



E-COMMERCE CHALLENGES AND THEORETICAL IMPLEMENTATION MODEL  
ADOPTION: CASES OF RETAILERS IN ADDIS ABABA & HAWASSA CITIES

MSc THESIS

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HAWASSA UNIVERSITY, HAWASSA, ETHIOPIA

JULY, 2021 G.C.

E-COMMERCE CHALLENGES AND THEORETICAL IMPLEMENTATION MODEL  
ADOPTION: CASES OF RETAILERS IN ADDIS ABABA & HAWASSA CITIES

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A THESIS SUBMITTED TO HAWASSA UNIVERSITY  
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## DECLARATION

I hereby declare that this MSc thesis, titled “**E-commerce Challenges and Theoretical Implementation Model Adoption: Cases of Retailers in Addis Ababa & Hawassa Cities**”, is my original work and has not been presented for a degree in any other university, and all sources of material used for this thesis have been duly acknowledged.

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**July 2021**

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**ADVISORS' APPROVAL SHEET**

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## **ABSTRACT**

Retailing industries, enterprises and other businesses are operated globally with technologically advanced methods that can be mentioned in different names like e-commerce, online shopping, digital marketing and others. However, these business-running mechanisms are not even officially emerged in Ethiopia as it is expected due to many problems. The researcher identified these e-commerce implementation barriers and proposed conceptual adoption frameworks that consider the Ethiopian infrastructures and other operational conditions. The data and necessary information for the study were obtained by using various scientific data collection mechanisms. These mechanisms include field observation, questionnaires, phone and face-to-face interviews. The target populations for this study were mainly online retailers found in Addis Ababa and traditional wholesalers, supermarkets found in Addis Ababa & Hawassa cities were considered in the study. However, the existed online shopping sites in Addis Ababa were interviewed and the detailed analysis was made. The data collected by using questionnaires were analyzed using the SPSS software for the further solidification of the study. From the analyzed data; lack of infrastructure, absence of government policies and rules on e-commerce, absence of e-logistics, unavailability of payment methods, lack of interest, trust, security and awareness of both business owners and customers were basic barriers to adopt and implement e-commerce. At the end of this work based on the above influencing factors of e-commerce in Ethiopia and the review of benchmark e-commerce adoption models from abroad, the new adoption model that fit with the current Ethiopian technological conditions was proposed. This proposed e-commerce adoption model was justified through the multinomial regression analysis of the variables of the model by using SPSS software. This thesis has important contributions for different groups of the community in Ethiopia, which planned to involve in the retailing business. The business owners and their customers are those whom supposed to be the first beneficiaries of this work. Since the study shows them the way to run their businesses using the modern technology by introducing the applicability of e-commerce.

Key words: E-commerce, infrastructure, logistics, online shopping, adoption model, business.

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## **List of Abbreviations/Acronyms**

ICT	Information and communication technology
E-commerce	Electronic commerce
SPSS	Statistical package for social science
CRM	Customer relationship management
B2B	Business to business
4G	4 <sup>th</sup> Generation
EFT	Electronic fund transfer
EDI	Electronic data interchange
Email	Electronic mail
UNCTD	United Nations Conference on Trade and Development
B2C	Business-to-Consumer
C2B	Consumer-to- business
C2C	Consumer-to- consumer
M-commerce	Mobile commerce
UPS	United parcel service
POS	Point of sale
SMEs	Small and medium enterprises
E-logistics	Electronic logistics
TRA	Theory of Reasoned Action
TPB	Theory of planned behavior
TAM	Technology Acceptance Model
PEU	Perceived Ease of Use
PU	Perceived Use
UTAUT	Unified Theory of Acceptance and Use of Technology
TOE	Technology Organization Environment

# CHAPTER ONE

## INTRODUCTION

### 1.1 Background of the study

The Internet has taken over the world to make easy things in every aspects of human day-to-day life. These days, almost everything can be found online whenever someone wants to have or to do using internet. As its known, the internet has simplified all aspects of life and online shopping is one area where it is a convenience and easily shines. In a world where many seem to value saving time and money, shoppers are starting to do most of their buying online.

The information and communication technologies (ICT) have transformed how retailers and consumers buy, distribute, and customize products. The electronic commerce (e-commerce) booms last decade along with the Internet boom have changed the way businesses interact with their customers. Fueled by mobile and social commerce, e-commerce/electronic commerce is expected to be one of the important keys to the success and growth in the current competitive business environment (Almoussa, 2013).

The internet penetration rate currently in Ethiopia is 18.6% and the users are reached 20,507,255 people in 2019. In addition, an attempt has been made for the broad expansion of access throughout the country (Hovernez, 2019). The subscribers of Ethio-telecom in two services internet and telecom that makes the company leader in Africa in terms of number of subscribers. Even if Ethiopian telecom is the only telecom company in the country which provides both internet and telecommunication service, it has made great effort to expand its quality service throughout the country. Lately, the company has made an agreement with three Chinese companies, ZTE corporation, Huawei technologies and the Chinese international telecommunication Construction Corporation, to upgrade and expand Ethiopian telecommunications services (Godlins, 2020). Recently in 2019, it also announced that it would install 4G network and fastest LTE internet service in Addis Ababa region. From another report obtained from Internet live status in 2016, the number of Internet users in Ethiopia was growing in fastest rate (Gothernach, 2016).

Many literatures sources reveal that Ethiopian Internet usage has to be liberalized to enable an increase in local business and home use of the Internet and as well as to attract foreign investments. Finally, the government of Ethiopia has passed decisions to liberalize the sector and opens up it for both the foreign and local investors to involve on telecom business.

A form of e-commerce which allows consumers to directly buy goods and services over the internet through a virtual shop or web store front shop is online shopping (or e-tail from electronic retail or e-shopping). There are so many leading online stores currently available in the world. Some of these are Amazon, eBay, Asos, Walmart, esty, Alibaba, Flipkart, Snapdeal, Homeshop18, Zappos, ModCloth, etc. Retail stores may be small or big but they mostly operate in the same line as “purchasing to sale” (Amit, 2015). Retail is a process of selling goods and services to customers through multiple channel of distribution.

E-commerce (Electronic commerce) is the most growing technology nowadays for doing business online. This technology is getting rapid development and adopted by most of businesses in the developing countries. Its growth is very high compared with other types of technologies. The technology is improving in daily bases and most of the developed countries depend on e-commerce to make businesses and trading deals. Some developing countries in Africa and Asia are still trying to track the steps of other developed countries in Europe and America in order to get the high advantage of adopting e-commerce but the adoption is not easy due to many barriers (Mohmed, Azizan, & Jali, 2013).

## **1.2 E-commerce in Ethiopia**

According to the observation, now a day some efforts have been done to sale products and services using Internet and other ICT Medias. However, the way of practicing e-commerce still faces with different challenges due to various reasons. The practice is better in service providing companies than goods. Service providers like Ethiopian banks, Ethiopian airlines, some tour and travels has more experiences to practice e-commerce than retailers and wholesalers. Different banks have developed different systems to adopt electronic payments and transactions. For example, commercial bank of Ethiopia provided mobile banking service, Internet banking, M-birr and CBE-birr accounts for its customers to perform payments, cash outs, buy mobile airtime and other financial based deals or transactions (Tekle, 2017). In addition, as the same thing, Dashen bank

has developed Amolle, Wogagen bank halo cash, Zemen bank, Awash bank and other banks in Ethiopian dedicated to introduce the same e-banking systems such as Internet banking, ATM cards and POS (point of sale) machines.

Despite the fact that, service providing business are more likely to practice e-commerce easily, goods and commodities retailing businesses also trying to deal their products online using internet and other online portals. Addis Ababa is the host of these online retailers.

Even if service providing companies have better e-commerce experience than goods as discussed above, this study focused only on goods and commodity traders to study the practice and challenges of online selling in Ethiopia. The reason why the study focused on goods was it believes that in Ethiopian context the challenges of adoption of e-commerce is more in goods and commodities than services due to various constraints (Gezu, 2016). It should be noted that product varieties are more prominent in goods and commodities than service products. This is one of the reasons for contributing challenges of e-commerce adoption on goods and commodities. Nature of products of goods and commodities for online shopping needs more e-commerce website features than service products like clear and net product image, secured payment option and convenient delivery services.

### **1.3 Motivation**

Many people in Ethiopia practiced bad trends in use of Internet for worthless deeds. That means almost more than half of internet users in Ethiopia browse the Internet for recreation and entertainment purposes only through various social media platforms like Facebook, telegram, Instagram and twitter. Except few merchants in Addis Ababa tried to start selling their products via the Internet, still they have even no awareness and idea of how goods can be sold and buy online via internet by most of internet users in Ethiopia (Lessa & Yigzaw, 2010). Even merchants have no trends to promote their products via their social media platform accounts for their Facebook friends and followers. They simply use their Facebook for entertainment purpose and for irrelevant news

According to the Internet World Status (IWS) report there are around more than 20 million internet users in Ethiopia currently. Having this huge amount of internet users who can browse various websites and social media platforms, there are still only few online shopping websites to sell goods

or service online in Ethiopia. This is due to lack of awareness, lack of confidential trust and security at the time of completing online transaction process. This is the situation why the researcher is interested to know the reasons why e-commerce specially selling of products and goods via internet is not yet started. Then the researcher finally wants to study the critical issues of online selling in Ethiopia by identifying the major challenges and barriers of the adoption of e-commerce.

#### **1.4 Statement of the problem**

In the current global market, business enterprises and manufacturing companies are facing big challenges in increasing market shares and competition for survival and sustainable growth. The challenges of businesses are linked with the recently technological advancement of ICT or internet based manipulation of business activities. Electronic commerce, E-retails, online shopping, e-logistics and other types of internet sells are major ICT based business operation mechanisms in retailing businesses. In the review of literatures in this research on electronic commerce with various names such as e-commerce, e-business, online sale, online market and others, there have been a wide range of implemented and practiced in various types of business around the world. However, trading businesses of physical products such as online retailers, wholesalers and supermarkets in Ethiopia have no developed and well-organized trends to run their businesses by using such type of technologically advanced way of e-commerce.

The problems of the adoption and implementation model to transform from traditional way of running businesses to the advanced and technologically supported mechanisms are critical issues for Ethiopian retailing businesses now days (Lemma, 2017). It should be improved by leading businesses using internet and electronic sells for the improved distribution of goods and products and the comparative advantage of customer satisfaction. It is obvious that selling products online is the most critical issue in the context of Ethiopia's retailing, logistics, distribution and marketing industry situation. Hence, this can be seen as one of the major problem on Ethiopian retailing businesses due to its lower level practice and limitation of e-commerce enabling elements.

Despite the current global advancement of ICT that greatly alters the market situation of companies in use of e-commerce, almost all business companies, enterprises, and other trade institutions in Ethiopia are still in preliminary stage to implement and apply e-commerce on their business. However, there are small number of wholesalers and retailer that are using online sells currently

in large cities like Addis Ababa and some of other regional cities. This leads Ethiopian companies not to be competent in both the current local and the global markets to increase revenues. These might be due to various reasons related to the implementation troubles of the internet marketing business channels in the country like low internet penetration rate, low telecommunication network, absence of online shopping and payment regulations and consumer interest to buy goods online. These above problems generate important insights to make study on major barriers and challenges of online sells for the improvement of effective logistics and distribution of goods and products in Ethiopian markets.

As it has been obtained from the preliminary study during the observation conducted on retailers found in the study areas of this research, there were numerous hindering problems to implement and practice e-commerce revealed by the owners of online retailers, wholesalers and supermarkets. The main troubles to establish e-commerce and online shopping in Ethiopian retailing businesses are lack of basic infrastructures like the availability of the Internet, telecommunication, government regulation and behavior of consumers towards acceptance of online shopping technology. Due to these problems, not only retailing firms but also other trading and business companies in Ethiopia cannot improve their products in terms of increasing market shares, productivity (increased capacity of selling products in case of retailers), customer satisfaction and competitiveness to develop the company in both locally and globally.

Online retailers that are officially started selling goods and commodities online in Ethiopia encounters various operational, organizational, legal and technological infrastructure problems. These retailing businesses commenced dealing their products using internet and other online mediums were for transforming their business from traditional way to the advanced technological way. Their intention of changing the way they operating their business were to increase profit, meet customer satisfaction, to develop the entire business and to be competent in locally and globally. However, the practical situations for selling products online such as telecom infrastructure payment methods, government regulations, logistics system and other factors are not suitable for online retailing companies to achieve their objective.

