goal of e-government, is to serve the citizen and facilitate citizen interaction with government by making public information more accessible through the use of websites, as well as reducing the time and cost to conduct a transaction (Ndou,2004). In applying the idea of G2C, customers have instant and convenient access to government information and services from everywhere anytime, via the use of multiple

channels. In addition to making certain transactions, such as certifications, paying governmental fees, and applying for benefits, the ability of G2C initiatives to overcome possible time and geographic barriers may connect citizens who may not otherwise come into contact with one another and may in turn facilitate and increase citizen participation in government (Seifert, 2003).

**Government-to-business (G2B):** Government to business, or G2B, is the second major type of e-government category. G2B can bring significant efficiencies to both governments and businesses. G2B include various services exchanged between government and the business sectors, including distribution of policies, memos, rules and regulations. Business services offered include obtaining current business information, new regulations, downloading application forms, lodging taxes , renewing licenses, registering businesses, obtaining permits, and many others. The services offered through G2B transactions also play a significant role in business development, specifically the development of small and medium enterprises (Pascual, 2003). Fang (2002) argued that G2B applications actively drive e-transaction initiatives such as e-procurement and the development of an electronic marketplace for government purchases; and carry out government procurement tenders through electronic means for exchange of information and goods. This system benefits government from business' online experiences in areas such as e-marketing strategies. The government-to-business G2B is as useful as the G2C system, enhancing the efficiency and quality of communication and transactions with business also, it increase the equality and transparency of government contracting and projects (Moon, 2003).

**Government-to-government (G2G):** This refers to the online communications between government organizations, departments and agencies based on a super-government database. Moreover, it refers to the relationship between government and its employees as outlined below. The efficiency and efficacy of processes are enhanced by the use of online communication and cooperation which allows for the sharing of databases and resources and the fusion of skills and capabilities. It renders information regarding compensation and benefit policies, training and learning opportunities, and civil rights laws in a readily accessible manner (Ndou, 2004). The vital aim of G2G development is to enhance and improve inter-government organizational processes by streamlining cooperation and coordination. On another G2G front, the use of information technologies by different governmental agencies to share or centralize information, or to automate

and streamline intergovernmental business processes such as regulatory compliance, has produced numerous instances of time and cost savings and service enhancements (Gregory, 2007).

**Government-to-employee (G2E):** Government to employee is the least sector of e-government in much e-government research. Some researchers consider it as an internal part of G2G sector and others deal with it as a separate sector of e-government (Riley, 2001). G2E refers to the relationship between government and its employees only. The purpose of this relationship is to serve employees and offer some online services such as applying online for an annual leave, checking the balance of leave, and reviewing salary payment records, among other things (Seifert, 2003). It is a combination of information and services offered by government institutions to their employees to interact with each other and their management. G2E is a successful way to provide e-learning, bring employees together and to encourage knowledge sharing among them. It gives employees the possibility of accessing relevant information regarding compensation and benefit policies, training and learning opportunities, and allowing them access to manage their benefits online with an easy and fast communication model. G2E also includes strategic and tactical mechanisms for encouraging the implementation of government goals and programs as well as human resource management, budgeting and dealing with citizens (Ndou, 2004).

#### 2.1.4 Stages of E-government

The implementation of e-government has several stages. The Stage of E-Government refers to the levels of websites development in providing services. In this regard, literatures found to vary in using the stages terminology and contents that should be included in each stage (Alshehri & Drew, 2010). For the purpose of this study, however, the Model that has applied for the E-Government survey of the United Nations Department of Economic and Social Affairs (UNDESA) is chosen for presentation. According to UNDESA (2016), there are four stages of government online service development. These are Emerging Information Services, Enhanced Information Services, Transactional Services, and Connected Services.

**Emerging information services:** Government websites provide information on public policy, governance, laws, regulations, relevant documentation and types of government services provided. They have links to ministries, departments and other branches of government. Citizens are able to obtain updated information in the national government and ministries and can follow links to archived information.

**Enhanced information services:** Government websites deliver enhanced one-way or simple two-way e-communication between government and citizen, such as downloadable forms for government services and applications. The sites have audio and video capabilities and are multi-lingual. Some limited e-services enable citizens to submit requests for non-electronic forms or personal information.

**Transactional services:** Government websites engage in two-way communication with their citizens, including requesting and receiving inputs on government policies, programmes, regulations, etc. Some form of electronic authentication of the citizen's identity is required to successfully complete the exchange. Government websites process non-financial transactions, e.g. filing taxes online or applying for certificates, licenses and permits. They also handle financial transactions, i.e. where money is transferred on a secure network.

**Connected services:** Government websites have changed the way governments communicate with their citizens. They are proactive in requesting information and opinions from the citizens using Web 2.0 and other interactive tools. E-services and e-solutions cut across the departments and ministries in a seamless manner, information, data and knowledge is transferred from government agencies through integrated applications. Governments have moved from a government-centric to a citizen-centric approach, where e-services are targeted to citizens through life cycle events and segmented groups to provide tailor-made services. Governments create an environment that empowers citizens to be more involved with government activities to have a voice in decision-making.

#### 2.1.5 E-Government for Taxation

Globally, e-government is gaining wide spread recognition and adoption to aid ease, transparency and accountability in business and government operations. With respect to taxing, countries such as Malaysia (Ling and Fatt, 2008); India (Rajeswari and Mary, 2014); USA (Carter et al., 2011); Nigeria (Ojeka et al., 2016) have been listed among active users of e-government for tax filing and payment. The introduction of E-tax in 2011 brought Ethiopia into one of the Nations that engage e-government as a means of taxation.

Despite attempts by government to ease the payment and filing of tax, avoidance attitudes of taxpayers to the e-government platform might not be a major challenge to Ethiopia alone. For instance in Malaysia, Azmi et al. (2012) reported that taxpayer's openness to using the e-filing

system will depend on the extent to which they perceive the system usefulness to them. Again the extent to which they perceive the system to be useful depends on the degree of associated risks and ease of using the system. Applying the principles of different technology acceptance models many studies have emphasized the need for E-tax systems to be perceived as easy to use and to improve tax service quality (Mustafa and Obid, 2015; Sharma et al., 2011; Azmi and Bee, 2010).

## 2.2 E-Government Adoption

Like any other new technology, the introduction of e-government to a country will also result in a number of challenges for the users and the government alike as a lack of access to e-services, security concerns, trust of the system, quality of the services, awareness towards the e-services, and individual differences are challenges that can impact on participation and thereby obstruct the usage of e-government services. This section highlights the theories that explain technology adoption that are relevant for this research (Al-Shafi and Weerakkody, 2008).

## 2.3 Technology Adoption Models

Technology acceptance is defined as “an individual’s psychological state with regard to his or her voluntary or intended use of a particular technology” (Gattiker, 1984). Technology acceptance models aim to study how to promote technology use and to explore the factors that hinder or facilitate the acceptance and use of technologies (Kripanont, 2006). A number of technology models have developed over the years to study and investigate the effect of factors on the acceptance and use of technologies such as:

- Theory of Reasoned Action (TRA) (Ajzen and Fishbein, 1980);
- Theory of Planned Behavior (TPB) (Ajzen, 1985);
- Technology Acceptance Model (TAM) (Davis, 1989); and the
- Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al., 2003).

In this study, the UTAUT model will be taken as a basis to discover factors that influencing the adoption of e-government services in Ethiopian Revenue and Customs Authority large Taxpayers Office. All the above mentioned models will be discussed in brief and UTAUT in detail in the following sections.

### 2.3.1 Theory of Reasoned Action (TRA)

Ajzen and Fishbein (as cited in Alshehri et al., 2012) developed this behavioral theory in 1980. This model is to be considered the backbone of studies associated with attitude behavior and it is

widely used in academic and business research (Alshehri et al., 2012). According to Ajzen and Fishbein (as cited in Alshehri et al., 2012), the theory of reasoned action (TRA) has two determinants on intention, *attitude toward behavior* and *subjective norms* associated with behavior. This theory is a general research intention theory that has been used to explain and predict human behavior. Suh and Han (2003) claim that this theory is used by information systems researchers to study the determinants of IT innovation-usage behavior.

According to the study by Davis et al. (1989), Subjective Norm construct is one of least understood aspects of TRA. The Subjective norm (SN) construct is likely to have an indirect impact on Behavioral Intention (BI) via the Attitude towards a behavior (A) construct. This will make the differentiation between the direct effect of SN on BI and the indirect effect of SN on BI via A more difficult. There is a lack of significant constructs that can analyze the adoption and utilization of complex systems such as e-Government.

### 2.3.2 Theory of Planned Behavior (TPB)

This theory Planned Behavior (TPB) was developed by Ajzen in 1985 and was proposed as an extension to the TRA. The TPB introduced a third independent determinant of intention, called *perceived behavior control*, in addition to the two TRA determinants *subjective norms* and *attitude toward behavior* (Ajzen, 1985, 1991). Perceived behavior control was proposed to influence behavior, in addition to attitudes toward use and subjective norms. In essence, TPB is a theory that predicts intentional behavior, and Chau and Hu (2002) claim that TPB is considered to be more general than TRA, because of the added determinant, *perceived behavior control*.

### 2.3.3 Technology Acceptance Model (TAM)

The Technology acceptance model (TAM) is adapted and transferred from the TRA to the field of information systems. Davis developed TAM in 1989 (Davis, 1989) and uses TRA as a theoretical basis for specifying the linkages between two key beliefs: *perceived usefulness* and *perceived ease of use* and *users' attitudes toward using*, *behavioral intentions to use* and *actual system use*. According to Davis et al., (1989), the main goal of the model is to offer an explanation of the determinants of computer acceptance, which eventually transformed in to an explanation of user behavior across a broad range of end-user computing technologies and user populations.

During previous years, TAM has received extensive support through validation, applications and replications for its power to predict use of information systems (Al-Shafi and Weerakkody, 2008;

Cheng et al., 2006). On the other hand Shareef, et al. (2011), claimed that TAM cannot capture and specify the complete essence of e-Government usage behavior due to the lack of many important factors and constructs that have direct impact on behavior in term of intention to use, as well as on the actual usage of technologies, particularly e-Government systems.

#### 2.3.4 Unified Theory of Acceptance and Use of Technology (UTAUT)

The UTAUT model consists of eight theoretical models: the theory of reasoned action (Ajzen and Fishbein,1980), the technology acceptance model (Davis ,1989), the theory of planned behavior (Ajzen, 1991), the motivational model (Davis et al., 1992), a model combining the technology acceptance model and the theory of planned behavior (Taylor and Todd 1995), the model of PC utilization (Thompson et al., 1991), the innovation diffusion theory(Rogers, 2003), and social cognitive theory (Compeau and Higgins, 1995). The UTAUT model combines these theoretical models and is made up of four core determinants of usage intention. Additionally, the UTAUT model has been found to be preferred to the abovementioned theoretical models, as it is able to account for a higher percentage of the variance ( $R^2$ ) in usage intention (Venkatesh et al., 2003).

The UTAUT model consists of three constructs that determine behavioral intention; *performance expectancy*, which is “degree to which an individual believes that using the system will help him or her to attain gains in job performance”; *effort expectancy*, which is “the degree of ease associated with the use of the system”; *social influence*, which is “the degree to which an individual perceives that important others believe he or she should use the new system”; and two constructs that determine actual use behavior *facilitating conditions*, which is “the degree to which an individual believes that an organizational and technical infrastructure exists to support the use of the system”; and *behavioral intention*, which is “an individual’s subjective probability that he or she will perform the behavior in question” (Venkatesh et al. 2003).

In the UTAUT model the two demographic factors *age* and *gender* are considered as a moderating variable that affect the relationship of performance expectancy, effort expectancy, and social influence and behavioral intention. In addition age plays a moderating role on the relationship of facilitating conditions and actual use behavior. In addition another moderating variable *experience* affects the relationship between effort expectancy & social influence and behavioral intention and between facilitating conditions and actual use behavior. Another moderating variable

*voluntariness to use* affects the relationship between social influence and behavioral intention (Venkatesh et al. 2003).

UTAUT did not address some very important constructs and factors, such as awareness and quality of service, although these are highly likely to have a strong impact on behaviors and intentions to use and adopt technologies. This research adopted the UTAUT model with some modification to address the problem that are already identified.

#### 2.4 Research Model and Hypotheses

In order to analyze factors that influence e-Government adoption and utilization, this research developed a comprehensive model based on unified theory of acceptance and use of technology (UTAUT) model. This model provides a comprehensive framework to analyze key factors that have crucial influence on the utilization and spread of e-Government. This model is developed based on a critical analysis of the literature on technology acceptance, in conjunction with insights from several models and theories that are commonly used to analyze the acceptance and usage of technologies. The main goal of this research model is to determine factors that could influence the users' beliefs and intentions, as well as the behavior that influences their adoption and usage levels.

The model consists of two dependent variables, namely Intention to Use E-Government (ITU) and Actual Adoption and Use of e-Government (AAU). The model also contains eight independent variables, which are Performance Expectancy (PE), Effort Expectancy (EE), Social Influence (SI), Awareness (AW), Website Quality (WQ), Facilitating Condition (FC), Age (AG), and Gender (GDR). These independent variables represent the fundamental factors that have a critical influence on the adoption and usage levels of e-Government. The conceptual model of the research, is shown in Figure 2.4-1.

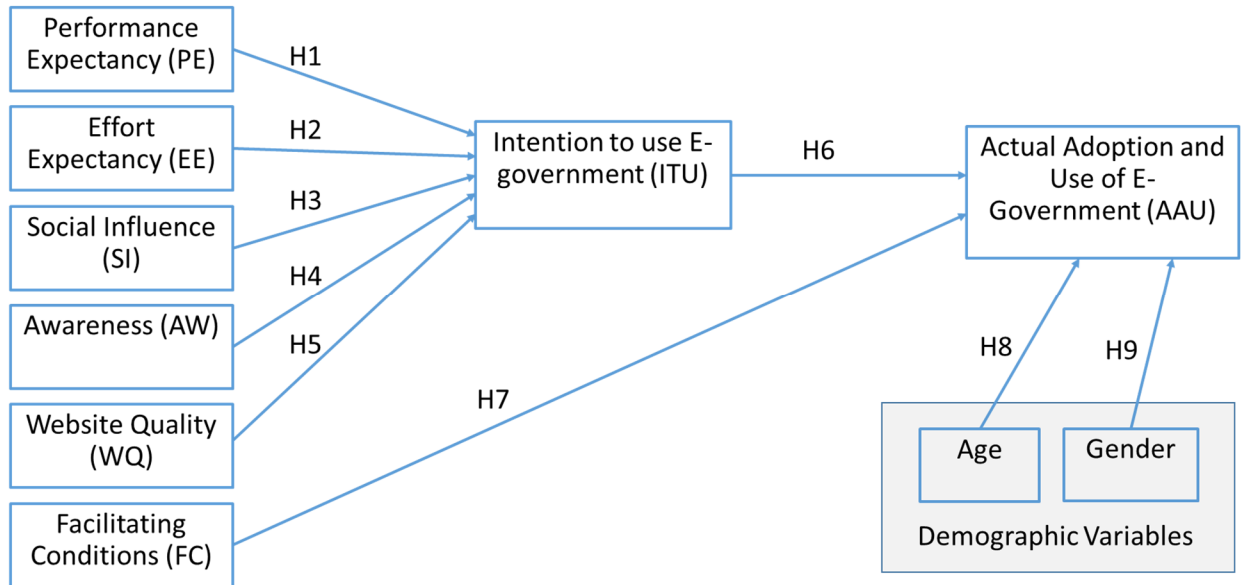


Figure 2.4-1: E-Government Adoption Model; adapted from Unified Theory of Acceptance and Use of Technology (UTAUT)

The relationships between the research constructs is represented by arrows and it means that the independent variable has a direct influence on the dependent variable. This means Performance Expectancy (PE), Effort Expectancy (EE), Social Influence (SI), Awareness (AW), and Website Quality (WQ) have a direct influence on the Intention to use e-Government (ITU). Facilitating Conditions (FC), Intention to use E-government (ITU), Age (AG), and Gender (GDR) have a direct influence on the Actual Adoption and Use of e-Government (AAU).

#### 2.4.1 Performance Expectancy (PE)

Performance Expectancy is defined as the degree to which individuals believe that using a system will help them improve their job performance. Performance expectancy was found to be a strong predictor of intention to use IT according to previous acceptance study (Venkatesh et al., 2003)

It contains five constructs from previous models: perceived usefulness (TAM/TAM2), extrinsic motivation (MM), Job Fit (MPCU) relative advantage (IDT), and outcome expectation (SCT). (Venkatesh et al., 2003). Venkatesh et al., (2003) integrated these five constructs into performance expectancy factors. In this study, performance expectancy is measured by the perceptions of using e-government services in terms of benefits, such as saving time, money and effort, facilitating communication with government, improving the quality of government services and by providing citizens with an equal basis on which to carry out their business with government. Performance

expectancy was found to be a strong predictor of intention to use IT according to previous acceptance studies (Venkatesh et al., 2003).

To explain performance expectancy toward intention to use e-government system/services, the author proposes the following hypothesis:

*H1: Performance expectancy will have a significant positive influence on intentions to use E-government services.*

#### 2.4.2 Effort Expectancy (EE)

Effort expectancy is the degree of ease associated with the use of the system (Venkatesh et al., 2003). Different Scholars (Davis, 1989; Venkatesh et al., 2003; Gupta et al., 2008) found that effort expectancy has a significant influence on intention to use behavior. Venkatesh et al. (2003) took three constructs from the existing models to capture the concept of effort expectancy: perceived ease of use (TAM/TAM2), complexity (MPCU), and ease of use (IDT).

In this research, effort expectancy is measured by the perceptions of ease of use of e-government services as well as ease of learning how to use these services. Therefore, the researcher proposes the following hypothesis:

*H2: Effort Expectancy will have a significant positive influence on intentions to use e-government services.*

#### 2.4.3 Social Influence (SI)

Social influence is defined as “the degree to which peers influence use of a system”. Whether this is positive or negative; it is a very important factor in many aspects of the lives of citizens and is likely to be influential (Venkatesh et al., 2003). Relevant references, such as citizen’s family, colleagues and friends may have an influence on citizen’s decisions (Tan & Teo, 2000).

The findings of many scholars like Rogers (1995), Taylor and Todd (1995), and Pavlou and Fygenson (2006) suggest that social influences are an important determinant of behavior. This research assumes that if e-government adopters are influenced with positive messages by their social networks, they are more likely to have a strong behavioral intention to adopt the e-government system. Thus, the researcher proposes the following hypothesis:

*H3: Social Influence will have a significant positive influence on intentions to use e-government services.*

#### 2.4.4 Awareness (AW)

Awareness of e-Government refers to scope of knowledge and recognition, users has over e-Government services (Meftah et al., 2015). It has been found that awareness is one of the factors that affect intention to use E-government services (Meftah et al., 2015; AlNuaimi et al., 2011; Mofleh & Wanous, 2008).

Studies conducted in different countries (Farouk and Kalid (2005); Al-hashmi, 2013) revealed that the e-government awareness of citizens is very low and the participation of females in e-government is even lower. Although Internet technology is rapidly growing with the emergence of 3G and broadband networks, citizens are still not aware of e-government services. In response to the low-usage of e-government, citizens cited lack of promotion to introduce e-government services and lack of exposure and awareness of e-government initiatives by the government to the public.

Similarly a study findings by Mekuria (2009) reveled that, the development of the stage of E-Government in Ethiopia found at its earliest stage. The study also noted that, Ethiopia has limited e-readiness profile for the adoption of E-Government System. In this regard, the limited Information Communication Technology (ICT) penetration, limited enabling environment, and the lack of information technology professionals and poor ICT infrastructure in the public sector are among the major challenges of the E-Government System

In this study, awareness is integrated into the UTAUT model as an independent variable and to explain effect of awareness on intention to use e-government, the researcher proposes the following hypothesis:

*H4: Awareness will have a significant positive influence on intentions to use e-government services.*

#### 2.4.5 Website Quality (WQ)

Hasan and Abuelrub, (2008) defined web quality as a user's positive evaluation of a website's features, ensuring it meets the user's needs and reflects the overall excellence of the website. Therefore, they identified four dimensions of web quality: content quality, design quality, organization quality and user-friendly quality. The findings of other scholars (Alshehri et al., 2012 and Kumar et al., 2007) confirmed that website quality had a positive and significant effect on intention to use e-government services.

#### *2.4.5.1 Content Quality Dimension*

Content quality dimension deals with the characteristics of websites' information (Rocha, 2012). This dimension is the key dimension of any website, since it is the major source of value to customers. The key elements and questions to consider under the content quality dimension include timeliness, relevance, Multilanguage/culture, variety of presentation, accuracy, objectivity, and authority.

Timeliness measures how the currency of websites' information is and how much it is up-to-date? How frequently is the website updated and is it clear when the site was updated? Relevance is a measurement on to what extent is the websites' information comprehensive, complete and provided the right level of details? The extent to which it is informative, meaningful, value added according to its audience, and fits to users' need to be assessed.

Multilanguage/Culture dimension measures whether the websites' information available in different languages (English and Amharic)? Or suitable for different cultures or not. Variety of presentation considers if information presented in different forms (text (.doc, .pdf ...), video, audio,), so that the user can download the form that suits him/her. Accuracy measures preciseness of the information provided. It checks whether there is no spelling errors or grammar errors and the sources of information are identified. Objectivity is a dimension that measures whether the information presented in objective manner without political, cultural, religious, or institutional biases. Finally Authority measures the credibility or the level of user confidence of websites' information. This credibility or confidence is based on whether information is clearly provided about: the organization's physical address, sponsor(s) of the site, manager(s) of the site, specification of sites' manager(s), identification of copyright sign, and email to manager of the website exists.

#### *2.4.5.2 Design Quality Dimension*

This dimension concerns with the visual characteristics of websites' design that attract the users and encourage them to stay longer time viewing the website and re-enter it (Hasan & Abuelreb 2008). Governments just like Companies put a great effort to design their websites in an attractive and innovative way since poor design can mean that potential readers never see excellent material as they may become bored, confused, and eventually abort their attempt to view the information (Singh & Sook 2002). When assessing design quality attractiveness, appropriateness, color, image/sound/video, and text are important indicators to be considered.

Attractiveness measures innovativeness of the design of the website, aesthetic effect by its graphics and animation and an emotional appeal which makes the user happy, pleasant, enjoyable, and cheerful when visiting the website. Appropriateness measures if the design of the website is appropriate to the type of the website and if the Images used within the pages serving their functional purposes. It also measures if the Images, colors, and text are appropriately used, if there is information about the organization's objectives, history, products and services. In addition it also checks if photographs are used appropriately to bring in meaning. Color is an indicator that measures the effective use of background and text colors when designing the website. According to Wenham and Zaphiris (2003) for background, light colors are preferred to be used. Concerning text color, it is advisable not to exceed four colors within the same page (Wenham & Zaphiris, 2003).

Image/Sound/Video is concerned with the non-text elements which are used within the website. Few number of image/sound/video should be used and the size should be small since large size of image/sound/video per page will slow downloading the page which is not preferred by users (Yoo & Jin, 2004). Text is an indicator that is concerned with the characteristics of text used within websites' pages. There should be consistency in text. Pages should use one font size and one font style except for titles (Yoo & Jin, 2004). Pages shouldn't use all capital letters unless in titles or headings since they are hard to be read and space wasting (Signore, 2005). There should be white space or breathing space between page elements to avoid crowded pages (Lin & Joyce, 2004). Different or multiple headings such as titles, sub titles, sub-sub titles are preferred as appropriate (Yoo & Jin, 2004). If pages use scrolling text, it shouldn't hide a large amount of information (Yoo & Jin, 2004; Signore, 2005). Pages should first show the text followed by the image(s).

#### *2.4.5.3 Organization Quality Dimension*

Hasan and Abuelreb (2008) observe that this dimension concerns with the logical grouping, categorization, or structure of websites' elements in order to help the user to reach the required information quickly, navigate easily within the website, feel comfortable within its layout consistency, and keep him/her informative that he/she is still in the same website (Rocha, 2012).

The most important elements to consider under organization quality dimension include index, mapping, consistency, links, logo, and domain.

Index checks if an index or links to all the website's pages available from the main page, so that the user can have an idea about all main categories of the website. Mapping measures if there is adequate website map or navigation bar/menu available in each page to facilitate navigating the website. It checks if the user can know the current page that he/she is in while browsing from the navigation title. Consistency measures if the general layout of each page is consistent throughout the website. Links measures if links are working properly. It checks if the link can take the user where he/she intends to go. Presence of assistant links in each page so that the user can get back to the main page from every sections of the website also checked under this indicator. In addition availability of functionality which help the user to return to the top of the page within the long pages of the website is checked under the link indicator. Can the user return to the original website when he/she follows external link of any page also checked under link indicator. Availability of worthy links that take user to other related websites and absence or presence of dead links also checked under this indicator. If the link color change after the user has visited it is also one phenomena to be checked under link indicator.

Logo indicates if the Organization logo is clear and noticeable in every page of the website. Domain indicates if the organization have a meaningful name related to the service it provides and according to the net standards.

These elements need to be assessed to determine the organization quality dimension.

#### *2.4.5.4 User-friendly Quality Dimension*

This concerns with many issues that help any user regardless of his/her education or experience to find the needed information within a reasonable time, the capability of the website to maintain specific level of performance when used (Lautenbach et al., 2008), and interactivity or connectivity which emphasize the existence of interaction between user and website using different tools (Rocha, 2012). The following indicators and check elements need to be considered when assessing user-friendly quality dimension:

Usability measures if the website is easy to use, understand, operate, find information, or navigate. It also checks if it is easy to find the website using external websites, and is it clear to the user that new information is added to the website. According to Tan et al. (2008), reliability governs the degree to which the functionalities offered consistently deliver on promised outcomes while ensuring that the execution sequence and performance of these service functionalities do not

fluctuate from person to person. Questions to ask include: is the Website's address appropriate and easy to remember? Does it have short download time? Is there multi browser support? Is it available 7days/week, Does it work with different screen settings? The website should not be over crowded with adverts to avoid long time downloading of website's pages.

Interactive features checks if the website have clear instructions to use different parts/sections/forms of it. Important questions to ask about this indicator are, does it have help function and clear error messages available to help users? Is there FAQ that summarizes frequently asked questions and their answers? Is there effective internal search tool to search the content of the website? Does communication channel and feedback exist between user and website through email, chat rooms, online community, or suggestion form? Are there follow-up services offered and users can track their orders/requests easily? Modern websites present a significant variety of features, complexity of structure and plurality of offered services (Grigoroudis et al., 2008). In order to gain users' trust, effective mechanisms are used to keep the transactions secure. In order to gain users' confidence, privacy of personal information is needed so that information can't be handled or read by unauthorized users. The indicator that measures this aspect is Security/Privacy.

In this study, website quality (WQ) is integrated into the UTAUT model as an independent variable. To explain effect of website quality on the intention to use e-government, the researcher proposes the following hypothesis:

*H5: Website quality will have a positive and significant influence on intention to use e-government.*

#### 2.4.6 Intention to Use (ITU)

Intention to use is defined as a customer's intention to adopt and make use of a certain tool in the future (Taylor and Todd, 1995; Venkatesh et al., 2003). According to Venkatesh et al. (2003), the majority of technology adoption researches have utilized behavior intention to predict technology adoption. Also, Venkatesh et al. (2003) suggests that behavioral intention is counted to have a direct influence on adoption. To explain intention to use toward actual use of e-government, the researcher proposes the following hypothesis:

*H6: Intentions to use e-government services will have a positive influence on actual adoption and use of e-government.*

#### 2.4.7 Facilitating Conditions (FC)

Facilitating conditions are the degree to which an individual believes that an organizational and technical infrastructure exists to support the system (Venkatesh et al., 2003). Researchers in the field of technology studies (e.g. Venkatesh et al., 2003; Taylor and Todd, 1995; Chau and Hu, 2002) found that the facilitating conditions construct has a positive effect on innovation use. They also found that it is a significant predictor of the technology use. In contrast, they found that it did not predict intention to use IT. To explain effect of facilitating conditions toward actual adoption and use of e-government, the researcher proposes the following hypothesis:

*H7: Facilitating conditions will have a positive influence on actual adoption and use of e-government.*

#### 2.4.8 Age (AG)

Scholars (Morris and Venkatesh, 2000; Venkatesh et al., 2003) have found evidence that explains the significant, direct and moderating effect of age on the behavioral intention, adoption and usage behaviors. The younger and middle age groups are expected to be more positive to adoption, while the older age group is expected to be more relevant to the non-adopters.

In this research the author followed Choudrie and Dwivedi (2006) and Dwivedi and Lal's (2007) proposition that age (as a social variable) can be considered as an independent variable to explain the differences between adopters and non-adopters of technology, in this case e-government. To explain age toward e-government adoption and use, the researcher proposes the following hypothesis:

*H8: There will be a significant difference between the ages of the adopters and non-adopters*

#### 2.4.9 Gender (GDR)

Previous studies have revealed that gender has an important effect and role when considering technology adoption and usage in organizational context. Venkatesh et al., (2003) showed that male users use a computer more than females to show gender as one of the most important variables when adopting technology. Venkatesh et al., (2003) found that the effect of perceived usefulness on behavior intention was moderated by gender.

In this research the author followed Choudrie and Dwivedi (2006) and Dwivedi and Lal's (2007) proposition that gender (as a social variable) can be considered as an independent variable to explain the differences between adopters and non-adopters of technology, in this case e-

government. To explain gender toward e-government adoption and use, the researcher proposes the following hypothesis:

*H9: There will be a significant difference between the gender of the adopters and non-adopters*

### 2.5 Empirical Studies on Adoption of E-government

In 2008, Al-Shafi and Weerakkody examined an extended technology acceptance model (TAM) that proposes individual differences, technology complexity, and trust environment constructs to determine perceived usefulness and perceived ease of use of the iPark initiative of Qatari government by using a survey based study. Results of the survey showed that among other constructs *Wireless Internet trust* and *technology complexity* has a significant effect on perceived usefulness of iPark services (Al-Shafi and Weerakkody, 2008).

Zafiroopoulos et al. (2012) used the Technology Acceptance Model (TAM), the extended TAM, and the Diffusion of Innovations (DOI) theory in order to describe teachers' behavioral intentions to adopt e-Government services. A model containing trust and risk, along with cognitive, social and intrinsic factors is used to study the intentions of e-Government use by Greek primary and secondary education teachers. Findings of this research revealed that *cognitive* and *intrinsic* factors have significant effects on intentions to use e-Government websites (Zafiroopoulos et al., 2012).

Alshehri et al. (2012) had investigated the effect of the Website Quality (WQ) factor on the acceptance of using e-government services (G2C) in the Kingdom of Saudi Arabia (KSA) by adopting the Unified Theory of Acceptance and Use of Technology (UTAUT) Model. Survey Data collected from 400 respondents were examined and the study found that the factors that significantly influenced the Use Behavior of e-government services in KSA include Performance Expectancy (PE), Effort expectancy (EE), Facilitating Conditions (FC) and Website Quality (WQ), while the construct known Social Influence (SI) did not. Moreover, the results confirmed the importance of quality government websites and support systems as one of the main significant and influential factors of e-government services adoption (Alshehri et al., 2012).

Tan et al. (2008) used a research model that emphasizes the pivotal role of e-government service quality as a salient driver of citizens' trustworthiness beliefs towards e-government websites, which in turn promotes the corresponding adoption of public e-services. Data collected from a

sample e-government service participants substantiates that high quality e-government websites do matter in building citizen trust towards public e-services (Tan et al., 2008).

Another study conducted in 2010 by Al-Shafi and Weerakkody utilized the Unified Theory of Acceptance and Use of Technology (UTAUT) to explore the adoption of e-government services in the state of Qatar. Citizens were surveyed to collect primary data. A regression analysis was conducted to examine the influence of the factors adapted from the UTAUT on e-government adoption. The findings reveal that *effort expectancy* and *social influences* determine citizens' behavioral intention towards e-government. Additionally, *facilitating conditions* and *behavioral intention* were found to determine citizens' use of e-government services in Qatar.

AlNuaimi et al. (2011), examined the key berries to the use of the e-Government services by citizens through testing the effect of 11 independent variables on the citizens' use of e-Government in municipal of Emirate of Abu Dhabi. In this research, trust in the Internet, and perceptions of compatibility were found not to have an effect on the citizens' intention to use e-Government services (AlNuaimi et al., 2011). On the other hand, *trust in government*, *perceptions of usefulness*, *perceptions of ease of use*, *quality of e- Government information system*, and the *quality of information in the e-Government portal* were found to have an effect on the citizens' intention to use e-Government services.

Another study by Meftah et al. (2015) is dedicated to address the factors that affect Bahraini citizen's intention to adopt e-Government services from *cultural*, *awareness* and *trust* perspectives. Regression analysis is conducted to determine the relationship between culture, awareness and trust with adoption of e-Government. The results of the regression test showed strong evidence of a significant relationship between culture, awareness and trust and adoption of e-Government in Bahrain. However, the test indicated that trust had the highest level of relationship toward e-Government adoption (Meftah et al., 2015).