## **1.5 Objective of the study**

### **1.5.1 General objective**

The general objective of this thesis is to assess barriers of the implementation of online sells in retailing businesses and to propose theoretical adoption model based on the survey made on retailers' performance of physical distribution logistics of products.

### **1.5.2 Specific objectives**

The specific objectives are:

- To assess and identify how online selling is practiced and performed currently in wholesalers, retailers and supper markets of the case study area.
- To evaluate performance of distribution of goods and commodities traded by online retailers.
- To propose theoretical adoption model and implementation framework of online sells that could initiate wholesalers, retailers, merchants and other businesses to implement online sells, increase their profit, and concurrently improve the distribution of goods.

### **1.6 Research questions**

With reference to the purpose of the study, this paper tries to identify and evaluate the barriers and challenges of implementing and practicing online sells of products and services in Ethiopian. Thus, to be able to understand and achieve the goal of this thesis there is a structured approach, and in doing so the entire subject of the paper try to answer the following basic questions:

- How online selling can be practiced currently in the case study area?
- How the current infrastructures of technology existed in Ethiopia support the implementation of online sells of products?
- What is the impact of practicing electronic commerce on the existing traditional businesses in various business perspectives?

### **1.7 Significance of the study**

This study is significant for every form of business owners; wholesalers, retailers, supermarkets and different service providers to increase their selling of products by implementing online sell. Because the result of the study provides business owners basic concept of understanding about the enabling conditions and basic infrastructure of e-commerce and how they could sell their products and services online.

The study also enables various business enterprises to practice selling products online by identifying the problems of implementation and showing the opportunities to increase their productivity and development with the help of online sells. Encouraging and motivating traders that have a different level of economic activities including the beginner businesses to practice this method of selling product online and to obtain increased advantages.

This study enables the researchers to make further investigations on the area of e-commerce and e-logistics activities in Ethiopia by providing a clear viewpoint of preliminary baselines. Conducting e-commerce related research studies in Ethiopia currently is appreciable because trading goods and services using ICT and the Internet are the era of modern business in the developed world and it is on the way of growing fast in the developing countries.

In addition, the study helps the community who want to involve in online shopping as a customer to understand how online shopping and transaction can be completed. The theoretical framework of online shopping and transaction that will be proposed in this research will offer the customers initial knowhow to buy products online.

The transfer of online shopping, and payment technology trends from the developed countries can be realized by doing such extensive researches. Since the numerous journal articles written in both developed and developing countries about e-commerce reviewed in the literature review of this thesis, the result and the proposed theoretical adoption model will help the reader to gain some knowledge of online shopping and e-commerce.

### **1.8 Scope and limitations of the study**

The idea under this study aims to investigate and make survey on the details of challenges of online sells; however, the study is limited to the identification of major problems of practicing selling products online in the Ethiopian market by considering the selected wholesalers and service providing companies on the case areas of Addis Ababa & Hawassa cities. This is due to the limited budget and time constrained. In addition, the study insights the positive impact of online sells on the distribution channel of product and customer satisfaction due to the adoption of e-commerce or online sell technology.

Some major circumstances could be considered as limitations for the study. The first is that since online selling is the newly emerging technology in Ethiopia, the respected parties of the sample population during data collection may have limited awareness of the issue of e-commerce. In spite of, the dedicated effort to discuss the most critical and latest issues on the development of technologically advanced method of running businesses with the help of modern electronic and internet sell.

## **1.9 Structure of the thesis**

The contents in this research are organized in six chapters. The first chapter was about the introduction of the thesis, which includes the background, motivations, statement of the problems, objective of the study, significance and scope of the study. The second chapter dedicates to review various related literatures done on the area of technology-based manipulation of businesses specially e-commerce related works. The basic requirement infrastructures and operating features, of e-commerce as well as various adoption theories and model was extensively reviewed in this chapter. Chapter three of this thesis dealt with the design procedures of the study. These study design procedures includes data gathering techniques, data presentation and data analysis with the appropriate tool. Chapter four was focused about result discussion and interpretations. The analyzed data in the previous chapters are briefly interpreted and discussed in this chapter using tabular and graphical presentation technique. In chapter five, this study was dedicated for the development of the new e-commerce adoption model that is suitable for Ethiopian technology infrastructure. Chapter six was the final chapter for the main body of this research, which contains the conclusion and recommendations of the study. The flow chart diagram below shows the entire structural organization of this thesis. The arrows and all the texts inside the figure indicate the major tasks done in this study work.

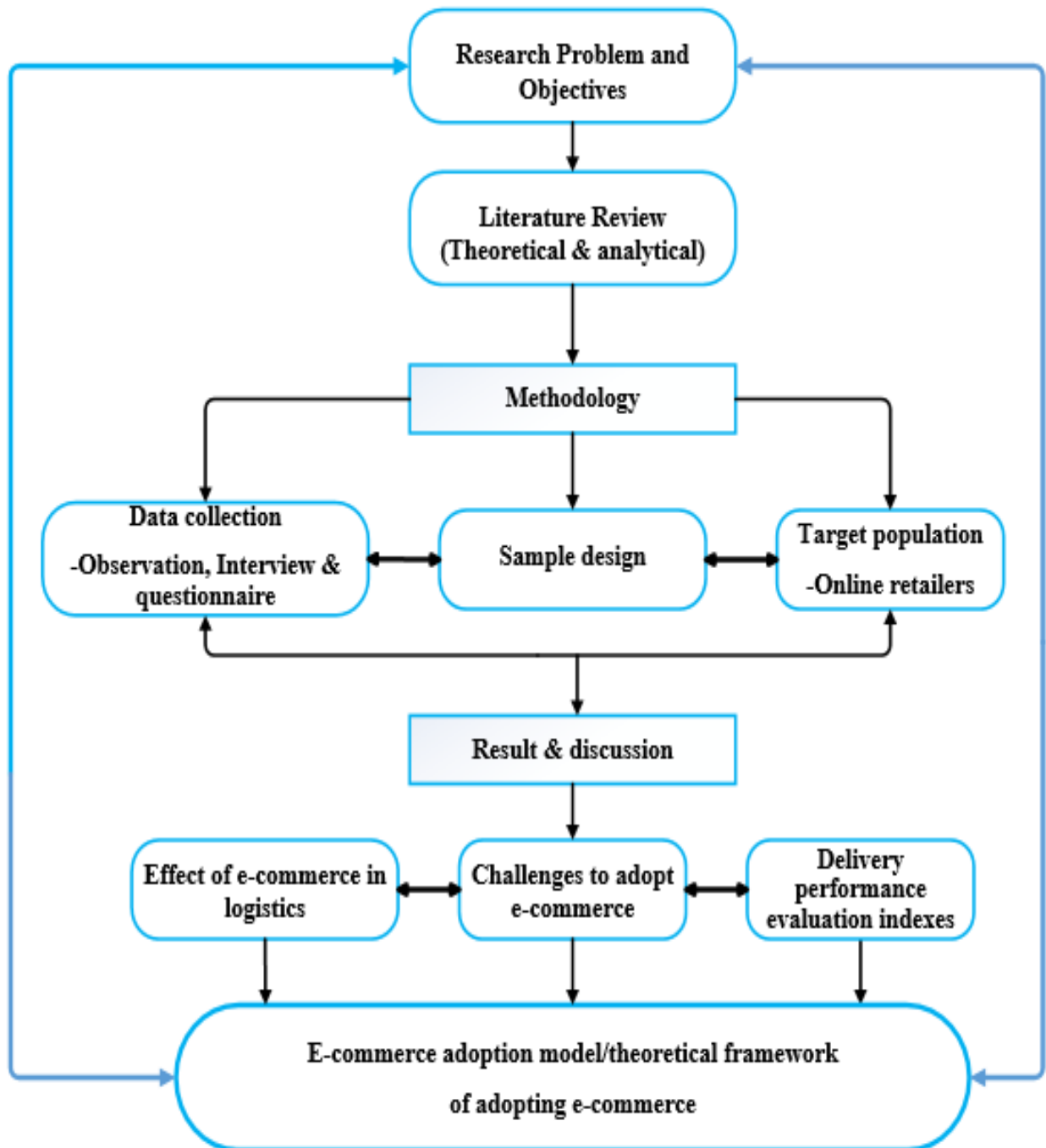


Figure 1.1 Flow chart of the research framework

# CHAPTER TWO

## LITERATURE REVIEW

### 2.1 Introduction

This chapter consists of a review of literature related to the importance and barriers of online marketing for wholesalers and retailers. In addition, it deals with distribution channel effectiveness and customer satisfaction perspective. Then it reviews the current issues in online marketing and factors affecting the adoption and implementation of online sells. Furthermore, a critique review of various studies related to online marketing is also presented in this portion. This is followed by highlighting the research gaps and contribution of the present study. Many researchers have studied the area of the online market. However, most of the articles and journals state about factors, advantages, influences, and prospects of adoption of the online market in respect to specific businesses and enterprises separately like banks, retailers, hospitals tour and travels. It introduces e-business and examines the theoretical foundation of where the electronic sell is placed in the enterprise's strategic transformation to online retailing and service providing.

The electronic commerce business can be started either from the scratch as starting any business or by transforming the already existing traditional business into the technological supported online business. However, no matter how it can be started, additional unique features should require. These e-commerce characteristic requirements are varying depending on the type and level of electronic commerce. This variation may happen on the technical online sells webpage developments or on online business model types. For example if the designed webstore allows the online buyers to finish the whole transaction online like filling their credit card number or other payment card options, online transaction regulation and payment methods are mandatory requirement features to complete the transaction. Moreover, if the payment is made in bank transfer or mobile banking it could be optional for this particular online web front/webstore.

Many researchers are interested to review online selling and purchasing of goods and services by employing technologies such as the World Wide Web (WWW), electronic mail (email), electronic fund transfer (EFT) and electronic data interchange (EDI). They have conducted many studies on the influence of the online market on consumer behaviors, cons, and pros of e-commerce and

adoption methods that link businesses and consumers to online shopping. Further, they conducted studies on online sells to generate a clear understanding to which extent e-commerce is considered whether it simply as a substitute to traditional sales channels or increases distribution channel and market share with implications for total employment and growth. Other circumstances concern the impact of e-commerce on prices in traditional shops and it may bring benefits to both consumers and producers. However, most research has focused on consumer benefits and has not compared this with the benefits to producers and hence total welfare and profit of producers or online sellers (Duch-Brown & Nestor, 2017).

In online shopping, transactions are determined by contexts. These transaction contexts are the situations or circumstances usually occurred as the transaction between buyer and seller is conducted. It consists of three processes of the transaction such as (agreement, payment, and delivery).

## **2.2 E-commerce / online shopping**

E-commerce online shopping has no agreed exact definition since it has a number of different definitions being used in different contexts. The definition of e-commerce considering itself as a production process states that, e-commerce is the modern business execution mechanism that improves cost effectiveness, quality of production and service to meet the needs of organization, market and customer through the use of ICT (Ayalew & Lessa, 2015). The literals in this study assume the value added processes in each stage of production is achieved by the digitalization of every activity. The United Nations Conference on Trade and Development (UNCTD) states it with the existence of six different mediums of electronic commerce (e-commerce): telephone, fax, television, electronic payment and money transfer systems, Electronic Data Interchange (EDI) and the Internet. The rapid growing and extensive increased application of the internet has resulted in much of the confusing expressions to understand the exact meaning of e-commerce. E-commerce has also been described as performing commercial and service providing activities via electronic media, and most commonly, the internet or it is defined as the buying and selling of goods and services over the World Wide Web or internet (Kabubay, 2014).

Online shopping or e shopping is the process by which online consumers directly buy goods or services from a seller at any time over the internet using a web browser. A form of electronic

commerce in which the transaction processes of buying and selling are completed electronically in real-time without an intermediary service. However, there are some cases that require the involvement of intermediary during the transaction process products (Chaffey, 2009).

This form of transaction process between online retailers and consumers is known as Business-to-Consumer (B2C) online shopping. These online retailers are; online shop, e-shop, e-store, internet shop, web shop, web store, online store, or virtual store display the details of a physical analogy of buying products or services in the online shopping Centre. The bigger online retailing companies such as Amazon.com conduct their electronic commerce in the form of Business-to-Consumer (B2C) online shopping (Jayalaxmi, 2014).