Gefen et al. (2002) studied the acceptance of online government services employing data collected from the undergraduate students of three Universities. Findings of this study suggest that trust, social influence, and website ease-of-use impact perceived usefulness of the interface, which, combined with social influence, predict the intended use of e-Government. Other studies which adopted the Technology Acceptance Model (TAM) (Davis, 1989) have verified that perceived usefulness (or performance expectancy) and perceived ease-of-use (or effort expectancy) are major

influences on the intention to use or to not use an e-government service (Al-Adawi et al., 2005; Carter & Belanger, 2005). These studies suggest that the higher an individual's perceived usefulness of an e-government service and the easier the service is perceived to be used by the person the more likely he/she uses the service.

A study conducted by Lee et al (2003) revealed that two factors that play important roles in user acceptance of e-government services are *trust* and *perceived risk* (Lee et al., 2003). In an uncertain environment like the Internet, trust and perceived risk are theorized as direct determinants of intention to use e-government services. An individual may weigh the benefits and the risks in using an e-government service (AlKhatab et al., 2015). Perceptions about risk in using e-government services may include concerns regarding privacy, financial, and security. Therefore, Dimitrova and Chen (2006) suggest that the perceived risk tolerance of an individual may determine his/her decision to use or to not use an e-government service, particularly for transactional use. Perceived risk, however, could be reduced by the increase of trust in the technology (Internet and the infrastructure) and the service providers (including the government agency, the Internet service provider, and the financial institution) (Lee et al., 2003; AlKhatab et al., 2015). A high level of trust in the service, the technology, and the service provider may lead to a low perceived risk in using the service and increase intention to use the e-government service.

## 3 Research Methodology

### 3.1 Research Design and Type

A multi-method research approach (combining qualitative and quantitative methods) is used to explore effort that has been done so far to promote e-government services by Ethiopian Revenue and Customs Authority and factors that influence adoption of e-government services by large taxpayers.

An interview conducted with the responsible personnel from ERCA the government agency responsible for implementation and promotion of e-government services for large taxpayers. The interview is used to explore on the efforts done so far to promote and diffuse e-government services to the large taxpayers. In addition, the interview is aimed to get more insight on the factors that affect adoption of the e-services from ERCA point of view.

Moreover, a survey (Quantitative method) of large taxpayers is used to analyze factors that affect adoption of e-government services of ERCA from large taxpayers' point of view. The interview and questionnaire surveys are supported with a review of ERCA online document where appropriate and this allowed the findings to be triangulated.

E-government research focuses on either the government (implementation and promotion of the services) or users (adoption) issues. The research hopes to gain valuable data from both of these aspects – interview with ERCA personnel (availing, promotion and adoption from provider point of view of the services); and, utilizing a survey based quantitative research for the adoption side. What makes this research unique is that, to the researcher's knowledge, there are no studies to date that explore e-government adoption from both the government (service provider) and business (service users) perspective to better understand factors that affect adoption and actual use of e-government in Ethiopia. This research utilizes a multi-method research strategy whereby the researcher can simultaneously explore both sides of e-government adoption. Therefore, the multi-method approach is chosen to be the base to obtain data for this study.

### 3.2 Source of Data and Collection Mechanism

The overall data collection is divided into two main phases to facilitate the multi-method approach for data collection. The first phase used a qualitative strategy, whereby the researcher employed an interview-based case study approach whilst the second phase utilized a quantitative research strategy involving a questionnaire- based survey.

### 3.2.1 Qualitative Approach: Using Interview:

The qualitative research method is employed in this study to undertake the government perspective. This included formal, in-depth, semi-structured interviews. An interview guide that was developed is used during the data collection process (see Appendix 1). The literature provided the frame of reference to draw relevant questions in preparing the semi-structured interview guide.

Questions covered in the interview guide were about general e-government service information, e-government background, status of e-government services in ERCA specifically in large taxpayers office, current problems and challenges encountered in promotion of e-government services, and factors that affect adoption of e-government from large taxpayers office perspective.

Having developed the interview guide, the researcher began to identify the people to be interviewed within Ethiopian Revenue and Customs Authority Large Taxpayers Office. The researcher submitted a support letter written from the Department of Management to the large taxpayers office and the interviewees were assigned by the Large Taxpayers Office Inland Revenue Affairs vice Manager based on the researcher's formal request. The interviewees were chosen from managerial level who have direct work relation with the E-tax system in the Large Taxpayers office and a technical engineer who has technical expertise on the system. The following personnel were interviewed:

1. Software Engineer- ERCA MIS Department
2. E-tax and E-payment Team Coordinator- Large Taxpayers Office
3. Tax Assessment and Collection Process Owner

In the interview process the researcher carrying interview guides that are open questions and took a note while simultaneously recorded the voice during the interview, so that the obtained answers can be listened and if still there are things that are not clear, the researcher will ask again.

### 3.2.2 Quantitative Approach: Using a Questionnaire-Based Survey:

In order to determine that suitable data would be collected for the acceptance of generalization, a survey was used in this study to learn large taxpayers' perceptions. The questionnaire was developed based on research literature with a particular focus on the information technology adoption literature and the adapted conceptual model.

The questionnaire contained brief and clear instructions, and was created to prompt an ease of response. Respondents were notified by a cover letter concerning the nature and the purpose of conducting this research. Respondents were advised to choose the most suitable and honest way to answer the questionnaire in either English or Amharic. Additionally, respondents were assured of privacy and confidentiality and told not to write any name that might represent their identity.

A five-point Likert scale was chosen to be the main instrument in the questionnaire. The questionnaire was structured into various sections to gain data from a demographic background-related viewpoint and about the constructs in this research's conceptual framework.

*Questionnaire Translation:* The original questionnaire was developed in the English language (Appendix 2), and translation to Amharic is not considered as tax officers of large taxpayer organizations who has responded to the questionnaire are able to read, write and understand English.

### 3.3 Sampling Technique and Sample Size

The survey questionnaire was distributed to 19 large taxpayer organizations. The organizations were selected from different sector manufacturing, banking, energy and telecommunications. These organization are selected based on industry mix, and significant contribution to the large taxpayer's office. In order to increase the sample size, the researcher tried to conduct the survey in more than thirty large taxpayers, however due to the unwillingness of the rest of the organizations only succeeded to conduct the survey in 19 of them.

All personnel of these selected organizations in the finance department who have direct or indirect work relation with ERCA are included in the survey. The questionnaire was distributed to a total of 145 users between the period of December 2017 and January 2018. From 145 questionnaires distributed, 118 responses were received. Of these, 14 questionnaires were discarded because the respondents gave incomplete answer. This meant that, from the final sample of 118 received questionnaires, 104 usable responses were obtained and used for subsequent analysis.

The procedure followed for the data collection was as follows: first, the researcher approached Finance Department of the selected organizations. Close contacts in some of these organizations are used to facilitate the environment and help to administer the survey in their respective Large Taxpayer organization. In some of the organizations, the researcher himself administered the

survey. The questionnaire was sent through email for some of the close contacts and in Hard copy for the others. The researcher collected the responses in two ways. The first is physically collecting the hardcopy from the participants or from the close contact and the second way is the close contact send the scan copy of the responses by email. The number of survey questionnaires distributed to the respective taxpayer organizations, number of responses received, number of completed responses, and method of collection is presented on Annex 3.

The survey protocol utilized a convenient sampling method by selecting to distribute the questionnaire in the above mentioned different organizations, yet distributed the survey to the available officers and managers who are working in the organizations related to tax.

Then, the process of completing of the questionnaire began within the premises of the above-mentioned organizations and was facilitated by the researcher and close contacts at each site. As stated before, the questionnaire offers a brief explanation of the purpose of the research to the participants and participation was on a purely voluntary basis. The questionnaires were completed in an environment free from external pressures and at the respondent's own pace.

### 3.4 Research Design

Figure 3.4.1 outlines the overall multi-method strategy adopted for this research. As shown in the figure, the overall research strategy draws from two schools of thought involving selection and justification of research methods for data collection: using qualitative interview-based approaches; and utilizing quantitative survey-based approaches. Additionally, Figure 3.4-1 outlines how the overall research process went through six different, but interlinked stages.

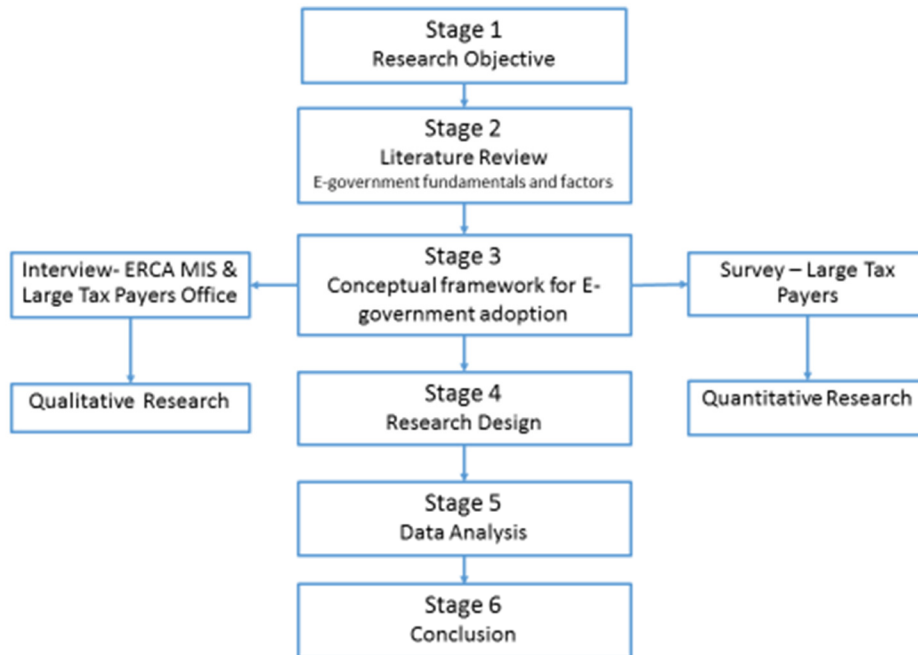


Figure 3.4-1 Research Design of the study

### 3.4.1 Validity Test

The questionnaires (items) of four independent constructs of this research are adopted from the original UTAUT (Venkatesh et al., 2003) model and the rest two are also obtained from other literatures. The content of the items of these constructs were evaluated early by postgraduate colleagues, distinguished advisor and university lecturers in the field of IT. They responded that the contents included in the questionnaire were good and easy to understand implying that the instrument fulfills content validity besides they forwarded constructive suggestions for improvement and it is included.

Convergent validity refers to the degree to which a measure is correlated with other measures that it is theoretically predicted to correlate with. Principal components analysis (PCA) is used to test convergent validity of the constructs of this research. PCA is a variable-reduction technique. Its aim is to reduce a larger set of variables into a smaller set of 'artificial' variables, called 'principal components', which account for most of the variance in the original variables.

There are a number of common uses for PCA:

- A. When a researcher has measured many variables (items) and believes that some of the variables are measuring the same underlying construct. If these variables are highly

correlated, the researcher might want to include only those variables in his/her measurement scale (e.g., questionnaire) that he/she feel most closely represent the construct, removing the others.

- B. The researcher might want to create a new measurement scale (e.g., a questionnaire), but he/she is not sure whether all the variables he/she has included measures the construct he/she is interested in. Therefore, the researcher test whether the construct he/she is measuring 'loads' onto all (or just some) of the variables. This helps the researcher understand whether some of the variables he/she has chosen are not sufficiently representative of the construct he/she is interested in, and should be removed from the new measurement scale.
- C. The researcher might want to test whether an existing measurement scale (e.g., a questionnaire) can be shortened to include fewer items (e.g., questions/statements), perhaps because such items may be redundant (i.e., more than one item may be measuring the same construct) and/or there may be the desire to create a measurement scale that is more likely to be completed (i.e., response rates tend to be higher in shorter questionnaires).

In this research PCA is utilized for the second reason (B). As it is shown in section 3.4 the researcher designed an E-government adoption model based on the UTAUT (Venkatesh et al., 2003) model. Two constructs Website Quality and Awareness are added to the original UTAUT model. The items (questionnaires) of the five adopted constructs are directly taken from the original work of UTAUT model. The items of the two new constructs are new to this research and the author of this research needs to test whether all of the six independent constructs 'loads' onto all of the respective items (questionnaires) of these constructs.

In order to verify the convergent validity of the constructs, a factor analysis was conducted utilizing Principal Component Analysis (PCA) with the varimax rotation method.

**Factor Loading:** Table 3.4.1-1 shows the factor loading for the six constructs that are loaded. All the items loaded above (0.40), which is the minimum recommended value (Dwivedi et al., 2006).

Items	Performance Expectance Factor(1)	Effort Expectancy Factor (2)	Awareness Factor (3)	Facilitating Conditions Factor(4)	Website Quality Factor (5)	Social Influence Factor (6)
PE1	0.726					
PE2	0.831					
PE3	0.803					
PE4	0.837					
EE1	0.839					
EE2	0.857					
EE3	0.822					
EE4	0.838					
AW1			0.872			
AW2			0.748			
AW3			0.882			
FC1				0.763		
FC2				0.790		
FC3				0.789		
FC4				0.704		
WQ1					0.641	
WQ2					0.899	
WQ3					0.818	
WQ4					0.446	
SI1						0.873
SI2						0.873
SI3						0.559
SI4						0.521
<i>Extraction Method: Principal Component Analysis.</i>						
<i>Rotation Method: Varimax</i>						

Table 3.2.2-1 Rotated Factor Matrix

All four items of the Performance Expectation constructs loaded at factor (1) and represents the underlying constructs of Performance Expectancy. Coefficients for this component varied between (0.726) and (0.837). Then, all four items of the Effort Expectancy construct loaded at factor (2). The coefficients for this component varied between (0.822) to (0.857). All three items of the Awareness construct loaded at factor (3). The coefficients for this component varies between 0.748 and 0.882. All four items of the Facilitating Condition construct loaded at factor (4). The coefficient for this component varies between 0.704 and 0.790. All four items of the Website Quality construct loaded at factor (5). The coefficients for this component varies between 0.446

and 0.899. Finally, all four items of the Social Influence construct loaded at factor (6). The coefficients for this component varies from 0.521 to 0.873. This means that the collected data and the findings that were obtained from this instrument are valid.

### 3.4.2 Reliability Test

The research instrument (questionnaire) was tested for its reliability before presenting the findings. Cronbach's coefficient alpha values were estimated to examine the internal consistency of the data post-gathering.

Alpha was developed by Lee Cronbach in 1951 to provide a measure of the internal consistency of a test or scale; it is expressed as a number between 0 and 1. Internal consistency describes the extent to which all the items in a test measure the same concept or construct and hence it is connected to the inter-relatedness of the items within the test. Internal consistency should be determined before a test can be employed for research purposes to ensure validity (Tavakol & Dennick, 2011).

Internal consistency is concerned with the interrelatedness of a sample of test items. If a test has more than one concept or construct, it may not make sense to report alpha for the test as a whole as the larger number of questions will inevitably inflate the value of alpha. In principle therefore, alpha should be calculated for each of the concepts (constructs) rather than for the entire test or scale (Nunnally & Bernstein, 1994).

Mathematically, reliability is defined as the proportion of the variability to the responses of the survey and is the result of differences in the respondents. Also, the results of the survey will differ because respondents have different opinions, not because the survey is confusing or ambiguous with multiple interpretations. Cronbach's alpha is computed by correlating the score for each scale item with the total score for each observation (usually individual survey respondents), and then comparing that to the variance for all individual item scores.

$$\alpha = \frac{N}{N - 1} \left( 1 - \frac{\sum_{i=1}^N \sigma_{y_i}^2}{\sigma_x^2} \right)$$

Where: N Refers to the number of scale items

$\sigma_{y_i}^2$  Refers to the variance associated with item i

$\sigma_x^2$  Refers to the variance associated with the observed total scores

Different researchers put different rule of thumb for describing internal consistency. Hinton et al., (2014) have suggested four different points of reliability: excellent reliability ranges (0.90 and above), high reliability (0.70- 0.90), high moderate reliability (0.50-0.70) and low reliability (0.50 and below). On the other hand Nunnaly (1978) suggested that a Cronbach Alpha value exceeding 0.7 is an acceptable measurement (Nunnaly 1978).

The reliability for each construct is illustrated in Table 4.2.2-2. According to Hinton et al. (2014) level of reliability, a high Cronbach's value for all constructs implies that they are internally consistent and measure the same content of the construct.