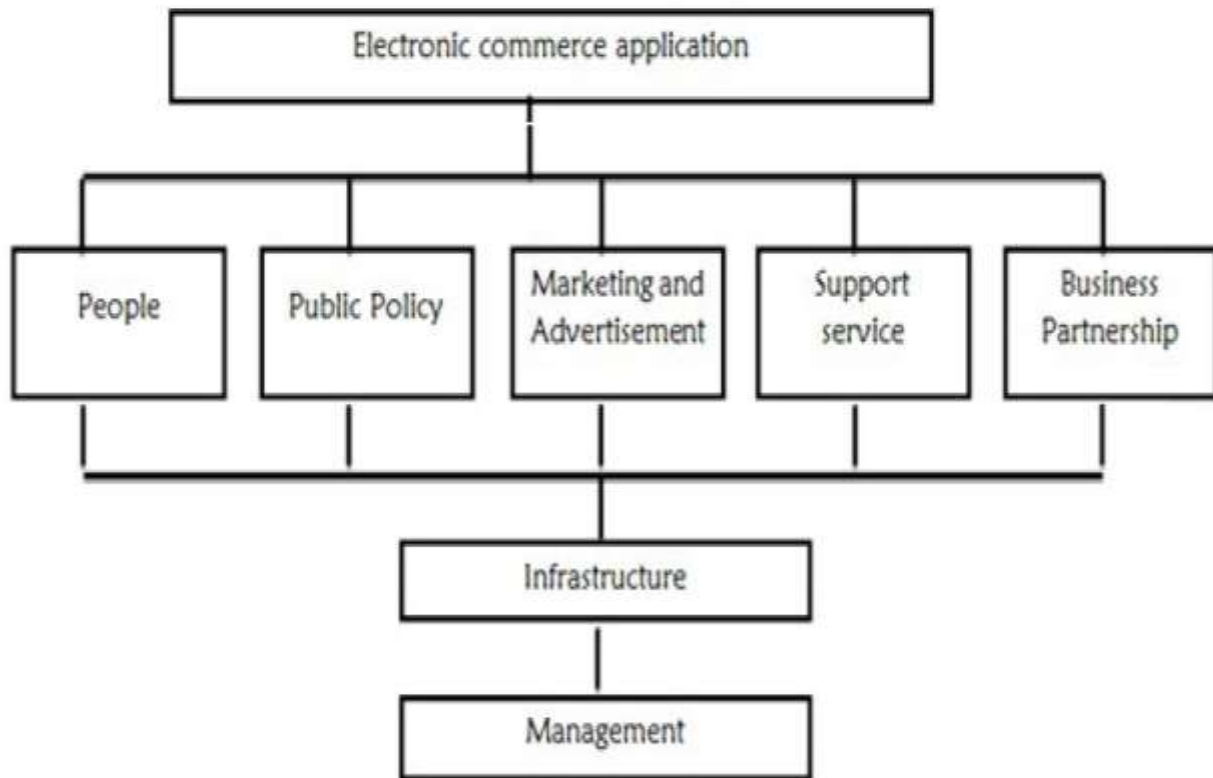


Figure 2.1 Standard e-commerce framework (Efraim Turban, 2015)

### 2.3 Types of online shopping

According to some literatures, online shopping involves the performances of buyers how they can buy goods or services online. There are many various categories of electronic commerce and many different methods to characterize these clusters. Academics determined the number of frameworks

for classifying electronic commerce but each one wants to illustrate it from a unique perspective. The main different classification of electronic commerce depends on identifying the partners directly involved in the transaction are Business-to-Business (B2B), Business-to-Consumer (B2C), Consumer-to-Consumer (C2C), Consumer-to-business (C2B) and Mobile Commerce (M-Commerce). In the start of new technologies and ever-increasing acceptance of internet usage, this form of shopping is greatly gaining traction among every aspect of individual businesses in the world. Today, many technologies are being used to support business processes. The various types of online shopping are described below in relation to those applicable to consumer and business (Purity, 2014).

### **2.3.1 Business-to-consumer**

Business-to-Consumer refers to transactions between a business and its end consumer. It creates electronic storefronts that offer information, goods, and services between business and consumers in a retailing transaction. An Internet and electronic commerce model indicate a financial transaction or online sale between a business and consumer. (Nanehkaran, 2013) states that business-to-consumer (B2C) is the process by which businesses provide goods and/or services to the end users. This type of online shopping is applicable to any organization that allows the purchase of its services or goods through the internet by the end user for their own use. Some of the other forms of this type of e-commerce aside from online retailing include online auctions, online travel offerings, banking over the internet, e-health services and online real estate websites (Nanehkaran, 2013).

### **2.3.2 Consumer-to-consumer**

Consumer-to-Consumer (C2C) is an electronic or internet facilitated medium, which involves transactions among users. It is a business model which two consumers deal business with each other directly. It is a type of e-commerce that includes the online-enabled transactions of goods or services between consumers using a platform provided by a third entity. It provides a way an individual can exchange goods or services directly without the need for being an accredited or registered business entity. This form of electronic commerce is presumed to expand in the future since it eliminates the costs of utilizing another organization (Nanehkaran, 2013). An example of

such type of e-commerce is an online payment made between two individuals for the return of goods or other property received by one of them

### **2.3.3 Consumer-to-business**

Consumer-to-Business (C2B) is the transfer of services, goods or information from persons to business. It is a business model where end users create products and services that are used by business and institutions. (C2B) is a type of e-commerce, where the consumers sell their goods or services to organizations are paid by these companies (UNCTAD, 2001). It is a reversal of the predominant business design where the businesses are the ones selling goods or services. This model was introduced majorly due to the need for providing a platform to connect a huge group of people to a bidirectional commercial relationship. In comparison to the old brick and mortar business models, which are uni-directional, this business design is of bi-directional nature. With reduced technological costs, consumers can now obtain them where previously only a big organization could only afford them. Examples include high performance computers, powerful and strong software and digital printing.

### **2.3.4 Business-to-business**

Business-to-Business is a type of commerce transaction that exists between businesses or a transaction that occurs between a company and other company to transfer of services and products. A possible explanation for this might be that Business-to-Business includes online wholesaling in which businesses sell materials, products, and services to other businesses on the websites (Nanehkaran, 2013). (B2B) could be between a manufacturing business and a wholesaler, or between the wholesaler and a normal retailer. A large number of companies are utilizing social media to allow their employees to engage with each other's just as they are using the same platform to interact with their consumers. The communication between employees is called business to business. This term originally was used to distinguish it from the relationship between business and consumers; it used to describe communication between businesses.

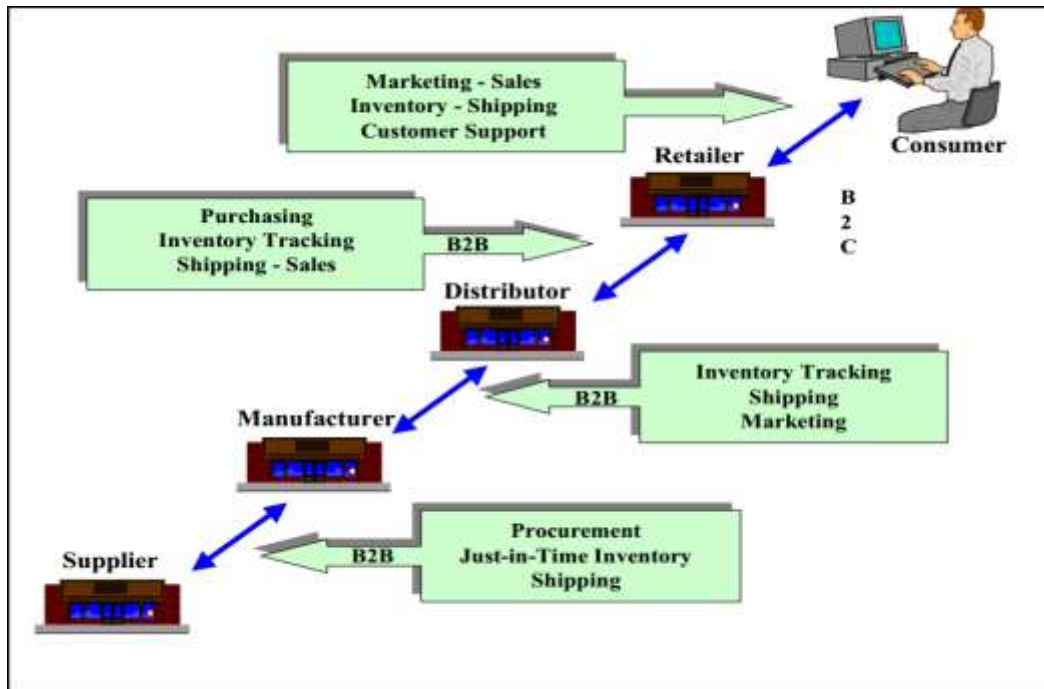


Figure 2.2 Online shopping supply chain model (Source: <https://www.cengage.com>)

## 2.4 Features of online shopping webstore/website

The owner of wholesaling and retailing company who have an online store need to design or upgrade their online store or sale website with the following main features that online shoppers demand from their internet-based shopping experience. In online sells business, the web-based storefront has to be fitted with these important features. This means supporting to attraction merchants to their online shopping.

### 2.4.1 A mobile website option

Online shoppers, no matter what computer they use, need to be given comfort and immediate ease-of-access to the online store. The online store should be based on a responsive design template and all users, at any time and from anywhere, need to have their features available. Older concept models were not structured to be adequately versatile for the different screen sizes available today. This is essential; all devices that access the internet need to be enabled by the website and its content. All features and functions should work perfectly, providing a seamless mobile experience for the browsers that complement their overall view of your brand. Online shoppers are demanding, and you can find quick access to all of your features on your mobile device, just as easily as on your PC (Tan, 2014).

#### **2.4.2 Free or competitive shipping options**

81 percent of online shoppers believe that free delivery is the most critical part of checking out online, according to the United Parcel Service's (UPS) customer experience report called The Pulse of the Online Shopper. Other shipping options, including an approximate cumulative shipping early in the shopping experience, also scored very high. (Siqi, 2017). After incorporating delivery, several shopping carts are abandoned because of an unexpectedly high number. How versatile online shoppers can be, however, is shocking. When done well, free or affordable delivery options will drive sale success. In order to get free shipping, the correct formula will allow customers to increase their cart total.

#### **2.4.3 Advanced navigation and search functions**

Ask a few honest clients or friends to take a spin around the created website and provide input on it. This quick, efficient method is often ignored, but is of vital importance. The online store should be set up in such a way that shopping is smoother than going to an online store. To create an online storefront that should be able to assist and direct a lot with this 'ease-of-navigation' process, the e-commerce software must be selected. It should be updated if the platform does not have the necessary resources needed (Johanson, 2018). For online shoppers to follow, an e-commerce solution should give a clear cut, intuitive flow. They need to find the stuff they like, browse and try out items they might be interested in. In online shopping, navigation and search, options are important.

#### **2.4.4 Superior photos and image options**

Pictures, photos and videos are very important for online shoppers to order the product they need in the case of online retail if the internet infrastructure supports to browse. In ways that make them run away or push them to buy, the product images can affect online shoppers. Product photographs and choices are key in an internet store because online shoppers cannot physically see, touch or try the product they are interested. The pictures of the product should be transparent and taken with high-resolution cameras. To give the consumer a better picture of the product, the images should also be taken from multiple points of view of the product. Viewing angles zoom, multiple

images, and more should be included as image options (Gupta, 2014). Nevertheless, this does not mean that the photographs should be unnecessarily improved or exaggerated.

#### **2.4.5 A detailed product description**

Online retail is also about selling a tale, an idea that fits the audience's requirements or current desire. Online retailers clearly do not have a live store attendant (although some can give live chat), so the sales products must have a summary of the product that takes the place of the best salesperson. With bright and attractive content that stimulates the browsers to need to purchase, they should be described. While imaginative and humorous explanations are always a strong selling point, it is also important to provide important information. A successful product description must include information such as the expiry date, dimensional measurements, weight, date of producers and practical uses. The availability, where applicable, of a guarantee must also be referred to in the definition. The retailer, for example, sells food products; he has to consider listing the ingredients, so they make it easier for people with special dietary needs or disabilities to purchase (Maës, 2018).