Construct	Sample Size	No of Items	Cronbach's Alpha	Level of Reliability
Performance Expectancy (PE)	104	4	0.918	Excellent Reliability
Effort Expectancy (EE)	104	4	0.925	Excellent Reliability
Social Influence (SI)	104	4	0.717	High Reliability
Awareness (AW)	104	3	0.961	Excellent Reliability
Website Quality (WQ)	104	4	0.827	High Reliability
Facilitating Conditions (FC)	104	4	0.895	High Reliability
Intention to Use (ITU)	104	3	0.930	Excellent Reliability

*Table 3.2.2-1 Reliability of Measurements*

The aforementioned Table 3.4.2-1 illustrates Cronbach's coefficient alpha values that were estimated to test the internal consistency of the measure. Cronbach's results varied between (0.717) for the Social Influence and (0.961) for the Awareness constructs. Effort Expectancy revealed a reliability of (0.925), Performance Expectancy possessed a reliability of (0.918), and Intention to Use possessed a reliability of (0.93). The remaining two constructs, namely Website Quality and Facilitating Conditions had a Cronbach's score of (0.827) and (0.895) respectively.

These values show that four of the seven constructs achieved Excellent Reliability (Cronbach's alpha above 0.90) and the rest three constructs achieved High Reliability (Cronbach's alpha 0.7 to 0.9) according to Hinton's cut-off points of reliability (Hinton et al., 2014). The high Cronbach's

values of the constructs means that constructs were internally consistent and the reliability of the same construct is measured (Field, 2005). The findings show that all the alpha values indicates the study's instrument is reliable and the higher the Cronbach's ( $\alpha$ ) value of construct, the higher the reliability is of measuring the same construct (Dwivedi et al., 2006).

Therefore, findings from both the Cronbach alpha test and the Principal Component Analysis test confirm internal consistency of measures and construct validity.

### 3.5 Data Preparation and Analysis

Data were prepared for analysis by coding, organizing, chart, tabularization, and figuring as needed. The study used separated frameworks of analysis for quantitative and qualitative data.

The framework of analysis for quantitative data of this study was examining the relationships between (independent and dependent) constructs to answering question of the study and test hypotheses. Therefore, all recorded data were transcribed into Statistical Package for Social Studies (SPSS) version 25 and MS Excel 2013 is used to ease the data analysis and then data were further interpreted by descriptive statistics, multiple linear regression model, logistic regression model, and correlation method. The data were analyzed by using simple and suitable mathematical and statistical tools like tabulation, frequency, percentage and regression coefficients. A relationship between the dependent and independent variables were analyzed through Pearson Correlation, Multiple Regression Analysis, and logistic regression analysis by using SPSS Version25 program. Results were presented through graphs, tables, narrative text, simple computations and logical reasoning. Analysis was carried out in relation to the research objectives and questions which lead to conclude testing the hypotheses.

On the other hand for the qualitative data, the recorded interviews were transcribed for analysis. The researcher read the transcribed interviews several times to obtain a sense of the overall data. At the same time, the researcher wrote memos, such as short phrases, ideas or key words, in the margins to facilitate later analysis. Then, he identified and elaborated concepts based on the literature review, the analysis and the interviewees' sayings.

## 4. Data Analysis Presentation and Interpretation

### 4.1 Interview Findings

#### 4.1.1 E-Services in Ethiopian Revenue and Customs Authority

In this study the researcher have successfully interviewed to three ERCA personnel a Software Engineer at the Head Office, E-tax and E-payment Team Coordinator and Tax Assessment and Collection Process Owner at Large Taxpayers Office.

As per the information from the interview and ERCA website, the current three online services of ERCA are Transitors Training Registration, E-tax and E-services (TASS). The first online service, E-tax is designed and implemented to serve for all taxpayers. However, currently Large Taxpayers Office is the only branch office which rolled out the E-tax service. The second online service, E-services (TASS) is used by the tax-payers and some government agencies like Ministry of Transport, National Bank of Ethiopia and Ministry of Trade. Online transitors training registration is used by those who are qualified and interested for the training.

E-tax is used by the taxpayers to declare their monthly tax, to request for tax clearance, to request for refund, and to follow their history of activity. E-services (TASS) is used by the taxpayers to declare their purchase, declare their sales, get sales register machine related service, and validate receipt and taxpayer.

Some government agencies like Ministry of Transport, National Bank of Ethiopia, and Ministry of Trade also has an interface with the TASS to get an online service. Ministry of Transport access data and verify information regarding tax compliance of a given vehicle before certifying the vehicle for operation in the country. National Bank of Ethiopia also has integrated its system with TASS to get taxpayers information. In addition, Ministry of Trade has a system that interfaces with ERCA's TASS to verify tax clearance of a given taxpayer.

#### 4.1.2 E-Services at Large Taxpayers Office

Ethiopian Revenue and Customs Authority Large Taxpayers Office provides one major E-government service E-tax. The researcher has conducted an interview with E-tax and E-payment Team Coordinator and Tax Assessment and Collection Process Owner at Large Taxpayers Office to get an insight about E-tax services, number of users, level of end users' acceptance/adoption of the service and factors that are affecting the acceptance/adoption of this service.

According to the information from the interview, large taxpayers are the primary users of E-tax service. Currently there are 1,156 registered large taxpayers who are using the E-tax system. E-tax system has the functionality of E-filing which enable Large Taxpayers to declare their monthly tax electronically using Internet. E-payment is the other functionality of E-tax which enables large taxpayers to settle their tax through the banks that ERCA signed partnership agreement with. Large taxpayers can pay their monthly tax as per their declaration using the E-payment functionality of E-tax platform. Taxpayers need tax clearance for different reasons like license renewal and bank loan processing. E-clearance is the other functionality of E-tax system which help large taxpayers to request tax clearance using Internet. Sometimes taxpayers may pay extra and are eligible to request for a refund. E-refund is one of the functionalities of E-tax system used by the taxpayers to request for a refund using Internet. Some other functionalities of E-tax are tracking tax payment history, and a forum for discussion of tax related issues.

E-tax brought different benefits for the taxpayers and also for ERCA. E-tax enables the taxpayers to administer their own taxes, check their account balance online, Save Cost and time, build trust relationship with ERCA, and provides immediate declaration confirmation. With the same token it also benefit ERCA by increasing efficiency and effectiveness, increasing transparency and accountability, increasing tax compliance and revenue collection, enhancing data quality (avoid human errors during encoding), and minimizing tax administration cost.

#### 4.1.3 E-tax Adoption

The interview which was conducted with E-tax and E-payment Team Coordinator and Tax Assessment and Collection Process Owner at ERCA Large Taxpayers Office also gave the researcher an insight regarding end users' acceptance/adoption level and factors that are affecting the adoption of this service from large taxpayers' office perspective.

E-tax platform has been launched and go-live in December 2011 for few pilot large taxpayers. The number of users has been increasing since then and as of now 1,156 large taxpayers are rolled out and are using the system. The usage has increased significantly after declaration of the Federal Tax Administration Proclamation No. 983/2016 which made electronic tax declaration and electronic tax payment mandatory. The Federal Tax Administration Proclamation No. 983/2016 states that:

1. *“When a taxpayer required by the Authority under a tax law to file a tax declaration or pay tax electronically fails to do so, the Authority shall serve the taxpayer with notice in writing seeking reasons for the failure.”*
2. *“A taxpayer who fails to provide adequate reasons to the satisfaction of the Authority for the failure to file a tax declaration or pay tax electronically within 14 (Fourteen) days of the date of service of the notice under sub-article (1) of this Article shall be liable for a penalty equal to birr 50,000 (Fifty Thousand Birr).”*

E-tax is made mandatory for a given taxpayer after a thorough analysis and precondition fulfillment. The preconditions that need to be fulfilled before the authority request a given taxpayer to be registered for E-tax are user training where representatives from the large taxpayer are given two days user training, provision of detailed user manual, and provision of access privilege on the system. In case the taxpayers have either a network or computer issue at their premises, fully equipped resource center is established at the large taxpayers’ office for large taxpayers use.

As per the interview data from large taxpayers’ office, the major factors that affect intention of large tax payer to use or adopt E-tax are attitude towards tax compliance, Lack of understanding of the benefit of the system, Lack of skill, Slow Internet Speed and connection outage, and Server unavailability.

#### *4.1.3.1 Attitude towards tax compliance*

Broadly defined, attitudes refer to people’s evaluations (favor or disfavor) of objects, persons, groups, or behaviors. People hold attitudes that are relatively stable towards many aspects of social life, including the tax system and their obligation to pay taxes. Some people may develop a chronic dislike of the tax system, while others may hold particularly favorable attitudes.

As per the interview data in large taxpayers’ office, attitude towards tax compliance is the major factor that affect adoption of the e-tax system. Taxpayers who are in favor of tax and the country’s taxation system are very willing and are motivated to adopt the e-tax system. On the other hand, significant number of taxpayers suspect the E-tax system as an instrument for government to spy on them and are very resistant to use the online tax system.

#### *4.1.3.2 Lack of understanding of the benefit of the system- Performance Expectancy*

Performance Expectancy or perceived usefulness of a system is defined as the degree to which individuals believe that using a system will help them improve their job performance. According

to the interview data from large taxpayers' office, e-tax enables the taxpayers to administer their own taxes, check their account balance online, save cost and time, build trust relationship with ERCA, and provides immediate declaration confirmation. However, not all taxpayers are recognizing these benefits. Those taxpayers who has clear understanding of these benefits are very motivated to use the system and those who think that the online system is an additional work for them are very reluctant to use and find any excuse to avoid the system. Therefore performance expectancy or perceived usefulness of the system is recognized by the large taxpayers' office as one of the factors affecting the adoption of e-tax.

#### *4.1.3.3 Lack of skill (fear to use the system) – Effort Expectancy*

Effort expectancy is measured by the perceptions of ease of use of the system as well as ease of learning how to use the system. As per the interview data from large taxpayers office, ERCA believes that the e-tax system is very user-friendly and easy to learn. Though almost all taxpayers initially think that the e-tax system is complex and difficult to use, most of them are easily adapted to it after provision of the end user training.

#### *4.1.3.4 Network and Server Availability and System Performance – Facilitating Conditions*

Large taxpayers are big enterprises and they don't usually have computer and Internet service affordability issue. However the reliability of the Internet service and availability of the E-tax system is a big factor. Internet service in the country is very unreliable and most of the time taxpayers mention this issue as a reason for not able to file their tax on time. Even if it is not as convenient as working from their own premises, large taxpayers office have arranged a service center equipped with sufficient number of computers and redundant link to the data center at its premises to maximize availability of the e-tax system.

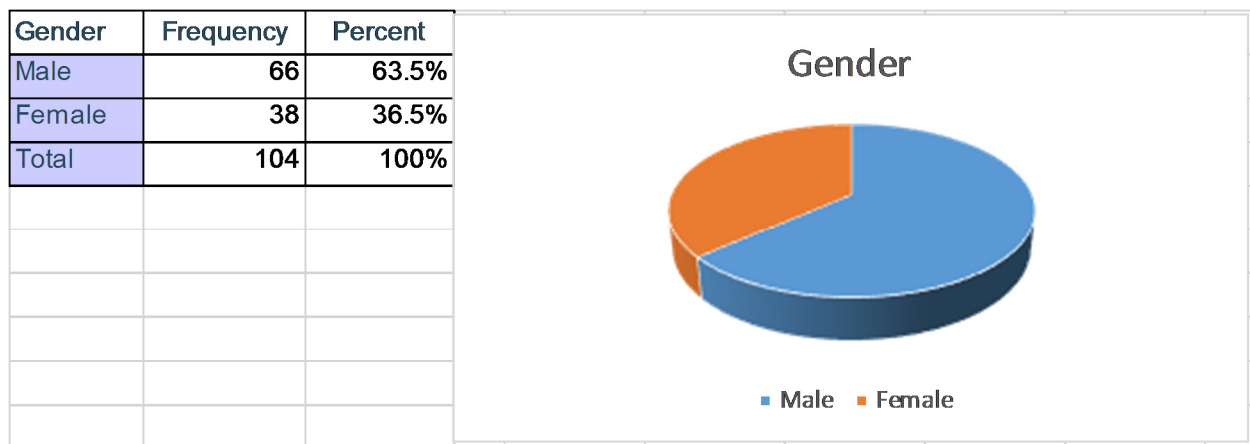
## 4.2 Survey Findings

### 4.2.1 Response Rate and Respondents Profile

The survey questionnaire was distributed to a total of 145 users between the period of December 2017 and January 2018. From 145 questionnaires distributed, 118 responses were received. Of these, 14 questionnaires were discarded because the respondents gave incomplete answer. This meant that, from the final sample of 118 received questionnaires, 104 usable responses were obtained and used for subsequent analysis. This means the total response rate obtained in this research was, 81.4% which is considered as a very good response rate within the field of social science research.

Of these 104 usable respondents, the demographic background is as follows:

Relating to the respondent's gender, (36.5%) of the 104 usable responses were females, while 63.5% of the total respondents were male (see Table 4.2.1-1).



*Table 4.2.1-1 Gender of Respondents*

In terms of age, the results revealed that the largest percentage of respondents were in the age group of 26-35 (38.46%), followed by the age group of 36-45 constituting around 26% of the total respondents. The age group 18-25 consisted of 18.27%, whilst the age group 46-55 comprised of 17.3%) of the total respondents. In contrast, the youngest (less than 18) and the older (greater than 55) age groups together consisted of 0% of the total respondents (see Table 4.2.1-2).

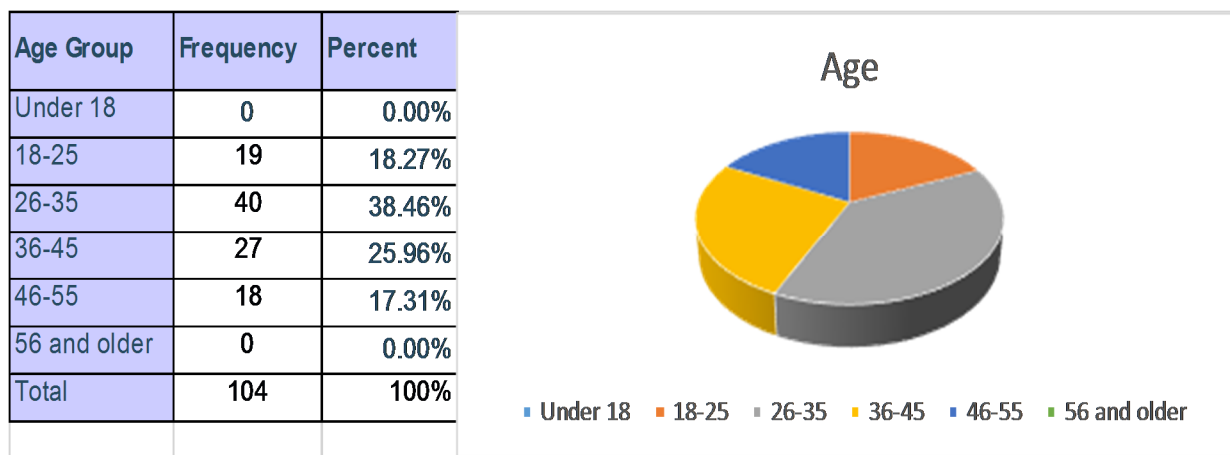


Table 4.2.1-2 Age of Respondents

In terms of educational backgrounds, the majority of respondents 78% hold undergraduate level qualifications degrees, 20% hold postgraduate degrees (Masters and PhD) and nearly 2% hold TVET certificates or below, (see Figure 4.2.1-3).

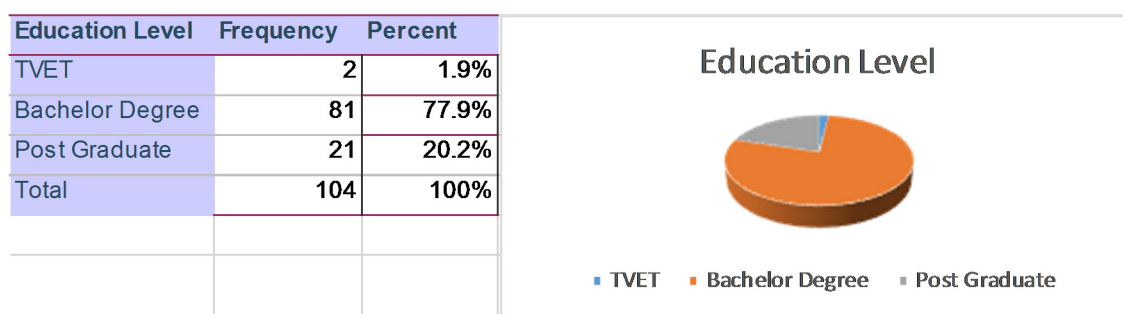


Table 4.2.1-3 Respondents Education Level

In terms of internet experience, the results revealed that the majority of respondents (87.5%) were found in the internet experience group, over 4 years. This was followed by the internet experience group of 3-4 years and less than a year, each constituting (4.8%) of the total respondents. The group with internet experience 1 to 2 years consisted of around 3% of the total respondents (see Table 4.2.1-4).