#### **2.4.6 A fast guest check-out option**

During the actual process of checkout, one of the final but most relevant factors of online shopping arrives. In a true brick-and - mortar store, shoppers typically have to wait for cashiers in line. The queue is long during peak hours, and they end up spending a longer period there. This is one of the key reason why online shoppers skip real shops and go to meet their needs online. Online shoppers inquire for the online store and make almost immediate choices about whether to buy or drop it. It enables them to work through the background of e-Commerce and find no fault in the flow of checkout or shopping (Kutz, 2016).

### **2.5 Payment methods**

The very important issue in the online market transaction is how the customer could pay money to merchants for the goods or services they buy online. It is not possible to take place the online transactions if the payment type and methods used are not available. Researchers show that the fastest and cutest method of payment facilitates the online transaction helps to increase online sales (Combe, 2006). Online merchants should better to select and offer the best alternative payment

options when they design their online store that can satisfy their customers' needs and contribute to revenue growth. This is because of the online shoppers' low interest of using their traditional credit cards to pay for the goods they buy due to the frustration of internet security issues and fraud when they write their credit card number/information on the internet.

The other reason why online shoppers' interest shifts to other payment options is that many consumers do not have credit or debit cards, while others do not want to increase credit card balances or expose their card information online. Furthermore, many customers have safety issues about the online use of credit or debit cards. Each customer places a great attitude on the online shopping scenario and places a high value on the alternative of simple, convenient, safe and risk-free payment method as they do on the offline transaction (Levy, 2010).

Many surveys on the online market reveal that offering more alternative payment methods for customers can significantly result in increased sales and earn large revenue for online merchants. If merchants are offering shoppers more than two payment alternative options, consumers can easily complete their online transaction and get satisfied. The number of consumers can also increase and at the same time, sales of the product significantly increase. It has also been shown that the availability of alternative payment solutions increases the average order value, as they can give consumers access to additional credit outlets. In addition, providing extra payment options, in addition to improving sales and customer loyalty, can provide new ways for merchants to minimize their overall payment costs. Some options for payment incur lower transaction charges than debit and credit, and many merchants seek to optimize their payment mix by encouraging shoppers to use lower-cost payment mechanisms (Lupu, 2016).

Online payments are the way shoppers can opt to pay for their online purchases and where, through the agreement of the buyer and vendor, the payment method itself is chosen online. Online refers to the provisions that are made online in the merchant's online shop or inside the online shopping application when choosing the payment method and the payment mechanism it sets. It does not, however, involve the actual transfer of funds that must be initiated online. It should be taken into account that not every user wants, or even has the ability to do so, to pay online and in real-time. Whenever online shoppers choose to pay for their online purchase with an online payment method, the online payment method should be displayed at the merchant's checkout or payment page. It

should have a clear recognition by the shopper through means of a well-known logo (e.g. Master Card, Pay Pal, i DEAL) or common all-purpose words like 'credit cards', 'bank transfer' or 'payment-on-delivery' (Lupu, 2016).

### **2.5.1 Online payment methods**

Purposefully there are many several methods of payment to complete the transaction for different online shopping sites and apps in more specifically (Garima, 2016). Online payment methods refer to online payment method brands (Master Card, Bitcoin, Boletto, and Bancontact), online payment solution brands (e.g. Klarna, PayPal, Master Pass) or directly to one of the payment methods (e.g. 'bank transfer'). In general, online payment methods can be classified as the following categories.

**Credit Cards:** Credit cards are issued to cardholders after the issuer has established a revolving account, providing the cardholder with a line of credit on which the cardholder can borrow money for payment to the merchant (Taddesse & Kidan, 2005). Credit card balances are typically revolving where part of the balance has to be charged (with interest and/or charges) on a 30-day basis before the entire balance has been charged. On credit ca. The three-corner scheme model consists of three parties where the issuer (having a relationship with the cardholder) and the acquirer (having a relationship with the trader) are the same party. This ensures that there is no need for any payments between the issuer and the acquirer. Merchants are also paying a relatively high commercial service fee. Examples of this setup include the Diners Club, Discover Card, and American Express. In the four-corner scheme model, the issuer who has a relationship with the cardholder and the acquirer who has a relationship with the dealer are two separate entities. The four parties shall consist of the buyer, the merchant, the issuer and the purchaser. The four-party model is known for the interchange fee revenue model. The exchange charge is a cost – set or a percentage of the transaction.

Figure 2.3 illustrates the credit card payment procedures of online payment method. Process1 indicates the issuing process of card for cardholder by the issuing bank. Process 2 is searching for products through the web by the customer. Process 3 enables the buyer to make payment via online payment service. Process 4 is the payment way from payment processing network to card association network. Process 5 is ordering the selected product. Process 6 product selection. Process 7 delivering the selected product. Process 8 order checking. Process 9 is transfer of money

from issuing bank to acquiring bank (Kraninger, 2019). Process 10 processing of paid money to the merchant through payment association network. Process 11 merchant received the money from acquiring bank via independent sales organization.

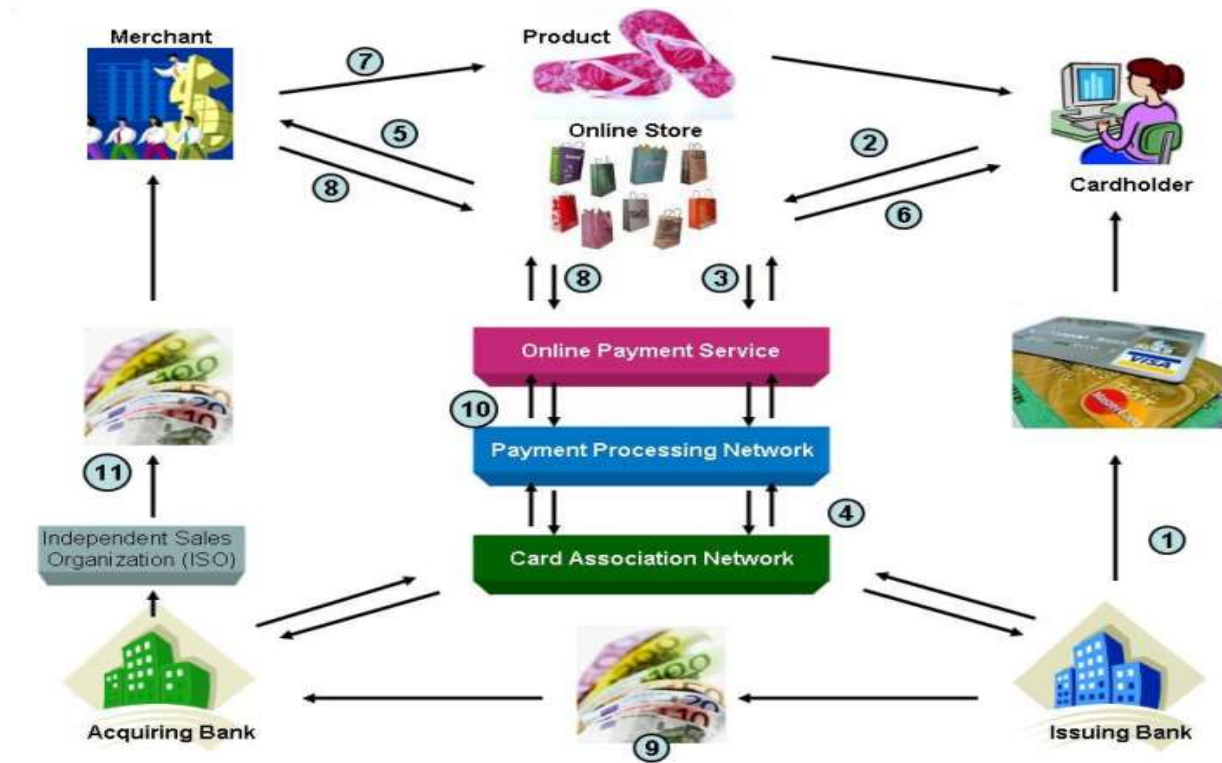


Figure 2.3 Structure of online credit card transaction (Garima, 2016)

**Debit Cards:** Debit cards are directly connected to the purchaser's account (Qatawneh, Aldhmour, & Alfugara, 2015). Debit cards need a PIN when used at the point of sale (POS), ensuring that debit card transactions are more safe than credit card transactions, by applying a two-factor authentication as a way of confirming the identity of the card / account holder. Several providers also offer the option of using the debit card online, via checkout services connected to the card providers. In these cases, the consumer has a password in place for authentication purposes.

**Bank transfer payments:** An online bank transfer, or an online wire transfer, is essentially the transfer of funds from one bank account to another. When this happens within a single bank system (also referred to as 'on-us' transactions), it normally happens in real-time (Betty, 2013). Transfers

between banks can take longer (depending on the cut-off times) and are subject to speed fluctuations depending on the size of the transfer.

**Direct Debit:** Under the Direct Debit payment system, the payer and the biller must both hold an account of the Payment Service Provider (PSP) that enables the biller to receive funds from the payer's account if a signed mandate has been provided to the biller by the payer (Moertini, Athuri, Kemit, & Saputro, 2011). The payer's mandate is to allow the biller to obtain the payment and to direct the payer's bank to pay the negotiated collections. Payers are entitled to advise their banks not to allow any list of direct debits from their accounts. The term of office ends 36 months after the last set commenced. The signed mandate shall be held by the biller for as long as the mandate is valid and for at least 14 months after the last set. Mandate can be issued in paper or electronic formats.

**Cash:** Cash is not an online payment method, but online shoppers often choose not to pay by online payment methods and in real time (Omollo, 2016). This is due to factors such as the lack of protection of online payment systems and, most significantly, most of the people who prefer cash payment are those who do not have bank accounts and do not have access to banking products ( e.g. online banking e-payments) or debit / credit card products.

## **2.6 Infrastructures for e-logistics**

ICT infrastructure is vital for the success of effective e-logistics. Proper information and communication technology infrastructure must be established in order to implement e-payment and e-logistics system. Communication infrastructures such as the Internet closed and secured WAN, and leased telephone lines must exist adequately. On the other hand, electronic access devices to e-logistics system such as PC, mobile phone and other Point of Sale (POS) devices (for instance ATM) are also important elements to build successful e-logistics and e-payment infrastructures (Milicevic, 2013). To enhance ICT and Internet infrastructures in Ethiopia, practical measures such as telecom network tower expansion and increased Internet server access points have to be extensively built to promote reliable and successful e-logistics and e-payment system.

Due to poor telecommunication infrastructure, organizations that run e-logistics system faced many challenges (Kebede, 2009). ETC (Ethiopian Telecommunication Corporation), the only telecommunication provider in the country, was, so far unable to provide reliable and fast telecommunication services. Frequent connectivity failure of telephone lines and other network lines had put banks and other organizations into trouble. Low bandwidth, particularly, for Internet is the other major problem. Availability of Internet especially at peak hour is also low. Organization that run e-commerce system also face power problem. The frequent electric power disturbance has forced these organizations to buy generators. This has increased their operational cost.

The above problems are some of the reasons that hinder e-logistics expansion in the country. However, this condition is currently changing. Both the government and the private sector are in the process of expanding their ICT infrastructure. Currently, the government is doing some good work to expanding ICT usage in Ethiopia. Recently the government has passed the national ICT draft policy for the country. One of the top priorities in the draft policy is the establishment of national information infrastructure. The policy states the role that national ICT resources play in building government capacity that would help to bring the desired development in the country. In line with this, ETC is making big effort in expanding the country's ICT infrastructure. ETC has already deployed high-speed network in the country (broadband and multimedia networks). The capacity of Internet has also grown in terms of bandwidth, coverage, and availability.

## **2.7 E-commerce logistics or e-logistics**

The relation and execution of e-commerce and e-logistics should necessarily performed in two forms in terms of how goods and products can be traded electronically using internet and ICT (Meeting, 2003). The first type is full electronic transact products for which all elements of transactions (advertising, ordering, billing, purchasing, payment and distribution) may be completed electronically without any physical transaction involvement. Examples of these goods are software, newspapers, music, films, customer services, games, videos and so on. The second type is partial electronic transact products includes goods for which some or most transactions can be effected electronically, but the actual delivery to destination requires the use of physical transport facilities.