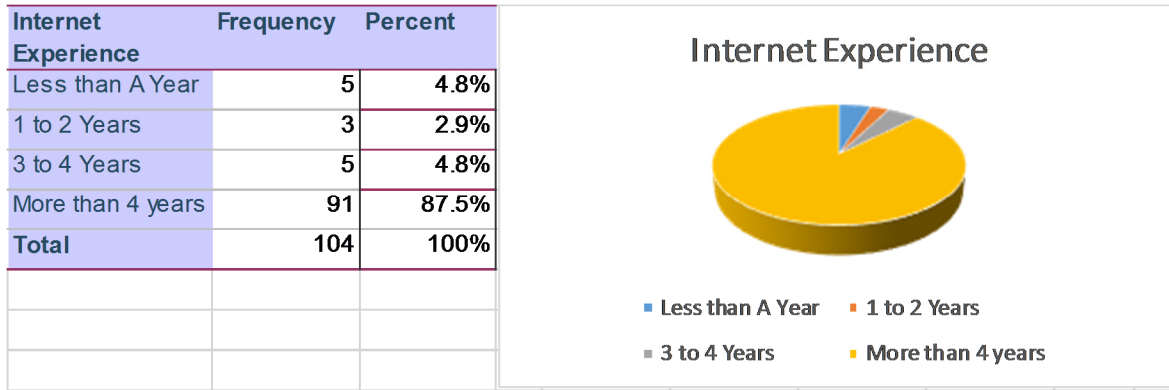


Table 4.2.1-4 Internet Experience of Respondents

In terms of internet usage frequency, the results revealed that the majority of respondents (63%) were found to use the internet on a daily basis. This was followed by the two groups who use Internet Several Times a Month and Several Times a Week 16% each. Finally, the internet usage groups of once in a month equaled 5% of the total number of respondents (see Table 4.2.1-5).

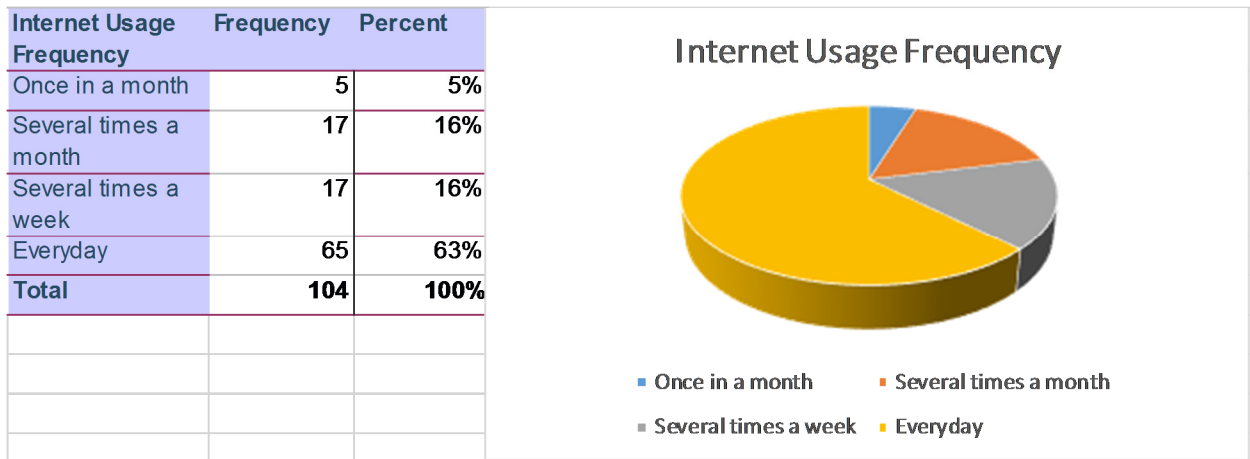


Table 4.2.1-5 Internet Usage Frequency of Respondents

Table 4.2.1-6 shows the respondents use internet services for: Business (85%); Email (57%); Education (45%); Entertainment (38%); and other reasons (5%), and each respondent had the chance of choosing more than one answer.

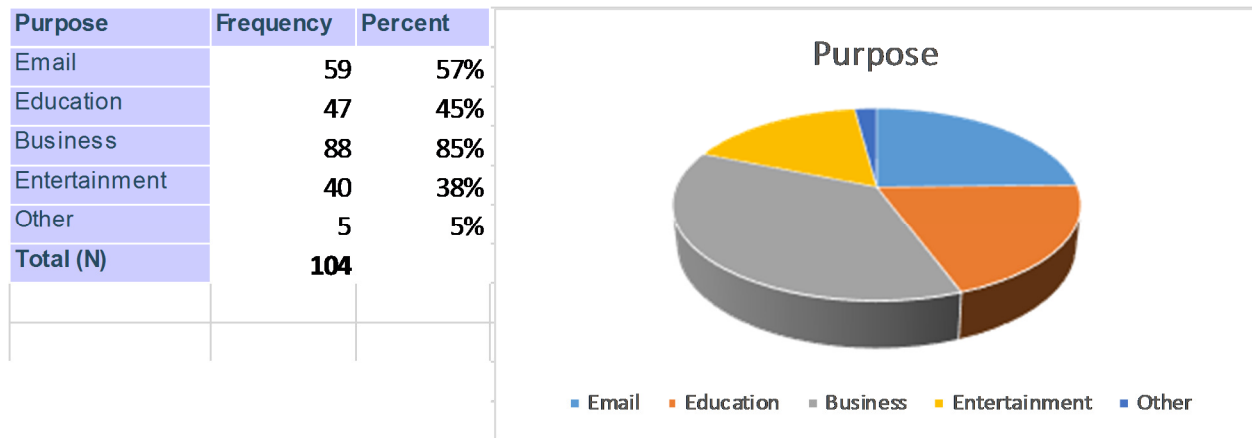


Table 4.2.1-6 Respondents Internet Usage Purpose

Table 4.2.1-7 shows that (38%) of respondents used the internet several times a month for gathering information or to get service from government websites. Then those who used internet for gathering information or to get service from government websites once in a month, revealed around 27% of the total respondents. This was followed by the group of those who never used the internet to gather government information or to get government service accounted for 17% of the total respondents. Respondents who used the internet for gathering information or to get service from the government several times a week constituted 13% of the total respondents. 5% of the total respondents mentioned that they gather government information or get government service from the internet every day.

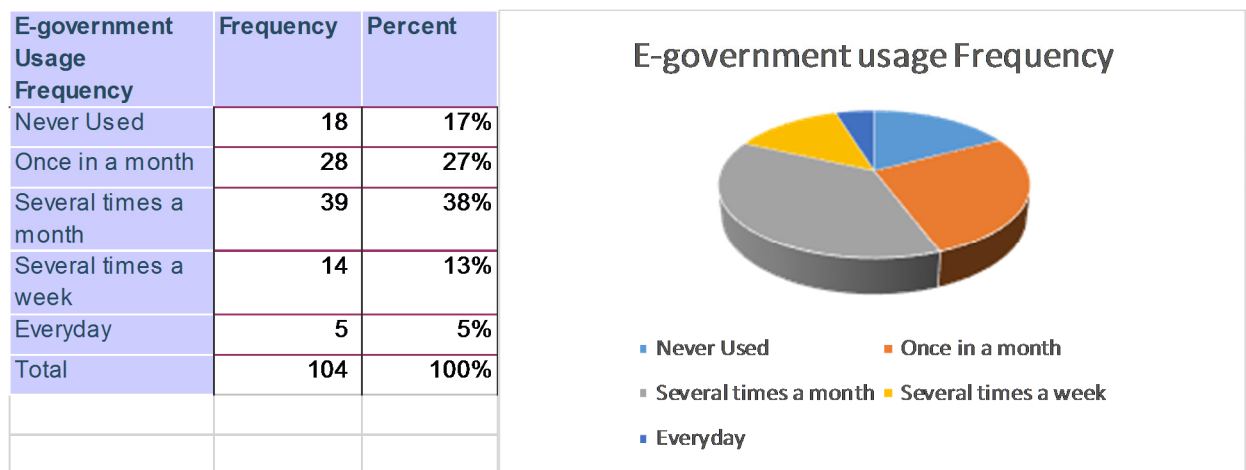


Table 4.2.1-7 E-government website usage frequency of Respondents

## 4.2.2 Adoption of E-Government

### 4.2.2.1 Descriptive Statistics

Table 4.2.2-1 presents the means, standard deviations, minimum and maximum of the items related to all 7 constructs included in the study. As found in the study (see Table 4.3), the average scores of respondents' for Performance Expectancy ranged from (3.47) and (3.80), which is high. Effort Expectancy ranged from (3.58) to (3.80), indicating that the scale is reasonably high. Concerning Social Influence, the average score ranged from (2) to (2.5) indicating that the scale is relatively low. Awareness ranged from (3.41) to (3.64) indicating reasonably high score. Website Quality ranged from (3.68) to (4.13) indicating that the scale is high. Facilitating Conditions ranged from (3.23) to (3.59), which is also high. Intention to Use e-government system, ranged from (3.43) to (3.45).

Descriptive statistics shows that scores of Performance Expectancy, Effort Expectancy, Awareness, Website Quality, Facilitating Conditions, and Intention to Use are high. The scores of Social Influence are relatively low.

<b>Descriptive Statistics</b>					
	<b>N</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>	<b>Std. Deviation</b>
<b>Performance Expectancy</b>					
PE1	104	2.00	5.00	3.4712	.95487
PE2	104	1.00	5.00	3.5192	1.01427
PE3	104	1.00	5.00	3.5577	1.12195
PE4	104	2.00	5.00	3.8077	1.25471
<b>Effort Expectancy</b>					
EE1	104	2.00	5.00	3.7500	1.04044
EE2	104	2.00	5.00	3.8077	.90390
EE3	104	1.00	5.00	3.7212	1.41735
EE4	104	1.00	5.00	3.5769	1.28238
<b>Social Influence</b>					
SI1	104	1.00	4.00	2.0481	.67378
SI2	104	1.00	4.00	2.1442	.64489
SI3	104	1.00	4.00	2.0769	.61836
SI4	104	2.00	4.00	2.5000	.55739
<b>Awareness</b>					
AW1	104	1.00	5.00	3.4615	1.32872
AW2	104	1.00	5.00	3.6442	1.45428

AW3	104	1.00	5.00	3.4135	1.32643
<b>Website Quality</b>					
WQ1	104	1.00	5.00	3.7500	1.05894
WQ2	104	1.00	5.00	4.0673	.91656
WQ3	104	1.00	5.00	4.1346	.95590
WQ4	104	1.00	5.00	3.6827	.97805
<b>Facilitating Conditions</b>					
FC1	104	1.00	5.00	3.2308	1.40201
FC2	104	1.00	5.00	3.5577	1.57546
FC3	104	1.00	5.00	3.4231	1.40521
FC4	104	1.00	5.00	3.5962	1.11058
<b>Intention to Use</b>					
ITU1	104	1.00	5.00	3.4519	1.42024
ITU2	104	1.00	5.00	3.4519	1.22973
ITU3	104	1.00	5.00	3.4327	1.42628
Scores Range from 1: Strongly Disagree to 5: Strongly Agree N: Sample Size					

Table 4.2.2-1 Descriptive Statistics

The descriptive statistics for Actual Adoption and Use indicate that 72 out of the 104 respondents (69.2%) were using ERCA’s online system. The rest 32 respondents (32.8%) were not using ERCA online systems (see table 4.2.2-2).

<b>Actual Adoption and Use (Have you ever used ERCA’s online system?)</b>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00 (No)	32	30.8%	30.8%	30.8%
	2.00 (Yes)	72	69.2%	69.2%	100%
	Total	104	100%	100%	

Table 4.2.2-2 Actual Adoption and Use

4.2.3 Demographic Differences

4.2.3.1 Gender and E-Government

Table 4.2.3.1-1 below shows that from those respondents who adopted e-government 78% are males compared to 22% females. Interestingly, within the non-adopters, females (69%) exceeded males (31%) showing a significant difference.

Gender	Adopters		Non-Adopters	
	Frequency	Percent	Frequency	Percent
Male	56	78%	10	31%
Female	16	22%	22	69%
Total	72	100%	32	100%

Table 4.2.3.1-1 Gender as a determinant of E-government Adopters and Non-Adopters

Pearson Chi-Square Test is used to test statistically significant association between Gender and Actual Adoption and Use of E-government (AAU). Specifically, it is used to test whether the frequencies of Adopters or Non-Adopters differ across Gender. In other words, Chi-Square Test is used to test whether or not a statistically significant relationship exists between Gender and Actual Adoption and Use (AAU). The result from the Pearson's chi-square test validated that there was a significant difference between the gender of the adopters and non-adopters ( $\chi^2 (1, N =104) =20.683, p < .001$ ) (Table 4.).

Chi-Square Tests			
	Value	df	p (2-sided)
Pearson Chi-Square	20.683 <sup>a</sup>	1	.000
a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 11.69.			

Table 4.2.3.1-2 Chi-Square Test for Gender and Actual Adoption and Use (AAU)

#### 4.2.3.2 Age and E-Government

The findings in Table 4.2.3.2-1 also showed that the majority (72%) of respondents adopting e-government are in the age groups from (26) years to (45) years. From the rest adopters 13% are in the age group of 18 years to 25 years and 15% are in the age group of 46 years to 55 years.

For non-adopters the age bands of 18 to 25 accounted for 31%, the age band 26 to 35 accounted for 19%, the age band 36 to 45 accounted for 28% and the age band 46 to 55 accounted for 22%. Furthermore, the elder group older than 56 years and the younger (under 18) age groups consisted of (0%) each.

Age	Adopters		Non-Adopters	
	Frequency	Percent	Frequency	Percent
Under 18	0	0%	0	0%
18-25	9	13%	10	31%
26-35	34	47%	6	19%
36-45	18	25%	9	28%
46-55	11	15%	7	22%
56 and older	0	0%	0	0%
Total	72	100%	32	100%

Table 4.2.3.2-1 Age as a determinant of E-government Adopters and Non-Adopters

Pearson Chi-Square Test is used to test statistically significant association between Age and Actual Adoption and Use of E-government (AAU). Specifically, it is used to test whether the frequencies of Adopters or Non-Adopters differ across different age group. In other words, Pearson's Chi-Square Test is used to test whether or not a statistically significant relationship exists between different age group and Actual Adoption and Use (AAU). The result from the Pearson's chi-square test revealed that there was no significant difference between the different age group of the adopters and non-adopters ( $\chi^2 (1, N = 104) = 6.404, p > .05$ ) (Table 4.2.3.2-2)

Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	6.404 <sup>a</sup>	3	.094
a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 5.54.			

Table 4.2.3.2-2 Chi-Square Test for Age and Actual Adoption and Use (AAU)

Spearman's rho correlation test was conducted to examine any association between the Age of respondents and Actual Adoption and Use of E-government. The following table shows the results obtained. The findings showed that there was no significant correlation between the respondents' Age and the Actual Adoption and use of e-government (Table 4.2.3.2-3).

Spearman's rho Correlations
-----------------------------

		AAU	Age
AAU	Correlation Coefficient	1	.010
	Sig. (2-tailed)		.921
	N	104	104
Age	Correlation Coefficient	.010	1
	Sig. (2-tailed)	.921	
	N	104	104

Table 4.2.3.2-3 Spearman's rho correlation between Age and Actual adoption and use of E-government

#### 4.2.4 Correlation between Performance Expectancy, Effort Expectancy, Social Influence, Awareness, Website Quality and Intention to Use

Spearman's rho correlation test was conducted to examine the association between Performance Expectancy (PE), Effort Expectation (EE), Social Influence (SI), Awareness (AW), Website Quality (WQ) and Intention to Use e-government. The result from this test shows that the correlation is significant for Performance Expectancy (0.788), Effort Expectancy (0.844), Awareness (0.807), and Website Quality (0.502). In contrast, the correlation is insignificant between Social Influence and Intention to Use (Table 4.2.4-1).

<b>Spearman's rho Correlations</b>			
			Intention to Use
Spearman's rho	Performance Expectancy	Correlation Coefficient	.788**
		Sig. (2-tailed)	.000
		N	104
	Effort Expectancy	Correlation Coefficient	.844**
		Sig. (2-tailed)	.000
		N	104
	Social Influence	Correlation Coefficient	.054
		Sig. (2-tailed)	.492
		N	104
	Awareness	Correlation Coefficient	.807**

		Sig. (2-tailed)	.000
		N	104
	Website Quality	Correlation Coefficient	.502**
		Sig. (2-tailed)	.000
		N	104
**Correlation is significant at the 0.01 level (2-tailed).			