According to (Joseph, Laura & Srinivas, 2003) e-logistics is used interchangeably with internet enabled logistics or e-business where it supports the delivery of goods and services through utilization of Information Communication Technology (ICT) as part of the business activities and in execution of various logistics activities.

The extended form of application of logistics with help electronically and ICT integrated business to the existing logistics system brought the concept of E-Commerce logistics, or e-logistics. Since it is impossible to get any form of complete electronic commerce without the realization of effective delivery system.

Products need to be customized on the way in which Customers demand and should be delivered at very high speed with complete order flexibility and convenience. Customers may also want to be able to track online their orders instantly from the moment they click the Buy button until the moment the package arrives on their home, and be able to reroute packages, determine delivery costs and time-in-transit, and break up their orders for multiple ship-to addresses.

In order to improve the efficiency of the flow of goods and reduce distribution costs in various distribution channels; the recent logistics practice needs to be integrated with ICT corresponding to the development of online shopping (Yingyua & Huanga, 2016). On the other side, the current growth of E-commerce and online trades also contributed to the expansion of the logistics market, promote the development of technologies related to logistics.

The entire task of e-trade to run business is not as simple as creating one's own website and selling products online. In addition to setting up of a technological online platform for business, the critical aspects of logistics, suitable infrastructures and product configuration have to be considered (John & Khoo, 2016). Thus logistics has a very important role in e-commerce for both the integrated up and down stream supply chain strategies and for the last mile delivery of products. Online customers want their goods to be delivered home fast and convenience.

## **2.8. Delivery of online sold products**

The Internet provides retailers with potentially powerful opportunities to boost sales, increase market share, and generate new business through new services. One of the challenging

questions that retailers are facing in that respect is how to organize the logistic fulfillment (shipping and delivery) processes during and after the transaction has taken place.

Retailers have to communicate clear anticipations on package delivery time in the process of selling regarding package delivery and executing on delivery promises leads to advocacy for the retailer. There is a definite correlation between the distance traveled by the package and the amount of time required in transit. Across continents, prompt delivery of orders and free shipping fuels online retailer recommendations. Package tracking services are considered to be of value to almost all customers (Ganesh, 2014). Shipping and delivery are key value drivers in the online shopping experience, with customers choosing different choices to meet these needs. Online shoppers expect to have a range of delivery options open, with more than half-expected regular or express delivery. Online shoppers have confirmed that they prefer standard delivery most of the time, meaning that even though customers expect a range of delivery choices.

### **2.8.1 Home delivery**

The rapid growth of electronic commerce changes the situation of urban logistics organizations providers (Miroslaw & Polkowski, 2016). The final stage of delivery of goods in the city using parcel transfers and freight forwarders is known as home delivery or last mile delivery or city logistics. Home delivery is growing since the rise of internet shopping as part of city logistics to deliver sold goods to the customers of home. It is becoming an attractive market for providers of city logistics (Johan & Browne, 2014).

The freight traffic in the urban areas is greatly affected by Internet shopping or home delivery. Since an internet, shopping is highly intertwined with express delivery to homes and therefore has an impact on urban freight transport. Even if the city logistics providers are dedicated to provide home delivery services for online buyers, many online shopping customers picked up the goods by themselves.

Last mile delivery or home delivery operators are become critical to serve the increased online shopper end-recipients who need quick, low-cost, convenient and high-quality delivery providers to transfer the goods to the final stage of their journey. The operation of last mile delivery process in B2C e-commerce have to efficiently perform even more challenging tasks of end delivery of

goods including; more stops per route; greater spread of delivery locations and a higher number of unsuccessful deliveries. Geographically difficult residential destinations and villages of customers with uncomfortable roads to deliver products are critically more challenging for last mile delivery operators. The new domestic regional carriers and local carriers should be created and involved in the last mile delivery operation to overcome these challenges and to generate their own local businesses (World Economic Forum, 2018).

## **2.9 Common characteristic factors of e-commerce**

The major promised characteristics of e-commerce requirements were first identified and analyzed their influence on the implementation of Internet market. The useful information and data were collected from the literatures with respect to the elements on which the analysis was taken place. The researcher identified the following elements.

- E-logistics
- Infrastructure
- Government e-commerce regulations
- Payment methods
- Customers awareness and skill
- Customers interest and readiness
- Cost of implementation
- Access Electronic devices

These above elements were identified as the independent variables of the research that have great influences on the implementation of e-commerce in Ethiopia. The reliability, validity and descriptive statistics of these variables were analyzed by the SPSS tool.

**E-logistics:** - The logistical manipulation process of online market and e-commerce is called E-logistic. It is the logistical process that embraces every logistical operations related to an online market takes place. These operations are the dynamic set of communication computing and collaborative technologies that transform key logistical processes to be customer-center by sharing data, knowledge and information with supply chain partners. The key elements of e-logistics are multi-channel operation, cross border functionality, warehouse layout and inventory, planning and

forecasting and performance management. Success in e-logistics depends on the focus selected for the online shop. Proper collaboration, transparent communication with customers for delivery and returns are the other key factors that determine the success of e-logistic (Wang, 2016). The e-logistics unique features over the traditional logistics are; by its automating logistic process and application of Internet based technologies.

**Infrastructures:** - Infrastructures in this case includes logistics infrastructures in both urban and rural areas and technology infrastructures that support the adoption and successful implementation of electronic commerce. Thus these technology infrastructures are e-commerce infrastructures such as; reliable telecom service, fast internet services and accessibility of electronic devices for both firms and customers such as smart mobile phones, personal computers, tablets and macs. The adequate level of roads and other means of transportation systems must be built for the convenience of regular transports as well as express deliveries that play great role for successful implementation and adoption of e-commerce (Onditi, 2017).

**Legal and Policy Framework:** - In general, policies that ensure legal certainty, security and consumer protection for online transactions and interactions should be enacted. These include the resolution of issues such as transactional security, electronic contract enforceability and the authentication of individuals and documentation. It (includes online payments, the use of electronic currency and foreign exchange liberalization), an efficient, inexpensive and reliable telecommunication system (long-distance market, competitive local exchange carriers, and high speed lines), legal mechanisms for the enforcement of contract law, consumer protection and defense of intellectual property rights, an efficient tax administration, and swift, transparent, and reliable customs operations (Neely, 2014). The following factors, often influenced by national policy, should be considered: Perceived political risk, Predictability of the legal environment, Soundness of economic and monetary policy, Openness to foreign direct investment, Convertibility of local currency, Restrictions on capital flows, Credit card usage, Credit card processing protocols, Access to credit, Entrepreneurial culture, Access to startup capital, Regulations and restrictions on small business.

**Electronic devices access:** - Electronic devices including both hardware and software components such as desktops, macs, personal computers and smart mobile phones are the most crucial elements

to run electronic transactions efficiently and effectively. Since the electronic market conducted by electronic device in addition to the availability of Internet, electronic devices must be available in both side's seller and customers (Afshar, 2011). Mobile devices are an important part of everyday life; especially customers spend much more time in a day on their smartphones. People want to be able to browse the Internet and access necessary information from their favorite devices without any headaches or second estimates.

Responsive web design automatically makes a mobile store suitable for mobile devices that are used without distortion of the view. A catching web design is one of the basic requirements of e-commerce business to start from ideas to products and beyond.

**Payment method:** - Payment methods for online sold products can completed in various ways; i.e. Offline payments (cash on delivery), electronic transfers, bank transfers and online payments using internet. Payment systems in electronic devices such as mobile phones and PCs can be made using of electronic networks and internet (Rachna, 2013). Using this method a buyer can make online payment for his purchase of goods and services without physical transfer of cash and checks irrespective of time and location.

**Customers' awareness and skill:** - (Individual readiness): This factor is divided into individual psychological factors and individual structural factors. Psychological factors consist of elements, which may reflect individual beliefs regarding a change to a new technology, identifying problems, and the level of agreement with the changes (Arshad, 2020). Structural factors are related to the ability of an individual to adapt to the new technology information literacy knows when and why you need information, where to find it, and how to evaluate, use, and communicate it in an ethical manner. Information literacy is a set of abilities requiring individuals to "recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information

**Customers' interest and readiness:** - Buyers interest and readiness to order goods from online stores by browsing through internet may be low due to various reasons. These are security reasons, fraudulent issue, quality issue of products, lack of transaction trust and fake websites that post wrong descriptions of products (Desai, 2015). These factors decrease customer's readiness and interest to buy product online. The study of e-commerce more importantly in business to customer (B to C) model in the perspective of customer's behavior reveals that community believes and

behavior has significant factors on the adoption process of e-commerce and other relating new emerging technologies.

**Cost of implementation:** - As it is mentioned earlier, selling of products online is a little difficult business for beginners than existing business. Because starting e-commerce requires additional costs for internet and telecom billing, electronic device purchasing costs, ICT professional hiring costs and website development cost. Businesses and enterprise have to consider these costs and make sure they have generated their capital potential when they want to start selling their products online. It also leads traditional retailers and wholesalers not to transform their businesses to technological supported modern online business (Khan, 2016). Cost of implementation has large influence on the establishment process of e-commerce to transform business from traditional retailing to modern online business.

## **2.10 Review of related studies**

In this section, a detailed summary of related works in the area of e-commerce and online shopping is reviewed for the intention of validating the study and to identifying the research gap. This is required to propose the correct adoption model of online selling for Ethiopian traders and businesses. Several studies were conducted in the area of online shopping in both developed and developing countries of the world. However, for the purpose of a work the preferable related works should be those that are done in, developing countries are best suited in various similar perspectives like socio-economic, political and behavioral attitudes with Ethiopia (Acosta, 2008). This is why the developing countries, most importantly sub Saharan African countries have the same infrastructure, economic, political and social level of living standard since they lack economic capability to furnish their extensive and massive needs of infrastructures that enable to adopt e-commerce as well as other related emerging technologies. The details of e-commerce adoption model articles done in various regions of the world have been presented as shown below in next paragraphs.

An article reviewed by Amino, Surah Abiding “Challenges Influencing against Adoption of Online Shopping in Retail Industry in Nigeria” with objective of examining the challenges of online shopping in Nigerian retail industries (Abiodun, 2013). The data source of this article was the secondary source. It has identified numerous obstacle challenges that influence against the implementation of online shopping of retailing industries in Nigeria. According to Abiodun the

perceived challenging barriers include cultural barriers, infrastructure challenges, security concern, perceived risk, and inadequate regulatory framework. These challenges are the significant tackles that result in a very slow adoption process of online shopping in Nigeria ( Abiodun, 2013).

There are factors that affect and slow down the adoption and evaluation of online selling and e-commerce on small and medium enterprises (SMEs) in Kenya particularly in firms like Tours and Travel (Wanjau & Rebecca, 2012). The article was reviewed in the objectives of determining the effect of leadership styles, resources, infrastructure and competition on the adoption of electronic commerce among in Kenya and the method of study was used survey research design in collecting data and simple random sampling procedure. Even if the final finding of the study has shown adopted e-commerce in tour and travel firms, leadership style, resources, infrastructure, competition and positioning significantly influence the adoption of electronic commerce on other S MEs.

A great finding obtained by an analytical study in China “on issues influencing e-commerce in developing countries” has classified implementation and adoption factors in three categories (Alev & Murray, 2014). These are

- **Infrastructure:** Access to Technology & Connectivity, Telecommunication Infrastructure, & Supporting E-Services,
- **Political/legal:** Governmental Policies and Support, & Legal Environment and Practices, secured and dependable transaction situation.
- **Socio-economic:** Business Environment, Consumer and Business Practices, & Social and Cultural Characteristics,

Infrastructure technical and managerial-organizational factors were explored by the qualitative and quantitative method research conducted in Iran under the title of “Limitations of E-commerce implementation in developing countries: a Case study of Iran” has constrained the development of e-commerce and online shopping (Mohanna, Yaghoubi, & Motlaq, 2011). Social-cultural barriers, low IT literacy rates, insignificant demand for online business and e-trust among the traditional traders and consumers have also been shown in the study as the major drawback the growth of E-Commerce.

The lack of sufficient basic infrastructures like technology telecommunication high access connectivity access to equipment. Socio-cultural barriers such as transactional trust shopping as a social place limitation on personal contact and language content. Socio economic barriers like economic conditions, educational system, payment system, logistics and the lack of government policy and national ICT strategies are significant barrier in the adoption and growth of e-commerce in developing countries (Lawrence & Usman, 2010). The statistical data were collected by surveying SMSEs of stratified determined sample.

Absence of legal regulations and security, inadequate banking systems, poorly developed telecommunications infrastructure, especially beyond urban areas, and high rates of illiteracy are the main obstacles to adopt online shopping in developing countries. Other considerable barriers to implementing e-commerce in developing countries also lack of the necessary financial, legal, and physical infrastructures. Cultures and business philosophies of developing countries can also limit the applicability and transferability of the e-commerce models designed by developed countries (Abdulkadir, 2012).

Table 2.1 Summary of literature reviews

<b>Author</b>	<b>Year</b>	<b>Methodology</b>	<b>Key findings</b>
(Alev & Murray	2014	Analytical study	Infrastructure, political/legal and Socio-economic challenges were major hindering barriers to adopt e-commerce
Abiodun	2013	Data source was the secondary source	Challenging barriers include cultural barriers, infrastructure challenges, security concern, perceived risk, and inadequate regulatory framework
Wanjau & Rebecca	2012	Survey research design in collecting data and simple random sampling procedure	Absence of legal regulations and security, inadequate banking systems, poorly developed telecommunications infrastructure, especially beyond urban areas, and high rates of illiteracy are the main obstacles to adopt online shopping
Mohanna, Yaghoubi, & Motlaq	2011	Qualitative and quantitative method research conducted	Infrastructure technical and managerial-organizational factors, Social-cultural barriers, low IT literacy rates, insignificant demand for online business and e-trust were major drawbacks of growth of E-Commerce.
Lawrence & Usman	2010	Data was collecting using survey method from the stratified samples of SMSEs	Lack of sufficient basic infrastructures, Socio-cultural barriers such as transactional trust, limitation on personal contact Language content. Socio economic barriers like economic conditions, educational system, payment system, logistics and the lack of government policy are significant barrier in the adoption of e-commerce.

## 2.11 Review of e-commerce adoption models

The theoretical models of e-commerce adoptions in the previous studies are mainly concern the attitudes towards the consumers in B-to-C e-commerce, organizational factors, customers' readiness and ease of using the technology and usefulness of the adopted technology. There are many literatures regarding the above-mentioned aspects of adopting e-commerce technology in both the developed and developing country. These theoretical models developed initially by numerous researchers are Theory of Reasoned Action (TRA), Theory of Planned Behavior (TPB), and Technology Acceptance Model (TAM). Among these, the technology acceptance model (TAM) has wide acceptance and serve as an initial framework for many researchers and model builders.

**Theory of Reasoned Action (TRA):-** Has given more emphasize on beliefs and attitudes that result intentions and behaviors of an individual and community to accept the technology (Maragia, 2016). The theory model was the older but it is very useful for every recently developed Technology adoption models to provide basic insights regarding to social and personal attitudes individuals towards the technology.

**Technology Acceptance Model (TAM):-** Was developed based on the specific behavioral beliefs of the technology users (Awalluddin, 2011). These are; perceived ease of use (PEU) and perceived usefulness (PU) to determine individual's behaviors and intentions to use IT (Blagoeva & Mijoska, 2017). TAM was one of the most widely used and empirically validated models based on theory reasoned action (TRA) in information systems research.

**Unified Theory of Acceptance and Use of Technology (UTAUT):-** is the extended model of TAM (Technology Acceptance Model) introduced by Venkatesh et al. (2003) to relate alternative view on users and innovation acceptance and has four constructing elements such as performance expectancy, effort expectancy, social influences and facilitating conditions (Abdulhakeem, 2014). According to the model, performance expectancy is the degree to which an individual believes that the use of a system will translate into increases in work performance. The extent to which a system is perceived to be easy to use is effort expectancy. Social influence on technology acceptance can be explained, as individuals perceive that influential people believe they should use a new system. The role of available infrastructure support how to use of a new system is said to be the facilitating condition.

The above model were generally stated how technologies are accepted and diffused in the earlier periods. These technology adoption models were the original models that cannot be convenient to develop and modify the specific e-commerce technology adoption model in the present time. Since they explained the initial concepts for the old technologies and their transformation and diffusion to the communities around the world. Despite the fact that, models that did not explain well about the specific e-commerce adoption model in recent days, various researchers reviewed to develop the extended and updated new model from those old models in convenient ways for the e-commerce adoption models recently. Some of these extended e-commerce models are reviewed as follows.

**Modified Unified Theory of Acceptance and Use of Technology:** - different researchers modified the UTAUT model in various methods to integrate with e-commerce adoption model. One of the modified UTAUT model was proposed by Chiemeké and Ewwiekpaefe to examine the factors affecting individual acceptance of e-commerce in Nigeria (Chiemeké & Ewwiekpaefe, 2011). The effects of awareness, culture, cost, power, government regulation, accessibility, trust, security, and reliability on intention to adopt e-commerce were evaluated in this model.

**The Extended Technology Acceptance Model:** - the extended technology acceptance model was developed by Rima Fayad and David Paper with the title of “The Technology Acceptance Model E-Commerce Extension: A Conceptual Framework” (Rima & Paper, 2015). Rima and Fayad have suggested the extension on the TAM model to be applicable in the e-commerce field. They added four predictor variables on the original TAM model. These four predictor variables were; process satisfaction, outcome satisfaction, expectations, and E-commerce use.

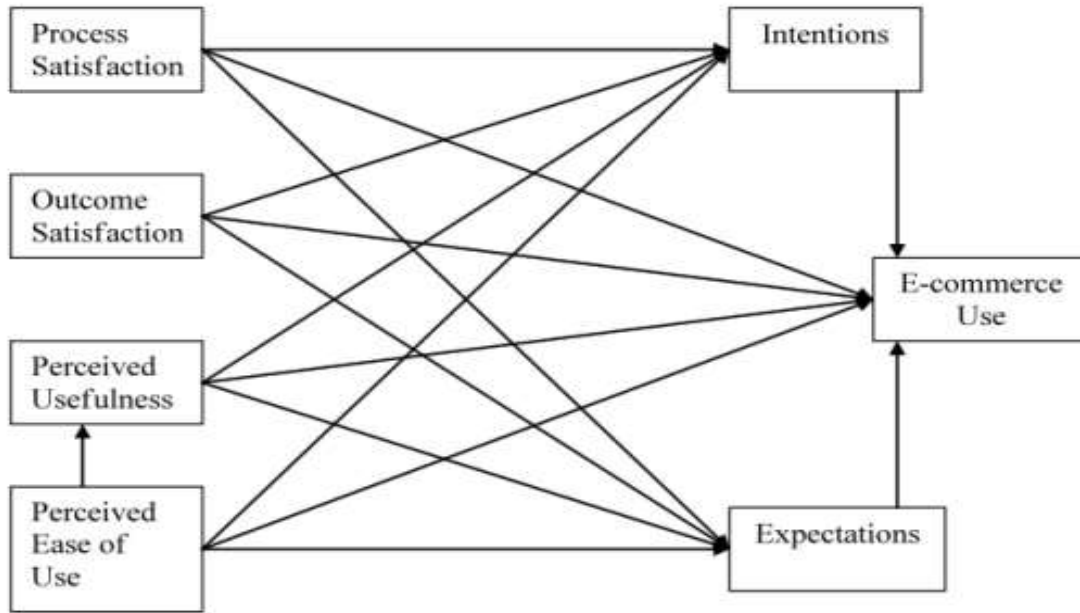


Figure 2.4 The Extended Technology Acceptance Model

However, the bellows are the particular e-commerce adoption models developed by various literals in the recent time. These are relatively the most recent and new models from which the researcher in this study have used to adopt and develop the specific e-commerce adoption model particularly convenient with Ethiopian existed technology infrastructures.

**Technology Organization Environment (TOE):-** To explain the factors that affect a firm’s decision to adopt innovation, the (TOE) framework was developed by Tornatzky and Fleischer. The suggestion of the framework was reveal that the three factors have major influence on technological innovations in organizations (Bultum, 2014). Organizational factors include informal and formal methods, communication processes, and size of the organization. Government regulation market structure and technology infrastructure the main characteristics under the environmental factor.

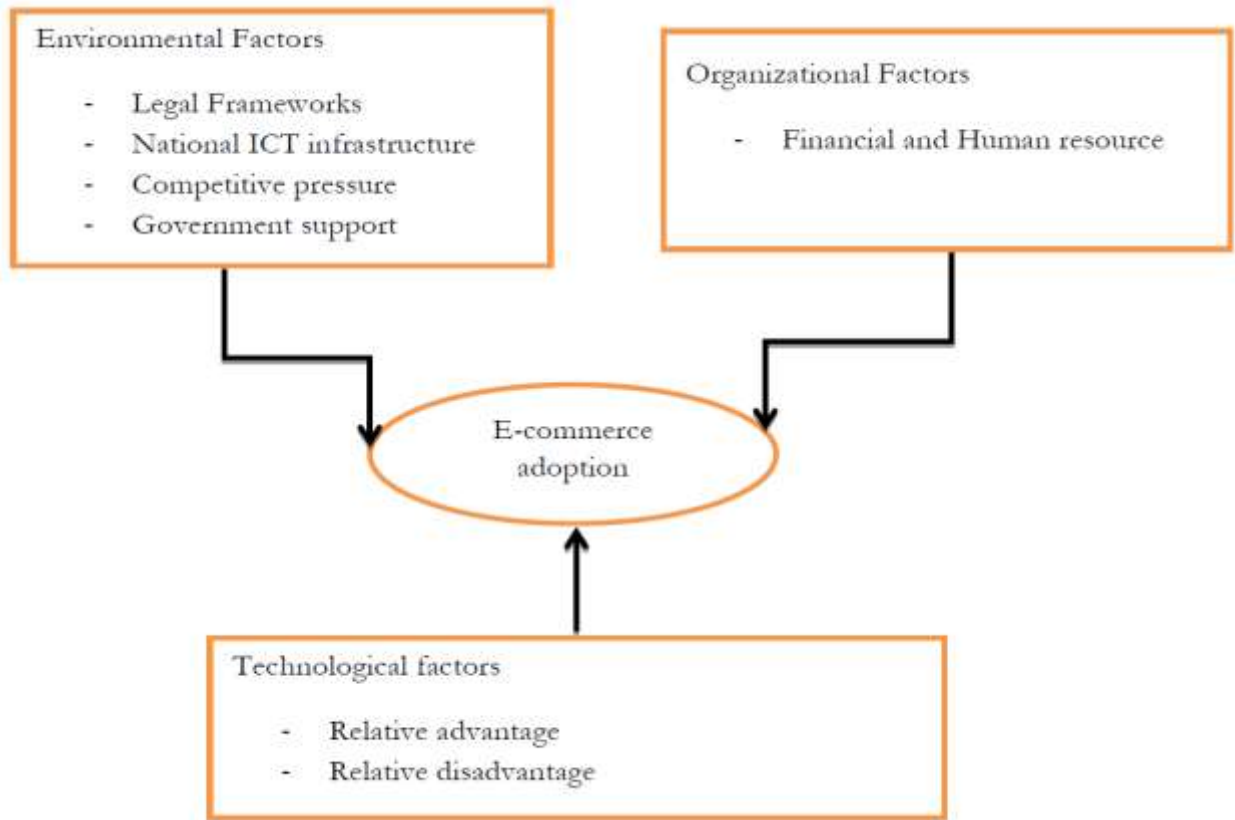


Figure 2.5 Technology organization environment (TOE) framework (Bultum, 2014)

**The e-business model:** The model was proposed by the group of authors named, Garima, Deepak, Feidu & Amare in 2016 under the title of ‘Effect of IT and Mobile Infrastructures on the Online Business in Ethiopia: Trends, Opportunities and Issues.’ The model considers payment method as the core element of e-commerce (Garima, 2016). The proposed model has client interface, merchants interface, payment gateway interface, client’s bank interface and merchant’s Bank Interface. The model depicts especially the online payment operations clearly. The entire study was also devotes much on electronic payment methods that could be applicable in Ethiopia using banks as the medium of transaction. Such payments are include internet banking and mobile banking service that enable users to make payments.

This e-business model was trying to describe the transaction process of payments made between the merchant and customers with mobile and internet banking with the help of transaction process flow diagram representation. However, it is difficult to say that the model was the complete e-commerce model. Since it does not consider so many e-business constraint players such as delivery requirements, transaction regulations, ICT infrastructures requirements and other factors. Because

these constraints are apparently existed challenges to implement e-commerce adoption model in case of our country.