Table 4.2.4-1 Spearman's rho correlation between Performance Expectancy, Effort Expectancy, Social Influence, Awareness, Website Quality and Intention to Use

#### 4.2.5 Multiple Linear Regression Analysis

A multiple linear regression analysis was performed with Intention to use e-government as the dependent variable and Performance Expectancy, Effort Expectancy, Social Influence, Awareness, and Website Quality as the predictor variables.

A total of 104 cases were analyzed. From the analysis, a significant model emerged ( $F(5, 98) = 245.008, p < 0.001$ ) (Table 4.2.5-1) with the R square being 0.926 (Table 4.2.5-2). The variables which are shown in Table 4.2.5-3 that include Performance Expectancy ( $\beta = 0.216, p < 0.05$ ), Effort Expectancy ( $\beta = .423, p < .001$ ), Awareness ( $\beta = .425, p < .001$ ), Website Quality ( $\beta = .189, p < .005$ ) statistically significantly predict Intention to use e-government. In contrast, Social Influence ( $\beta = .056, p = .499$ ) was not considered to be significant predictor in this model.

The  $R^2$  value (also called the coefficient of determination), which is the proportion of variance in the dependent variable that can be explained by the independent variables. It can be seen from the value of  $R^2 = 0.926$  that the independent variables explain 92.6% of the variability of the dependent variable, Intention to Use e-government. Other unidentified factors account for the remaining (7.4%).

ANOVA <sup>a</sup>						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	166.998	5	33.400	245.008	.000 <sup>b</sup>
	Residual	13.359	98	.136		

	Total	180.358	103			
a. Dependent Variable: Intention to Use						
b. Predictors: (Constant), Website Quality, Social Influence, Performance Expectancy, Effort Expectancy, Awareness						

Table 4.2.5-1 Multiple Regression Analysis - ANOVA

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.962 <sup>a</sup>	.926	.922	.36922
a. Predictors: (Constant), Website Quality, Social Influence, Performance Expectancy, Effort Expectancy, Awareness				

Table 4.2.5-2 Multiple Regression Analysis – Model Summary

Coefficients <sup>a</sup>								
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-1.253	.300		-4.173	.000		
	Performance Expectancy	.216	.088	.160	2.459	.016	.180	5.568
	Effort Expectancy	.423	.093	.341	4.571	.000	.136	7.348
	Social Influence	.056	.083	.020	.679	.499	.907	1.102
	Awareness	.425	.076	.424	5.603	.000	.132	7.565
	Website Quality	.189	.058	.114	3.265	.002	.623	1.604
a. Dependent Variable: Intention to Use								

Table 4.2.5-3 Multiple Regression Analysis - Coefficients

As demonstrated in the above Table 4.2.5-3, the size of (B) suggests that Awareness, Effort Expectancy, Performance Expectancy, and Website Quality has significant impact in the explanation of variation of Intention to use e-government in a descending order. The general form of the equation to predict Intention to Use from Performance Expectancy, Effort Expectancy, Awareness and Website Quality is:

$$ITU = -1.253 + 0.425 * AW + 0.423 * EE + 0.216 * PE + 0.189 * WQ$$

In regression analysis, the existence of multicollinearity negatively affects the predictive ability of the regression model and causes problems to the success of a model. Therefore, examining the existence of the multicollinearity problem in this study is required. Tracing whether the data suffers with this problem of multicollinearity, SPSS software provides two options to estimate the tolerance and variance inflation factor (VIF). The Variance Inflation Factor (VIF) measures the impact of multicollinearity among the variables in a regression model. The Variance Inflation Factor (VIF) is always greater than or equal to 1. There is no formal VIF value for determining presence of multicollinearity. Values of VIF that exceed 10 are often regarded as indicating multicollinearity.

An alternative to this is to approximate the tolerance value that measures the correlation between the predictor variables that vary between (0) and (1). The closer the tolerance value is to (0), the stronger the relationship between this and the other variables. Also, in this research the researcher has provided both the (VIF) and tolerance that are shown in Table 4.2.5-3. Values achieved for both (VIF) and tolerance signify that there is no problem of multicollinearity in this study. Table 4.2.5-3 illustrates that the (VIF) for the model varied between (1.102) for Social Influence and (7.348) for Effort Expectancy which are below the recommended threshold level. From all these statistical explanations we conclude that:

- H1: Performance expectancy has a significant positive influence on intention to use E-government services.
- H2: Effort Expectancy has a significant positive influence on intention to use e-government services.
- H3: Social Influence has insignificant influence on intention to use e-government services.
- H4: Awareness has a significant positive influence on intention to use e-government services.
- H5: Website quality has a significant positive influence on intention to use e-government services.

- H8: There is no significant difference between the age groups of the adopters and non-adopters.
- H9: There is a significant difference between the gender of the adopters and non-adopters.

#### 4.2.6 Logistic Regression

A binomial logistic regression (often referred to simply as logistic regression), predicts the probability that an observation falls into one of two categories of a dichotomous dependent variable based on one or more independent variables that can be either continuous or categorical.

The dependent construct that measures the actual adoption and use of e-government (AAU) is categorical in nature and represented by (Yes) and (No). Number (2) represents “Yes”, when the particular respondent used ERCA’s e-government system and (1) to represent “No”, if they have not used e-government. The binary logistics regression model was chosen because of the dichotomous nature of the dependent variable it was found to be most appropriate for estimating the factors which influence actual adoption and use of ERCA’s e-government system.

A logistic regression analysis was conducted with actual adoption and use of e-government (AAU) as the dependent variable and Facilitating Conditions and Intention to use e-government as the predictor variables. The full model was considered to be significantly reliable ( $\chi^2$  (2, N= 104) = 66.741,  $p < .001$ ) (Table 4.2.6-1). This model accounted for between 47.4% and 66.8% of the variance in ERCA’s e-government system adoption (Table 4.2.6-2), and 95.8% of the ERCA’s e-government system adopters were successfully predicted (Table 4.2.6-3). Moreover, 78.1% of the ERCA’s e-government system non-adopters were successfully predicted, and overall predictions were accurate by 90.4% (Table 4.2.6-3).

Omnibus Tests of Model Coefficients				
		Chi-square	df	Sig.
Step 1	Step	66.741	2	.000
	Block	66.741	2	.000
	Model	66.741	2	.000

Table 4.2.6-1 Logistic Regression - Omnibus tests of model coefficients

Model Summary			
Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	61.645 <sup>a</sup>	.474	.668

a. Estimation terminated at iteration number 5 because parameter estimates changed by less than .001.

Table 4.2.6-2 Logistic Regression – Model Summary

Classification Table <sup>a</sup>					
Observed			Predicted		
			Actual Adoption and Use (AAU)		Percentage Correct
			No	Yes	
Step 1	Have you ever used ERCA’s online system?	No	25	7	78.1
		Yes	3	69	95.8
	Overall Percentage				

a. The cut value is .500

Table 4.2.6-3 Logistic Regression – Classification Table

The below Table 4.2.6-4 describes the Wald, coefficients, associated degrees of freedom and probability values for all of the predictor variables. This Table 4.2.6-4 shows that both Intention to use ( $p < .005$ ) and Facilitating Conditions ( $p < .005$ ) significantly predict actual adoption and use of ERCA’s e-government system. The coefficients values expose that an increase in the Facilitating Conditions score is associated with an increase in the odds of actual adoption and use of e-government by a factor of (2.654) (see Table 4.2.6-4). In addition, the coefficients values expose an increase in Intention to use score is associated with an increase in the odds of e-government adoption by a factor of (2.445).

Variables in the Equation							
		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1 <sup>a</sup>	FC	.976	.328	8.855	1	.003	2.654
	ITU	.894	.289	9.586	1	.002	2.445
	Constant	-5.217	1.088	22.977	1	.000	.005

a. Variable(s) entered on step 1: Facilitating Conditions (FC), Intention to Use (ITU).

Table 4.2.6-4 Logistic Regression - Variables in the Equation

#### 4.2.7 Validating Factors Affecting E-Government Adoption

The following Figure 4.2.7-1 shows the results of the aforementioned validated factors that affected the actual adoption and use of ERCA’s e-government system.

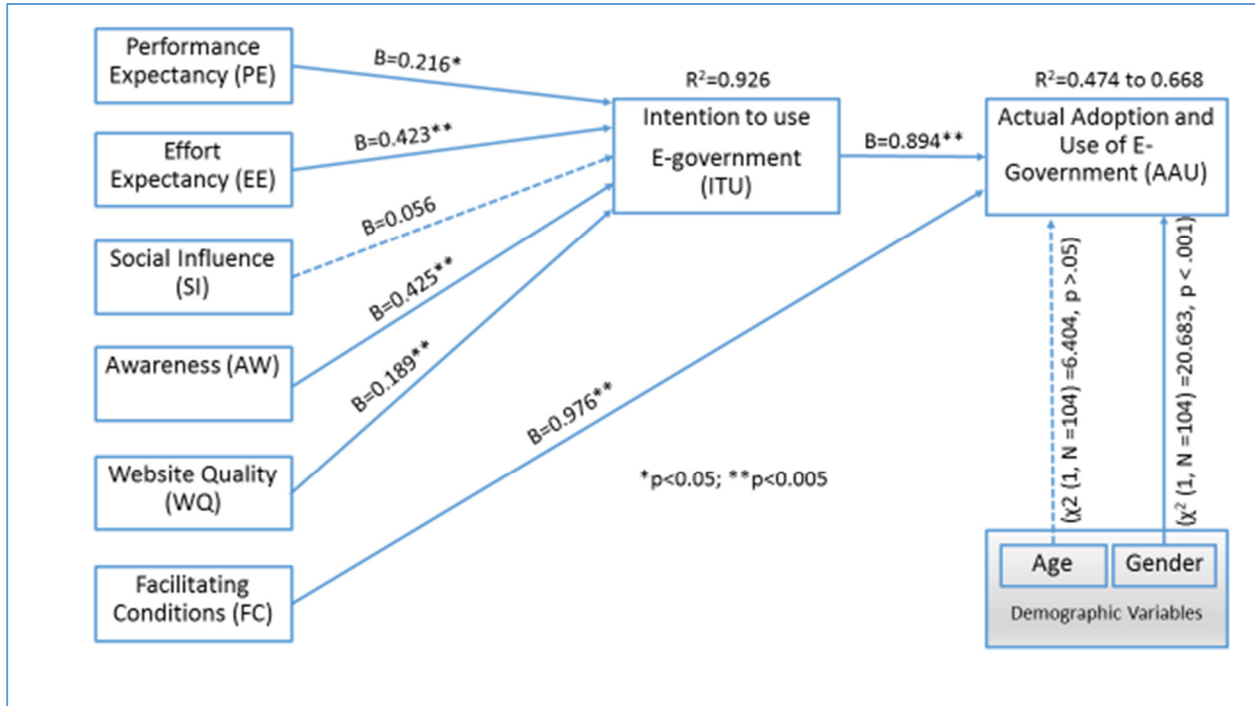


Figure 4.2-1 Validated factors that affect ERCA’s e-government System

#### 4.2.8 Summary of the Hypotheses

The following Table 4.2.8-1 summarizes the hypotheses suggested and offered in Chapter 3. Additionally, it shows whether these research hypotheses are supported or not. Table 4.2.8-1 demonstrates a total of nine research hypotheses that were tested to examine whether the independent variables significantly explained the dependent variables. Seven out of the nine research hypotheses were supported by the data and the rest two were not supported.

No	Hypothesis	Result
H1	Performance expectancy will have a significant positive influence on intention to use E-government services	Supported
H2	Effort Expectancy will have a significant positive influence on intention to use e-government services.	Supported
H3	Social Influence will have a significant positive influence on intention to use e-government services.	Not Supported

H4	Awareness will have a significant positive influence on intention to use e-government services.	Supported
H5	Website quality will have a significant positive influence on intention to use e-government services.	Supported
H6	Intentions to use e-government services will have a positive influence on actual adoption and use of e-government.	Supported
H7	Facilitating conditions will have a positive influence on actual adoption and use of e-government.	Supported
H8	There will be a significant difference between the ages of the adopters and non-adopters.	Not Supported
H9	There will be a significant difference between the gender of the adopters and non-adopters	Supported

*Table 4.2.8-1 Summary of Hypotheses*

## 5. Discussion

This section discusses the empirical issues regarding e-government adoption from the large taxpayers' perspective that were identified from the survey findings in chapter 4 in relation to the literature in chapter 3.

### 5.1 Response Rate

The total response rate obtained in the survey, as discussed in Chapter 4.2, was (81.4%). Fowler, (2013) suggests that the survey response rate is satisfactory between the values of (5%) at the lower end and (95%) at the higher end. Thus, the survey response rate of this research is considered satisfactory and acceptable.

### 5.2 Instrument Validation

The instrument validation processes that have been used in this research include content validity, construct convergent validity and reliability. In order to have a reliable survey instrument and thus confidence in the research findings, the researcher employed content validity by letting postgraduate colleagues and distinguished advisor to assess the content of the questionnaire as a pre-data collection validity, and a construct convergent validity using principal component analysis (PCA) for post-data collection validity.

Cronbach's coefficient alpha value was assessed to examine the internal research consistency of measuring (Hinton et al., 2014; Field, 2005). Hinton et al., (2014) suggest four points of reliability, excellent (0.90 and above), high (0.70 - 0.90), high moderate (0.50 – 0.70), and low (0.50 and below). Reliability values of the various constructs reported in this research vary between (0.717) and (0.961), which means that all the constructs possessed reliability values above the minimum recommended level of Nunnally (1978) which is 0.7 and resulted in high and excellent-range scores as per Hinton et al., (2014)'s suggested four points. This suggests that the measures for this study revealed an appropriate level of internal consistency.

### 5.3 E-government adoption constructs

#### 5.3.1 Performance Expectancy

As per the discussion provided in Chapter 3, performance expectancy is defined as the degree to which individuals believe that using a system will help them improve their job performance. Performance expectancy was found to be a strong predictor of intention to use IT according to previous acceptance study (Venkatesh et al., 2003).

The survey and interview findings from this study provide evidence that the performance expectancy factor was considered to have significant influence on the behavioral intention to use e-government systems. This clearly suggests that efforts are required from ERCA officials and implementers to develop the content of the E-tax system to be more useful to citizens.

### 5.3.2 Effort Expectancy

As discussed in Chapter 3, Effort expectancy is the degree of ease associated with the use of the system (Venkatesh et al., 2003). Different Scholars (Davis, 1989; Venkatesh et al., 2003; Gupta et al., 2008) found that effort expectancy has a significant influence on intention to use behavior. This theoretical assumption is confirmed in the interview and survey findings that are obtained in this research which suggest that the effort expectancy factor has a significant positive influence on the behavioral intention to use e-government.

Findings from this study provide evidence that the effort expectancy factor has a significant positive influence on the behavioral intention to use e-government. The survey findings are consistent with the UTAUT model, which suggests that the presence of constraints might inhibit the behavioral intention to adopt e-government (Venkatesh et al., 2003). This also suggests that there is a need to equip users with the skills to use computers, the internet, and the e-government system.

### 5.3.3 Social Influence

As discussed in chapter 3, social influence is defined as “*the degree to which peers influence use of a system*”. Whether this is positive or negative; it is a very important factor in many aspects of the lives of citizens and is likely to be influential (Venkatesh et al., 2003). The findings of many scholars like Rogers (1995), Taylor and Todd (1995), and Pavlou and Fygenon (2006) suggest that social influences are an important determinant of behavior.

In terms of this research, the findings show that social influence has no significant influence on explaining large taxpayers’ behavioral intention to use e-government (E-tax). This could be due to that many employees segregate their social or personal life from their work. In addition, most families and close friends do not have sufficient information about the employees’ day to day work. This means family members and close friends will not be able to give influential idea on whether to use or not to use employees’ work related system.

#### 5.3.4 Awareness

As discussed in chapter 3, awareness of e-Government refers to scope of knowledge and recognition, users has over e-Government services (Meftah et al., 2015). It has been found that awareness is one of the factors that affect intention to use E-government services (Meftah et al., 2015; AlNuaimi et al., 2011; Mofleh & Wanous, 2008).

Findings from this study provide evidence that the awareness factor has a significant positive influence on the behavioral intention to use e-government. The survey findings are consistent with the referred literatures, which suggests that awareness messages that are produced and gained via different communication channels, are considered to have an effect that is likely to influence users' intentions to use technology.

#### 5.3.5 Website Quality

Hasan and Abuelrub, (2008) defined web quality as a user's positive evaluation of a website's features, ensuring it meets the user's needs and reflects the overall excellence of the website. Therefore, they identified four dimensions of web quality: content quality, design quality, organization quality and user-friendly quality. The findings of other scholars (Alshehri et al., 2012 and Kumar et al., 2007) confirmed that website quality had a positive and significant effect on intention to use e-government services.