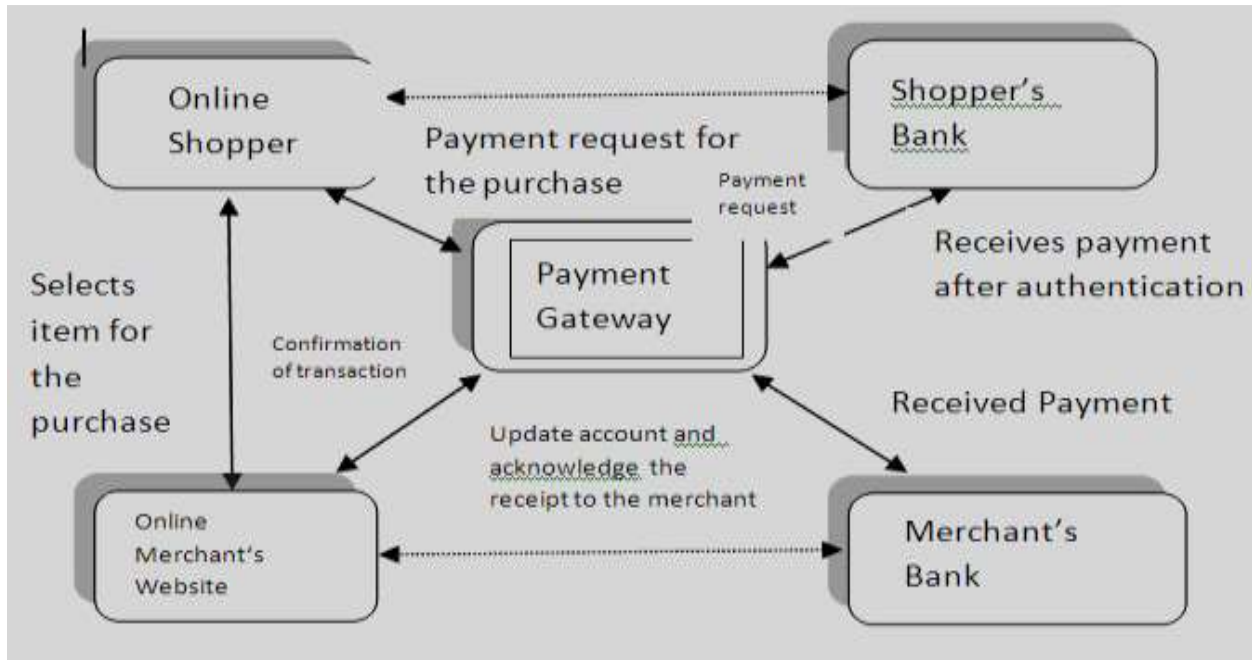


Figure 2.6 The e-business model (Garima, 2016)

### Framework barriers hindering ecommerce adoption in developing countries

An extensive review of e-commerce adoption barriers was made by Japhet Lawrence and Usman Tar under the title of ‘barriers to e-commerce adoption in developing countries’. The framework of barriers that hinder the adoption of electronic commerce in developing country was identified through literature reviews conducted by those literals. According to this model, the e-commerce barriers were absence of adequate basic infrastructural, socio-economic conditions, the lack of government national ICT infrastructure strategies and legal supports has significant barrier in the adoption and growth of e-commerce in developing countries. In addition cultural issues of the societies in the developing countries were also mentioned a considerable factor in the adoption and diffusion of e-commerce in those developing countries (Japhet & Tar, 2010).

The researcher in this study has developed a conceptual framework of e-commerce adoption with the specific hindering barriers. The Figure below shows a framework of barriers hindering e-commerce adoption in developing countries. These enabling factors were infrastructure (technology, network availability of ICT skills, qualified personnel), cost factors (costs of ICT

equipment and networks) and security and trust factors (uncertainty of payment methods, and legal frameworks), poor distribution logistics and lack of computer literacy for online purchasing.

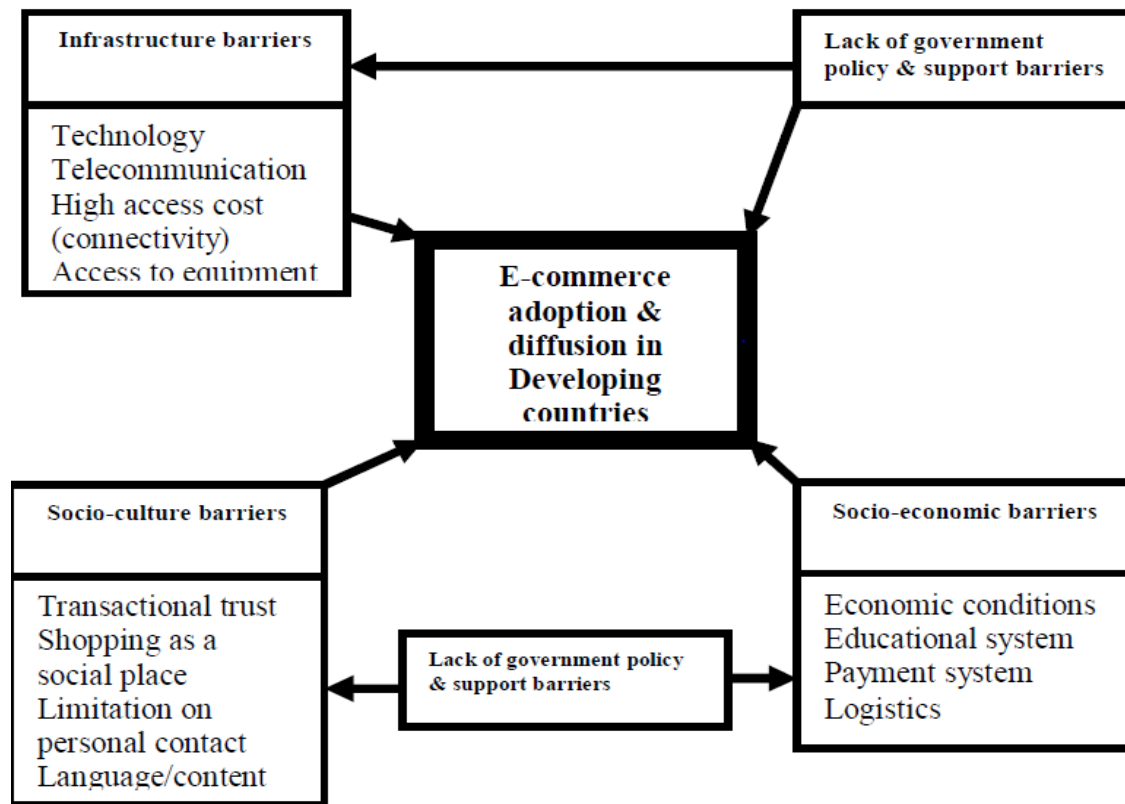


Figure 2.7 Framework barriers hindering ecommerce adoption in developing country (Japhet & Tar, 2010)

## 2.12 Gaps on the reviewed literatures of e-commerce

Based on the intension of this study, the researcher observed the gaps of related works of e-commerce adoption that have been developed in both the developed and developing countries. In most of the studies of e-commerce in the developed and developing countries, the basic requirements to electronic commerce operation have common features (Nazir & Azam, 2020). These e-commrce operation requirements are: ICT infrastructures, government decisions to formulate e-commerce trade regulations, logistics infrastructure and system, secured payment systems and other external factors like: environmental, social behaviors, customs and norms were found to be requirements for the successful adoption of e-commerce.

However, the studies made on the adoption and implementation challenges and factors of e-commerce model were different from developed to developing countries and even from countries

to countries depending on various circumstances that the researchers taking to consideration on each study and country as mentioned in sections 2.10 and 2.11 of this study. For instance, the e-commerce adoption model studies made on the countries like China, America, Canada and Europe was given more emphasis for environmental factors, social attitudes and behavior of the society to accept the new emerging technologies rather than technology infrastructural and governmental issues as the major challenge to adopt e-commerce model (Michael & Ku-Ho, 2018). Because developed countries have the complete infrastructures of technology, transportation and support of government and legal frameworks for adoption of e-commerce and other related technologies. Thus the challenges of adopting e-commerce shifts towards external factors such as environmental, social and organizational factors.

On the other hand, the e-commerce adoption model studies made in developing countries were focused on the lack of technology infrastructures and absence of responsibility of government to formulate and endorse trade rules and regulations as the main challenging factor to e-commerce adoption than other social and external factors (Idris & Edwards, 2017). This is because of the low availability of technology and logistical infrastructure in the developing countries. Even if most of the e-commerce adoption models developed in developing countries had various common challenging factors, the detailed technical and practical variations were observed on it. Thus, the gap for this particular study was identified based on this principle. Considering the “Framework barriers hindering ecommerce adoption in developing country” from which the adopted model was driven in section 2.11 shares the same major common elements. However, the modified major elements e-logistics and payment method has been taken as the gaps for this study. Finally, the researcher dedicated to propose e-commerce model that suites best with the available Ethiopian infrastructures by considering the infrastructure and other factors identified on the model studies of developing countries.

# CHAPTER THREE

## RESEARCH METHODOLOGY

### 3.1 Introduction

Since the research studied practically appears to be descriptive research, the sample and population of the study area were specified in order to obtain more appropriate, relevant & accurate data. Furthermore, the relevant and accurate data depends on the population size and good sampling techniques. In a descriptive type of research, most of the data have a chance of being qualitative data than experimental type of research (Teddlie & Yu, 2007). However, the quantitative data have to be substantial whenever it is necessary. Therefore, both qualitative and quantitative data are practically applicable in this research.

The study gave more focus to traditional retailers who sell physical products and merchandized goods than service products since the delivery of goods to customers is more challenging than service products. This was why the study focused mainly on the physical products and goods to be traded on the online market and its difficulties to practice in our country. The other reason was selling of goods online enhances the efficiency of downstream logistics or delivery of physical products in the entire supply chain system. One measure of the efficiency of logistics is the minimum duration of products in the stock. Thus selling of products online highly reduces the number of stokes in the physical store. However, the reduction of number of stokes in physical store is not an easy task without the comparative advancement of electronic logistics or e-logistics.

During the course of accomplishing this thesis, the research methods were started with determination of study sample from the given population and follows with collection of both primary and secondary data in the study area. The data collected were qualitative or quantitative for empirical analysis. Observation and survey of small business enterprises, wholesalers, retailers and banks found in Addis Ababa & Hawassa areas are the core data centers for the accomplishment of this research.

After the sample determination was completed, data were collected by using both primary and secondary data collection methods. In the primary data collection technique, questionnaires and interview were extensively conducted.

Generally, the sampling design and the potential data sets are described in this chapter depending on the study population size and sampling frame. The sampling frames of the population in the study were wholesalers, supermarkets and retailers found in Addis Ababa & Hawassa cities. The detail descriptions are presented later on in this part of the research. As the sampling process has completed the process of data, collection is made and data organizing, coding, and analyzing follow to complete the tasks in this chapter.

### **3.2 Study area description**

This study was conducted on two locations in Ethiopia i.e. Addis Ababa and Hawassa cities. These two places are selected due to their strategic convenience for this particular research. Geographical closeness to the researcher location, they are industrialized location relative to other places in Ethiopia, they are large trade corridors and mainly Addis Ababa is the biggest city in the country which makes it popular for every business activities including to establish the newly emerged online market in the country. These above mentioned points are identified as the main reason for the researcher to select these two city where this research has been conducted on.

Addis Ababa is the capital city of Ethiopia, which has an estimated population of around 8 million people resident. It is a diplomatic and political center of Africa (Tewodros & Girma, 2008). There are more than 92 embassies and consular representatives found in the city where the Organization of African Unity and the UN Economic Commission for Africa have their headquarters. It is also the most industrialized city and trade center where mass of goods and commodities were transacted. It hosts Africa's large market place known as Mercato.

Addis Ababa is located at the geographical center of Ethiopia with latitude of 9.005401 and longitude of 38.763611. The GPS coordinates of the city are 9° 0' 19.4436" N and 38° 45' 48.9996" E. Addis Ababa comprises 6 zones and 28 woredas. The city is divided into 328 dwelling associations (Kebeles) of which 305 are urban and 23 rural. The city council is made up of 18 bureaus, offices and authorities. Amharic is the working language of the city administration (Abagissa, 2019).