Findings from this study provide evidence that the Website Quality factor has a significant positive influence on the behavioral intention to use e-government. The survey findings are consistent with the referred literatures, which suggests that ERCA need to give attention to the different dimensions of website quality. The contents should be relevant to the users, the system should be easy to use and the design and organization of the website should be able to catch the users' intention.

#### 5.3.6 Facilitating Condition

As previously discussed, facilitating conditions is considered to be directly related to usage behavior (Venkatesh et al., 2003). The inclusion of the aspects of technological and organizational environment that are meant to minimize the challenges and barriers that hinder the system use, directly adds to this relation. Resources (computer, Internet), trainings on how to use the systems, and service desk which provide support whenever there is a need are part of the facilitating condition.

Therefore, it is expected that if these items are perceived as high, then e-government adoption will be high. In line to the theoretical bases (Venkatesh et al., 2003), findings of this research revealed that the facilitating conditions have significant effect on the actual adoption of ERCA's e-government system. Therefore ERCA should think about facilitating necessary resources and trainings and also setup a help desk which provide support whenever large taxpayers are in need of.

#### 5.3.7 Intention to Use

Intention to use is defined as a customer's intention to adopt and make use of a certain tool in the future (Taylor and Todd, 1995; Venkatesh et al., 2003). According to Venkatesh et al., (2003), the majority of technology adoption researches have utilized behavioral intention to predict technology adoption. Also, Venkatesh et al., (2003) suggests that behavioral intention is counted to have a direct influence on adoption. In line to the literature, the findings of this research provided evidence that intention to use has a significant positive influence on the actual adoption and use of ERCA's e-government system.

#### 5.3.8 Gender

Venkatesh et al., (2003) showed that male users use a computer more than females to show gender as one of the most important variables when adopting technology. Venkatesh et al., (2003) found that the effect of perceived usefulness on behavior intention was moderated by gender.

The research by Choudrie and Dwivedi (2006) and Dwivedi and Lal's (2007) proposed that gender (as a social variable) can be considered as an independent variable to explain the differences between adopters and non-adopters of technology, in this case e-government. These studies have revealed that gender has an important effect and role when considering technology adoption and usage in organizational context. The findings of this research validated that there is a significant difference between the gender of the adopters and non-adopters.

#### 5.3.9 Age

Scholars (Morris and Venkatesh, 2000; Venkatesh et al., 2003) have found evidence that explains the significant, direct and moderating effect of age on the behavioral intention and actual adoption and usage behaviors. The younger and middle age groups are expected to be more positive to adoption, while the older age group is expected to be more relevant to the non-adopters. In contrast,

the findings of this research revealed that, there is no significant difference between the different age groups of the adopters and non-adopters.

## 6. Summary, Conclusion and Recommendation

This empirical study identified those factors that determine adoption of e-government system through a modified UTAUT model. The findings showed that performance expectancy, effort expectancy, Awareness, and Website Quality were significant in determining intention to use e-government. Awareness contributed to the largest variance ( $B= 0.425$ ) when explaining intention to use e-government. Also, the effort expectancy construct contributed to the second largest variance ( $B= 0.423$ ), and performance expectancy construct ( $B= 0.216$ ) contributed to the third largest variance and Website Quality construct ( $B=0.189$ ) contributed the least significant variance when explaining intention to use e-government. In contrast, Social Influence construct ( $B=0.056$ ) didn't show significant variance in explaining intention to use e-government. In addition, facilitating conditions construct ( $B=0.976$ ) and intention to use e-government construct ( $B=0.894$ ) were significant in determining actual adoption and use of e-government. The findings of this research also validated that there is a significant difference between the gender of the adopters and non-adopters. However the findings of this research revealed that, there is no significant difference between the different age groups of the adopters and non-adopters.

To achieve the objectives of this research, two research questions were defined in Chapter 1 and they were addressed. The first question was intended to see the efforts done so far by ERCA to avail and promote e-government services for large taxpayers. Based on the interview made with relevant ERCA's Large Taxpayers Office personnel, ERCA has implemented and made available three online services E-tax, E-services (TASS) and Transistors Training Registration System. In terms of promoting the services, ERCA has provided end-user training for all registered large taxpayers, facilitate service center equipped with networked computer, and also made the use of E-tax mandatory through Federal tax administration Proclamation No. 983/2016.

The second and the major question was intended to know key factors that affect large taxpayers' adoption of e-government services that Ethiopian Revenue and Customs Authority provides. Based on the literature review, e-government adoption factors were identified and defined by the researcher (Chapter 3). These factors were analyzed using the survey data from large taxpayers. The analysis revealed that Awareness, Effort Expectancy, Performance Expectancy, and Website Quality have significant influence on Intention to Use E-tax. In contrast, Social Influence didn't show significant positive influence on Intention to Use. In addition, Facilitating Conditions and

Intention to Use have significant positive influence on Actual Adoption and Use of E-tax. An interview with the large taxpayers personnel revealed that Attitude towards tax compliance, Lack of understanding of the benefit of the system, Lack of skill and network or system performance are the major factors identified from the tax authority's point of view.

Overall, the findings of this research could be applicable to other e-government systems in Ethiopia whose context is similar to that of ERCA. The result of this research also showed that, the modified UTAUT model is a valid model to understand the adoption and successful use of e-government system in Ethiopia. This model has made a foundation for future research works that focus on adoption of e-government in Ethiopia. Decision makers on the adoption and use of e-government systems have to understand these adoption determinants in order to be benefited from full utilization of the systems.

## 7. Future Work

Research can usually be further developed and the research presented here is no exception. Therefore, there are some areas that relate to this research which need to be investigated and explored further. Also, there are some alternative recommended directions that further work could be embarked upon.

This research suggested e-government adoption model adapted from the original UTAUT model. This adapted model contains five determinants of intention to use and these are performance expectancy, effort expectancy, social influence, Awareness, and Website Quality. In addition facilitating conditions and intention to use are considered as factors affecting actual adoption and use of e-government. Gender and age were used as direct determinants influencing e-government adoption. A further recommendation is to explore adoption factors such as culture and trust that might affect the citizen's intention to adopt e-government.

This study focused in the area of e-government adoption of ERCA's E-tax technology by testing the modified UTAUT model in large taxpayers' context. Future research can focus on extending this study to other e-government applications at national level.

## REFERENCES

- Abdulkarim, M. R. (2003). Technology and improved service delivery: Learning points from the Malaysian experience. *International Review of Administrative Sciences*, 6(9),191–204.
- Akesson, M., & Edvardsson, B. (2008). Effects of e-government on service design as perceived by employees. *Managing Service Quality: An International Journal*, 18(5), 457-478.
- Al-Adawi, Z., Yousafzai, S., & Pallister, J. (2005, September). Conceptual model of citizen adoption of e-government. In *The Second International Conference on Innovations in Information Technology* (pp. 1-10).
- Al-hashmi, A. (2013). Evaluating the Awareness of E-government in the Republic of Yemen. *International Journal of Computer Applications*, 67(16).
- Al-Shafi, S., & Weerakkody, V. (2010). Factors affecting e-government adoption in the state of Qatar.
- Al-Shafi, S., & Weerakkody, V. (2008). The use of wireless internet parks to facilitate adoption and diffusion of e-government services: An empirical study in Qatar. *AMCIS 2008 Proceedings*, 322.
- Alghamdi, S., & Beloff, N. (2014, September). Towards a comprehensive model for e-Government adoption and utilisation analysis: The case of Saudi Arabia. In *Computer Science and Information Systems (FedCSIS), 2014 Federated Conference on* (pp. 1217-1225). IEEE.
- AlKhattab, A., Al-Shalabi, H., Al-Rawad, M., Al-Khattab, K., & Hamad, F. (2015). The Effect of Trust and Risk Perception on Citizen's Intention to Adopt and Use E-Government Services in Jordan. *Journal of service science and management*, 8(03), 279.
- AlNuaimi, M., Shaalan, K., Alnuaimi, M., & Alnuaimi, K. (2011, December). Barriers to electronic government citizens' adoption: A case of municipal sector in the emirate of abu dhabi. In *Developments in E-systems Engineering (DeSE), 2011* (pp. 398-403). IEEE.
- Alshehri, M., Drew, S., Alhussain, T., & Alghamdi, R. (2012). The Effects of Website Quality on Adoption of E-Government Service: AnEmpirical Study Applying UTAUT Model Using SEM. *arXiv preprint arXiv:1211.2410*.

- Alshehri, M., & Drew, S. (2010). Implementation of e-government: advantages and challenges. In International Association for Scientific Knowledge (IASK).
- Azmi, A. A. C., Kamarulzaman, Y., & Hamid, N. H. A. (2012). Perceived risk and the adoption of tax e-filing. *World Applied Sciences Journal*, 20(4), 532-539.
- Azmi, A. C., & Bee, N. L. (2010). The Acceptance of the e-Filing System by Malaysian Taxpayers: A Simplified Model. *Electronic Journal of e-Government*, 8(1).
- Carter, L., & Bélanger, F. (2005). The utilization of e-government services: citizen trust, innovation and acceptance factors. *Information systems journal*, 15(1), 5-25.
- Carter, L., Schaupp, L. C., & McBride, M. E. (2011). The US e-file initiative: An investigation of the antecedents to adoption from the individual taxpayers' perspective. *E-service Journal*, 7(3), 2-19.
- Chau, P. Y. K. & Hu, P. J. H. (2002) Investigating healthcare professionals' decisions to accept telemedicine technology: an empirical test of competing theories. *Information & Management*, 39, 297-311.
- Choudrie, J., & Dwivedi, Y. K. (2006, January). Examining the socio-economic determinants of broadband adopters and non-adopters in the United Kingdom. In *System Sciences, 2006. HICSS'06. Proceedings of the 39th Annual Hawaii International Conference on* (Vol. 4, pp. 85a-85a). IEEE.
- Choudrie, J., & Weerrakody, V. (2007). Horizontal process integration in e-government: the perspective of a UK local authority. *International Journal of Electronic Government Research*, 3(3), 22.
- Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests. *psychometrika*, 16(3), 297-334.
- Davis, F. D. (1989) Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology. *MIS Quarterly*, 13, 319-340.
- Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1989). User acceptance of computer technology: a comparison of two theoretical models. *Management science*, 35(8), 982-1003.

- Dimitrova, D. V., & Chen, Y. C. (2006). Profiling the adopters of e-government information and services: The influence of psychological characteristics, civic mindedness, and information channels. *Social Science Computer Review*, 24(2), 172-188.
- Dwivedi, Y. K., Choudrie, J., & Brinkman, W. P. (2006). Development of a survey instrument to examine consumer adoption of broadband. *Industrial Management & Data Systems*, 106(5), 700-718.
- Dwivedi, Y. K. & Lal, B. (2007) Socio-economic determinants of broadband adoption. *Industrial Management and Data Systems*, 107(5), 654-671.
- Ebrahim, Z., & Irani, Z. (2005). E-government adoption: architecture and barriers. *Business process management journal*, 11(5), 589-611.
- Eshetu, S., (2015) The Practice, Challenges, and Prospects of e-Government: The case of Ethiopian Revenue and Customs Authority (ERCA) Large Taxpayers Office (LTO).
- Fang, Z. (2002). E-Government in digital era: Concept, practice, and development. *International Journal of the Computer, the Internet and Management*, 10(2), 1–22.
- Farouk, F. M., & Kalid, K. S. (2005, December). The awareness of electronic government from the Malaysian perspectives. In *Proceeding Seminar Kebangsaan E-Komuniti*, Putrajaya.
- Fowler Jr, F. J. (2013). *Survey research methods*. Sage publications.
- Gattiker, U. E. (1984). *Managing computer-based office information technology: a process model for management*. Human Factors in Organizational Design, North-Holland, Amsterdam, the Netherlands.
- Gefen D., Warkentin M., Pavlou P.A., and Rose G.M. (2002). 'E-Government adoption'. In *Proceedings of the eighth Americas Conference on Information Systems*, 569-576.
- Gregory, G. (2007) .E-government. *Encyclopedia of political Communications*. Los Angeles.
- Grigoroudis, E, Litos, C., Vassilis A., Moustakis, V.A, Politis, Y. & Tsironis, L. (2008). The assessment of user-perceived web quality: Application of a satisfaction benchmarking approach, *European Journal of Operational Research*, Volume 187, Issue 3, 16 June 2008, Pp. 1346–1357.

- Gupta, B., Dasgupta, S. & Gupta, A. (2008) Adoption of ICT in a government organization in a developing country: An empirical study. *Journal of Strategic Information Systems*, 17, 140-154.
- Hasan, L., & Abuelrub, E. (2008). Assessing the quality of web sites. *INFOCOMP Journal of Computer Science*, 7(4), 11-20.
- Heeks, R. I. C. H. A. R. D. (2007). *Impact assessment of ICT4D projects: a partial review of frameworks*. Manchester: Institute for Development Policy and Management.
- Hu, G., Pan, W., Lu, M., & Wang, J. (2009). The widely shared definition of e-Government: An exploratory study. *The Electronic Library*, 27(6), 968-985.
- Hinton, P. R., McMurray, I., & Brownlow, C. (2014). *SPSS explained*. Routledge.
- Irani, Z., Al-Sebie, M., & Elliman, T. (2006, January). Transaction stage of e-government systems: identification of its location and importance. In *System Sciences, 2006. HICSS'06. Proceedings of the 39th Annual Hawaii International Conference on* (Vol. 4, pp. 82c-82c). IEEE.
- Khanh, N. T. V. (2014). The critical factors affecting E-Government adoption: A Conceptual Framework in Vietnam. arXiv preprint arXiv:1401.4876.
- Kripanont, N. (2006). Using a technology acceptance model to investigate academic acceptance of the internet. *Journal of Business Systems, Governance, and Ethics*, 1(2), 13-28.
- Kumar, V., Mukerji, B., Butt, I., & Persaud, A. (2007). Factors for successful e-government adoption: A conceptual framework. *Electronic Journal of E-government*, 5(1).
- Lautenbach, M. A. E., ter Schegget, I. E., Schoute, A. E., & Witteman, C. L. M. (2008). Evaluating the usability of web pages: a case study. *Artificial Intelligence Preprint Series*, 11.
- Lee, J. K., Braynov, S., & Rao, R. (2003). Effects of public emergency on citizens' usage intention toward e-government: A study in the context of war in Iraq. *ICIS 2003 proceedings*, 83.
- Ling, L. M., & Fatt, C. K. (2008). Electronic tax filing system: Taxpayers' perspectives. In *seventh Wuhan international conference on e-business: unlocking the full potential of global technology* (Vol. 1, pp. 338-343).
- Lin O. and Joyce D. (2004). Critical success factors for online auction web sites, in the *Proceedings of the 17thNACCQ*.

- Meftah, M., Gharleghi, B., & Samadi, B. (2015). Adoption of E-government among Bahraini citizens. *Asian Social Science*, 11(4), 141.
- Mekuria, T. W., (2009) Challenges and Practices of E-Government in Ethiopia: The Case of Federal Civil Service Organizations (Masters Dissertation).
- Mofleh, S. I., & Wanous, M. (2008). Understanding Factors Influencing Citizens' Adoption of e-Government Services in the Developing World: Jordan as a Case Study. *INFOCOMP*, 7(2), 1-11.
- Morgeson, F. V., & Mithas, S. (2009). Does E-government measure up to E-Business? Comparing end user perceptions of US federal government and E-business web sites. *Public Administration Review*, 69(4), 740-752.
- Mustapha, B., & Obid, S. N. B. S. (2015). Tax service quality: The mediating effect of perceived ease of use of the online tax system. *Procedia-Social and Behavioral Sciences*, 172, 2-9.
- Ndou, V. (2004). E-government for developing countries: opportunities and challenges. *The Electronic Journal on Information Systems in Developing Countries* 18 (1), 1-24.
- Ojeka, S., Iyoha, F., Ibadunni, A., Ayo, C., & Gberevbie, D. (2016). Role of e-Governance in Nigeria's tax System: Strategy Perspective to Enhancing Compliance. In *ECEG2016-Proceedings of 16th European Conference on e-Government ECEG 2016* (p. 139). Academic Conferences and publishing limited.
- Rajeswari, K., & Mary, T. S. (2014). E-Filing of Income Tax returns: Awareness and Satisfaction level of salaried employees. *International Journal of Current Research and Academic Review*, 2(9), 39-45.
- Seifert, W. (2003). *A Primer on E-Government: Sectors, Stages, Opportunities, and Challenges of Online Governance*. Congressional Research Service: The Library of Congress.
- Sharma, D. S. K., OMAN, S. O., & YADAV, D. R. (2011). An empirical study on taxpayer's attitude towards e-return filing in India. *CHIEF PATRON CHIEF PATRON*.
- Signore, O. (2005, September). A comprehensive model for web sites quality. In *Web Site Evolution, 2005*.(WSE 2005). Seventh IEEE International Symposium on (pp. 30-36). IEEE.

- Singh I. and Sook A. (2002). An evaluation of the usability of South African University web sites, in Proceedings of the 2002 CITTE Conference, Durban, South Africa.
- Pascual, P. (2003). E-Government, E-Asian Task Force and the UNDP Asia Pacific Development Information Programme (UNDP-APDIP), Manilla.
- Pavlou, P. A. & Fygenson, M. (2006) Understanding and predicting electronic commerce adoption: An extension of the theory of planned behavior. *Management Information Systems Quarterly*, 30, 115.
- Riley, B.T. (2001) *Electronic Governance and Electronic Democracy: Living and Working in the Connected World*, Vol. 2, and Commonwealth Centre For Electronic Governance, Brisbane, Australia.
- Rogers, E. M. (1995) *Diffusion of innovations*. Free Press. New York. Retrieved from: <https://teddykw2.files.wordpress.com/2012/07/everett-m-rogers-diffusion-of-innovations.pdf>
- Shareef, M. A., Kumar, V., Kumar, U., & Dwivedi, Y. K. (2011). E-Government Adoption Model (GAM): Differing service maturity levels. *Government information quarterly*, 28(1), 17-35.
- Siau, K. & Long, Y. (2005) Synthesizing e-government stage models- a meta-synthesis based on meta-ethnography approach. *Industrial Management & Data Systems*, 105, 443-458.
- Suh, B., & Han, I. (2003). The impact of customer trust and perception of security control on the acceptance of electronic commerce. *International Journal of electronic commerce*, 7(3), 135-161.
- Tan, C. W., Benbasat, I., & Cenfetelli, R. T. (2008, January). Building citizen trust towards e-government services: do high quality websites matter? In *Hawaii International Conference on System Sciences, Proceedings of the 41st Annual* (pp. 217-217). IEEE.
- Tan, M. & Teo, T. S. H. (2000) Factors influencing the adoption of Internet banking. *Journal of the AIS*, 1.
- Tavakol, M., & Dennick, R. (2011). Making sense of Cronbach's alpha. *International journal of medical education*, 2, 53.
- Tat-Kei Ho, A. (2002). Reinventing local governments and the e-government initiative. *Public administration review*, 62(4), 434-444.

Taylor, S. & Todd, P. A. (1995) Understanding information technology usage: A test of competing models. *Information systems research*, 6, 144.

UNDESA 2016. ' UNITED NATIONS E-GOVERNMENT SURVEY'.

Venkatesh, V., Morris, M., Davis, G. & Davis, F. (2003) User Acceptance of Information Technology: Toward a Unified View. *MIS Quarterly*, 27, 425-478.

Wenham, D., & Zaphiris, P. (2003). User interface evaluation methods for internet banking web sites: a review, evaluation and case study. *Human-computer interaction, theory and practice*, 721-725.

Worku, K. (2016). The Role of E-government in Enhancing Performances of Public Service Qualities and Promoting Good Governance: With Special Reference of Document Authentication and Registration Agency (Masters Dissertation).

Yildiz, M. (2007). E-government research: Reviewing the literature, limitations, and ways forward. *Government information quarterly*, 24(3), 646-665.

Yoo, S., & Jin, J. (2004, July). Evaluation of the home page of the top 100 university websites. In *Allied Academies International Conference. Academy of Management Information and Decision Sciences. Proceedings* (Vol. 8, No. 2, p. 57). Jordan Whitney Enterprises, Inc.

Zafiroopoulos, K., Karavasilis, I., & Vrana, V. (2012). Assessing the adoption of e-government services by teachers in Greece. *Future Internet*, 4(2), 528-544.

## Appendices

### Appendix 1: Interview Guide

Declaration:

The objective of this research is to investigate Businesses or Citizens' adoption of electronic government (e-government) services in Ethiopia. The research is focused on online services of ERCA provided for large taxpayers. The services include but not limited to e-services and e-tax and any other online service provided to businesses or citizens. I wish to identify the factors that influence large taxpayers to adopt (actually use) the services. I would greatly appreciate your participation in this study. Participation is voluntary. You may decide to stop participation at any time. All conversation of this interview will be kept in strict confidence. Only summary measures and conclusions will be reported in the research. No data or opinions will be associated with specific individuals.

#### Interview Guide

1. Aim of the interview: To identify and capture the salient factors that affect e-government adoption and measure adoption (actual usage) level of e-government services in Ethiopia.
2. General Interviewee Information (Interviewee demographics)

Title .....

Name.....

Position.....

Organization.....

Phone/ E-mail.....

Date of interview .....

Venue.....

Education Background.....

Age.....

Career: (including number of years).....

Experience level with IT in general.....

How would you describe your role in respect of the e-government services provision to the large taxpayers? .....

.....

### **3. E-government adoption- General Information**

- a. What are the available electronic services (informational, transactional, and integrated)?
- b. What benefit does these services have for the users?
- c. When did you start these services provision?
- d. Who are the major clients of these services?
- e. How do you rate the current acceptance/adoption level of these services?
- f. How do you rate the number of users who adopted the services relative to the total number of eligible users?
- g. Which specific activities of a given service are more adopted by the users? (You may put it in descending order)
- h. What is your opinion about the adoption speed of the services?

### **4. Factors Affecting Adoption**

- a. In your opinion, what do you think are the major factors that affect users' intention to use e-government services?
- b. How do you rate those factors in your opinion (from highest impact to lowest)?
- c. Is there any technical factor that you would like to add to this list? How this factor influences intention to use or adoption of the e-government services?
- d. Do you know someone who used to use your e-government service but stopped to use now? If yes, why did they stop using?
- e. As an organization, what effort have you exert so far to increase the adoption level of the e-government services?

#### **4.1 Performance Expectancy**

- f. How do you see the effect of understanding the benefit of using the e-government services on adoption?

#### **4.2 Effort Expectancy**

- g. How do you see the complexity and time needed to learn to use e-government systems?
- h. How much do you think that complexity and time needed to learn to use the system affects adoption of the e-government services?

#### **4.3 Social Influence**

- i. How do you rate the impact of people around us in adopting the e-government service?
- j. How much does your organization encourage large taxpayers to use the e-government services?

#### **4.4 Awareness**

- k. What is your opinion regarding impact of awareness on adoption of e-government?
- l. What has been done so far to create awareness among businesses/citizens around the e-government services that your organization is providing?

#### **4.5 Website Quality**

- m. What do you think is the impact of the e-government website quality (content, design, ease of use, organization) on the adoption of e-government?
- n. How do you rate your organization's e-government website quality in terms of content, ease of use, design, and organization?

#### **4.6 Facilitating conditions**

- o. How do you rate the impact of facilitating conditions like availability and affordability of Internet, smart phones, and computers which are needed to use the e-government services? (high, medium, low)
- p. What do you think about availability and affordability of resources (computer, smart phone, Internet) required to adopt the e-government?
- q. What has been done so far by your organization to facilitate the required resources for businesses/citizen to adopt the e-government?

### **5. Closing Questions**

1. Would you like to add anything more?
2. May I use your name in my thesis?
3. May I send my interview transcription to your E-mail for checking?
4. Would I contact you for a follow-up questions and how I can contact you?

## Appendix 2: Survey Questionnaire

### Declaration:

The objective of this research is to investigate adoption of electronic government (e-government) services of Ethiopian Revenue and Customs Authority Large Taxpayers Office. As one of large taxpayers, I wish to identify the factors that influence your adoption of the e-government services. I would greatly appreciate your participation in this study. There is no personally identifiable information on the questionnaires. Participation is voluntary. You may decide to stop participation at any time. All answers to this survey will be kept in strict confidence. Only summary measures and conclusions will be reported in the research. No data or opinions will be associated with specific individuals.

While answering the questionnaire, consider any Ethiopian Revenue and Customs Authority online services like e-tax, e-services or any other service available on ERCA's official website ([www.erca.gov.et](http://www.erca.gov.et)) that provides informational, transactional, or integrated services.

### 1. Demographic Information

1. Gender	A. Male B. Female
2. Age (Please Circle the range)	1. Under 18 2. 18-25 3. 26-35 4. 36-45 5. 46-55 6. 56 and older
3. What is your educational background? (Please circle)	A. High school or less B. Diploma C. Bachelor Degree D. Postgraduate
4. How many years have you been using the Internet?	A. Less than a year B. 1 to 2 years C. 3 to 4 years D. More than 4 years
5. How often do you use the Internet?	A. Everyday B. Several times a week C. Several times a month D. Once a month E. Never
6. What is your purpose of using Internet?	Email, Education, Business, Entertainment, Other_____
7. How often do you use the Internet to gather information about or to get services from the government?	A. Everyday B. Several times a week C. Several times a month D. Once a month E. Never

**Circle the Most Suitable Number to Your Opinion from the Following Scale:**

1 = Strongly Disagree. 2 = Disagree. 3 = Neutral. 4 = Agree. 5 = Strongly Agree.

	<b>Performance Expectancy</b>	
PE1	Using ERCA's online services enables me to accomplish my needs from ERCA more quickly and more efficiently.	1 2 3 4 5
PE2	Using ERCA's online services would make services of ERCA more easier	1 2 3 4 5
PE3	Using ERCA's online services increases the quality of ERCA services.	1 2 3 4 5
PE4	Overall, ERCA's online system is useful to mine and other companies.	1 2 3 4 5
	<b>Effort Expectancy</b>	
EE1	Using ERCA's online services system is easy.	1 2 3 4 5
EE2	By using ERCA's online service system I am able to obtain ERCA's services easily.	1 2 3 4 5
EE3	Learning to use ERCA's services system is easy	1 2 3 4 5
EE4	It is easy for me to become skillful at using ERCA's online services system.	1 2 3 4 5
	<b>Social Influence</b>	
SI1	People who are important to me think that I should use e-government services.	1 2 3 4 5
SI2	My family members and relatives think that I should use the e-government system.	1 2 3 4 5
SI3	My supervisor is very supportive of the use of ERCA's online services	1 2 3 4 5
SI4	My company supports to use ERCA's online services.	1 2 3 4 5
	<b>Awareness</b>	
AW1	I am aware of available ERCA online services	1 2 3 4 5
AW2	I am aware of about online service projects which ERCA has implemented.	1 2 3 4 5
AW3	I have general information regarding online services in ERCA	1 2 3 4 5
	<b>Website Quality</b>	
WQ1	Content of ERCA websites is useful and updated regularly.	1 2 3 4 5
WQ2	ERCA's website looks organized and attractive.	1 2 3 4 5
WQ3	ERCA's website is always up and available 24/7.	1 2 3 4 5
WQ4	ERCA's website appears safe and secure for carrying out transactions.	1 2 3 4 5
	<b>Facilitating Conditions</b>	
FC1	I have the resources necessary to use ERCA's online services.	1 2 3 4 5
FC2	I have the knowledge necessary to use ERCA's online services.	1 2 3 4 5
FC3	There is a specific person or group available for assistance with any technical problem I may encounter.	1 2 3 4 5
FC4	There is no doubt of high support from ERCA towards the online services	1 2 3 4 5
	<b>Intention to Use</b>	
ITU1	I predict using ERCA's online system in the future.	1 2 3 4 5

ITU2	I plan to use ERCA's online system in the future.	1 2 3 4 5
ITU3	I intend adopting ERCA's online system in the future.	1 2 3 4 5
	<b>Actual Adoption and Use</b>	
AAU	Have you ever used ERCA's online system?	Yes No

### Annex 3: Number of Questionnaires Distributed and Received from Respondents

<b>Organization</b>	<b>Number of Questionnaires Distributed</b>	<b>Number of Responses Received</b>	<b>Number of Complete Responses</b>	<b>Method of Administration</b>	<b>Method of Collection</b>
Heineken Breweries S.C.	10	10	7	Researcher Administered	Hard Copy
Bedele Brewery S.C.	10	10	7	Researcher Administered	Softcopy (Scan) through Email
Commercial Bank of Ethiopia	10	9	9	Researcher Administered	Hard Copy
Habesha Brewery S.C	5	4	4	Close contact administered	Softcopy (Scan) through Email
Total Ethiopia S.C.	10	10	7	Close contact administered	Hard Copy
BGI Ethiopia PLC	10	5	5	Close contact administered	Softcopy (Scan) through Email
Dashen Bank S.C.	10	6	6	Close contact administered	Softcopy (Scan) through Email
Awash Bank S.C.	10	9	6	Close contact administered	Hard Copy

Ahadukes Food Products S.C.	5	4	4	Close contact administered	Softcopy (Scan) through Email
Moha Soft Drinks Industry S.C.	10	7	5	Close contact administered	Hard Copy
Abay Bank S.C.	5	2	2	Researcher Administered	Hard Copy
Inat Bank S.C.	5	3	3	Researcher Administered	Hard Copy
Oromia International Bank S.C.	5	3	3	Close contact administered	Softcopy (Scan) through Email
Meta Abo Brewery S.C.	5	5	5	Close contact administered	Softcopy (Scan) through Email
Ethiopian Airlines	10	10	10	Close contact administered	Hard Copy
United Bank S.C.	5	5	5	Researcher Administered	Hard Copy
Unilever Ethiopia PLC	5	5	5	Close contact administered	Softcopy (Scan) through Email
Yes Brands Food & Beverage PLC	5	5	5	Close contact administered	Softcopy (Scan) through Email

Ethio telecom	10	6	6	Close contact administered	Hard Copy
<b>Total</b>	<b>145</b>	<b>118</b>	<b>104</b>		

#### Annex 4: Response of Survey Participants

Item	Item Description	N	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
	<b>Performance Expectancy</b>						
PE1	Using ERCA's online services enables me to accomplish my needs from ERCA more quickly and more efficiently.	104	14%	39%	28%	19%	0%
PE2	Using ERCA's online services would make services of ERCA more easier	104	14%	45%	20%	18%	2%
PE3	Using ERCA's online services increases the quality of ERCA services.	104	19%	46%	8%	25%	2%
PE4	Overall, ERCA's online system is useful to mine and other companies.	104	41%	27%	3%	29%	0%
	<b>Effort Expectancy</b>						
EE1	Using ERCA's online services system is easy.	104	24%	47%	9%	20%	0%
EE2	By using ERCA's online service system I am able to obtain ERCA's services easily.	104	22%	47%	20%	11%	0%
EE3	Learning to use ERCA's services system is easy	104	38%	33%	11%	3%	16%
EE4	It is easy for me to become skillful at using ERCA's online services system.	104	33%	26%	11%	28%	3%
	<b>Social Influence</b>						
SII	People who are important to me think that I should use e-government services.	104	0%	1%	22%	58%	19%

SI2	My family members and relatives think that I should use the e-government system.	104	0%	1%	26%	60%	14%
SI3	My supervisor is very supportive of the use of ERCA's online services	104	0%	1%	20%	64%	14%
SI4	My company supports to use ERCA's online services.	104	0%	3%	44%	53%	0%
<b>Awareness</b>							
AW1	I am aware of available ERCA online services	104	19%	50%	2%	15%	14%
AW2	I am aware of about online service projects which ERCA has implemented.	104	41%	22%	8%	17%	12%
AW3	I have general information regarding online services in ERCA	104	17%	50%	4%	14%	14%
<b>Website Quality</b>							
WQ1	Content of ERCA websites is useful and updated regularly.	104	17%	64%	2%	12%	6%
WQ2	ERCA's website looks organized and attractive.	104	31%	58%	1%	9%	2%
WQ3	ERCA's website is always up and available 24/7.	104	38%	51%	2%	7%	3%
WQ4	ERCA's website appears safe and secure for carrying out transactions.	104	14%	61%	5%	19%	1%
<b>Facilitating Conditions</b>							
FC1	I have the resources necessary to use ERCA's online services.	104	16%	45%	1%	20%	17%
FC2	I have the knowledge necessary to use ERCA's online services.	104	40%	25%	5%	10%	20%

FC3	There is a specific person or group available for assistance with any technical problem I may encounter.	104	28%	32%	8%	20%	13%				
FC4	There is no doubt of high support from ERCA towards the online services	104	19%	48%	9%	21%	3%				
<b>Intention to Use</b>											
ITU1	I predict using ERCA's online system in the future.	104	21%	50%	1%	9%	19%				
ITU2	I plan to use ERCA's online system in the future.	104	13%	59%	2%	15%	12%				
ITU3	I intend adopting ERCA's online system in the future.	104	21%	49%	1%	10%	19%				
<b>Actual Adoption and Use</b>			Yes		No						
AAU	Have you ever used ERCA's online system?	104	69.2%		30.8%						
<b>Age Distribution</b>											
Under 18		18-25		26-35		36-45		46-55		56 and older	
0.0%		18.3%		38.5%		26.0%		17.2%		0.0%	
<b>Gender Distribution</b>				Male				Female			
				63.5%				36.5%			