Hawassa is the capital city of southern nations, nationalities and people (SNNP) region found 275km far to the south of Addis Ababa (Abate & Woldesenbet, 2015). The majority of the field works of this research like data gathering, survey and observations were conducted in Hawassa

city. The reason why Hawassa city was chosen to conduct the study is due to Hawassa city is currently becoming the main trade center of the southern region of the country due to the major opportunities of resource infrastructure. The first opportunity was the recently built industrial park, which contributes significant economic activities for the city. The second opportunity was the Modjo to Hawassa and Moyale highway road currently under construction that links the city with Addis Ababa for effective transportation. The geographically strategic location of Hawassa and the connection with the border of Kenya via Moyale by major road also have its own positive impact on trade activity of Hawassa city. Even though, most of the field studies were done in Hawassa, the interviews were made with the owners/managers of shopping malls, wholesalers and retailers found in Addis Ababa and those started online selling of their goods to support and strengthen the work with relevant and essential data and to find out better result of the study.

The major economic activities of Hawassa are; trade, hotel & tourism, industry, agriculture, health, education, construction, etc. (Shibru & Woldemichael, 2018). Out of these integrated economic activities practiced in Hawassa city the trade, particularly trading of physical goods and merchandise goods were the targets for this study. More specifically, the merchandise good traders who are in high level businesses like supper markets, wholesalers and large retailing stores are intentionally selected targets. This is because of they are large businesses supposed to have high capital potential to withstand the risks of starting online selling. Their level of business is recognized by Ethiopian revenue authority as they are registered in level ‘A’ government tax payers according to Hawassa City Administration Revenue Authority.

### **3.3 Research target area**

As discussed in the research problem background in section 1.2, physical products (goods and commodities) are focused target areas in terms of product type. When considering type of businesses investigated in this research, retailers, wholesalers and supermarkets are targeted business areas. Since the objective of the study is to identify challenges and propose theoretical framework for e-commerce in Ethiopia, all the available online retailers which have official online selling websites in Addis Ababa was observed and interviewed to evaluate their experience and to identify challenges they encountered. Traditional retailers, wholesalers and supermarkets found in Hawassa city are surveyed by dispatching printed questionnaires.

Thus, this research tends to focus the study target areas to online retailers of goods and commodities. The reasons why goods & commodities are preferred for this study than service products was emanated from the aim of the study. The empowering reason to prefer physical products like goods and commodities was that challenges need to be study in this paper are more prominent than service products due to product variety and mass transportation requirements. It should be noted that product varieties are more prominent in goods and commodities than service products. This is one of the reasons for contributing challenges of e-commerce adoption on goods and commodities. Nature of products of goods and commodities for online shopping needs more e-commerce website features than service products like clear and net product image, secured payment option and convenient delivery services.

### **3.4 Population size and Sample frame**

For the study, convenient sampling technique method was applied based on suitability for the availability of information and which has a substantial share in the market to give a more accurate vision of the factors of practicing online shopping. The targeted study areas/populations were traditional retailers, supermarkets and wholesalers found in Addis Ababa and Hawassa cities. As the same time online retailers whom officially commenced selling their physical products or goods and commodities online in Addis Ababa were interviewed.

The population needs to discrete in to online retailers and traditional retailers. Population of online retailers is taken from Addis Ababa and population of traditional retailers, wholesalers and supermarkets are taken from both Addis Ababa and Hawassa to make intuitive analysis since there were not officially started online retailers in Hawassa city. Full implemented official online selling website found in Ethiopia are population of this study. Unintentionally the population of online selling sites available is all in Addis Ababa city. There is no well-established official e-commerce websites available in Hawassa city to sell goods and commodities online. Therefore, population of official e-commerce websites has been taken from Addis Ababa to determine sample size of this study. However, population of traditional retailers, wholesalers and super markets are estimated and questionnaires were dispatched to them for analyzing their thoughts intentions, general looking of online market and operational requirements to establish e-commerce for their business as a subordinate supportive information to complete the study.

Here in the case of online retailing websites found in Addis Ababa, there is no scientific method and further calculations are used to determine the sample size. Since the population size of these online dealers was very small, using sophisticated sample determining systems are unnecessary. Therefore, all the available online retailers found in Addis Ababa are assumed Ethiopian online selling websites. However, it does not mean all of the possible online sellers who have launched official online retailing websites are willing to give the interviews. There were 30 official e-commerce websites found live on the internet in various searching sites (Aga, 2017) & (Tesfaye, 2017). Out of 30 online e-commerce websites available in Addis Ababa, 17 online selling websites are undergone in the investigation. The remaining 13 e-commerce website owners were unwilling to give interviews for this survey due their various reasons. Then, the unstructured interviews were made with those online sellers whom they are willing to give interviews to identify the possible challenges they exactly faced in the course of running their businesses in internet as it has been discussed in detail later on this paper in section 3.7.

The population of traditional retailers, wholesalers and supermarkets investigated in this study was taken from Hawassa city revenue authority, a total 15,651 merchandize traders are registered in Hawassa City Administration according to Mr. Matheos Ekito. In the same way, merchandize traders of a total 336,173 were registered in Addis Ababa city administration revenues authority according to Mr. Shisema Gebresillasse, Director General of Addis Ababa Government Revenue Authority reported in six month tax income report of 2013 fiscal year. In this study, the sample size was selected using stratified sampling technique by considering supermarkets, wholesalers and retailers as strata. The samples from each stratum were drawn by applying simple random sampling technique. However, the data found from both cities were organized in levels of taxpayers, which are level A, level B and level C as shown below.

Table 3.1 Population data of retailers in Addis Ababa & Hawassa

	Level A	Level B	Level C	Total
Addis Ababa city	69,319	46,981	219,873	336,173
Hawassa city	3,557	2,453	9,641	15,651

From the above table, level A categories are considered in the research for data collection. The reason why level A categories selected is that they have relatively better competitiveness and capital potential to confidently start e-commerce and resist failed risk while beginning e-commerce. They are able to withstand the cost of establishing online sells platforms other online sale risks like fraud, home delivery, trust and other failed cases. Due to these capabilities of level A categories, it has been believed that data obtained from this category were more relevant and accurate than other level taxpayers of level B and level C.

Hence, the sample size has been determined based on this category considering numerical ratio of the two cities level A population sizes. Since the data obtained from both cities of revenue authority are not only for retailers, supermarkets and wholesalers, it should be important to estimate population for retailers only from the given holistic population size of level A tax payers considering the approximate ratio of two cities. Thus, the population level A tax payers of retailers, supermarkets and wholesalers in Addis Ababa city was estimated to be 1,247 among various sectors. Then the sample of Addis Ababa city has been determined using this population size and sample for Hawassa city should has been determined considering the ratio.

The sample size was determined using the formula given by Yamane (1967) in drawing an adequate sample size from a given population at 95% confidence level (Ajay & Masuku, 2014). The reason of using Yamane's formula to determine sample size over the various sample determining techniques such as simple random sampling, cluster sampling, systematic sampling, stratified sampling (probability sampling) and deliberate sampling, purposive sampling and judgment sampling (non probability sampling) (Etikan & Bala, 2017) was that the formulae considers the important statistical element level of confidence (e). Level of confidence (e) has great role on analysis of statistical data (Garson, 2012). The formula is simple and helpful to determine the sample size with the known population size.

$$n = \frac{N}{1+e^2 \times N}$$

Where; n = sample size required for the study

N= Total population size

e = level of confidence

Using the relation above the estimated sample size of population of merchandize traders in Addis Ababa city according to revenue authority 1247, will be,

$$n = \frac{N}{1+e^2 \times N} = \frac{1247}{1+0.05^2 \times 1247} = 302$$

The population size of merchants in Addis Ababa city that is obtained from revenues authority i.e. (1247) that results the sample size of 302 as shown above by using the relation and the sample size for Hawassa city has been obtained by applying the ratio of Hawassa city level A tax payers to Addis Ababa level A tax payers i.e. (3557:69319) approximated to 1:20. Thus, sample size for Hawassa city was found to be  $302/20 = 15$ . Having these sample sizes of both cities, the questionnaire was dispatched to the retailers and the data have been obtained accordingly.

### **3.5 Data collection tools**

The study employed both qualitative and quantitative research method. It focused the collecting, analyzing, interpreting and mixing both the qualitative and quantitative data in the research. The data collection technique involved primary and secondary data. The primary data collection process was made by using various survey techniques like; interview, questionnaire and field observation. The secondary data were obtained from the related literatures of online shopping and e-commerce documents that were done around both the developed and developing countries. Due to the above nature of this particular research, the sizes of both the population and sample of the respondents were determined in a scientific research method.

The qualitative and quantitative data were collected by using various data collecting mechanisms. These particular tools used to gather relevant and necessary information for this research were questionnaire, survey and field observation. The methods were selected taking into consideration the nature of descriptive research that, each sample in the population has valued response for each single question in the process of data collection.

The data for the study were collected through the application of the following techniques: Direct personal interview and investigation through schedules data representation tools the data collected were classified, tabulated and represented through chart and bar diagram. The practically

implemented data collection techniques for this particular study were primary and secondary data collection methods. Interview and questionnaire dispatching was the major primary data collection methods extensively applied in this research. The secondary data from various literatures provided fundamental insights of online commerce. These are different documentation about the practice of online shopping publicized around the abroad.

### **3.6 Primary data**

The primary data collection method is the most widely used method and very essential data collection technique was employed to accomplish this study. These primary data gathering methods are the use of questioners, interviews, and observations. The primary data sources collected in either method of the above three methods were analyzed and interpreted with appropriate tools to reach with the final solution and result of the stated problems and to meet the objective of the study.

Questionnaire and observation were a more important primary data source for this particular study (Appendix-1). The sample from population of wholesalers, retailers, and supermarkets around Hawassa town were selected as a target for responding to questioners and interview. A standard form of orderly organized questioner about the barriers of online sells, the currently available online sell supporting infrastructures and the tendency of those sample populations towards the importance of online sale were prepared and issued to the population to be answered.

#### **3.6.1 Observation**

Observation was made on target study populations that are found in both case study areas (i.e. Hawassa and Addis Ababa). The intuitive observation was conducted on retailers, wholesalers and supermarkets. The observation exclusively embraces both target groups that was officially started dealing their business online and that did not started online sell yet. All of the target groups, which started online sell, are found in Addis Ababa. It was difficult to estimate the exact number of all of available online dealers for determining the sample on which the observation has been conducted. This is due to the researcher did not find the authorized body who has such information of the population for these group. However, an attempt has been made to find all the available online sellers found in Addis Ababa by searching from google those who have an official online

selling websites on google. These include qefira, addismerkato, sheromeda, onlinemarkato, sholamart, soderestore and ethiosuq.

The purpose of conducting this observation was to know the operation of e-commerce process executed by those online retailers and to identify challenges they face. The issues of online sell practices and encountering obstacles were observed. The detailed description of the purpose and conducting interviews and type of interview would be discussed below in the interview sub section.

### **3.6.2 Interview**

The interview questions were derived from literature and developed by the researcher. First face-to-face interview was conducted with owners and managers of online sellers after the observation was made. Interview questions that are developed by the researcher were given more focus on how these online dealers conduct their business and the challenges of practicing e-commerce were identified. The interview was made on those target groups who practically started selling products online. Open-ended questions were set up and asked to the top managers or owners of the online dealers found in Addis Ababa.

Semi structured face-to-face interviews based on open-ended questionnaires were selected for the purpose of this research. An interview guide was constructed in order to support the interview. All the interviews were conducted with the same interview guide for each online retailers. Since this research is exploratory type, face-to-face interviews are preferable and most suitable. Because face-to-face interview enables the researcher to adapt the questions as necessary, clarify doubts, and ensure that the responses are properly understood (Harrell & Bradley, 2009). This is particularly important for the possible interview participants that may not have a clear understanding about E-commerce and its application. The researcher also explored issues raised by the respondents, which is not possible through questionnaires or telephone interviews, if face-to-face interviews were performed.

### **3.6.3 Questionnaire**

To meet the objective of this research, the mix of both close-ended questions and open-ended questions were set long form questions offer the ability for the respondent to elaborate on their thoughts. Questions were contained with the main ideas more elaborating challenges of the current situations in infrastructure, logistics, government rules and regulations of trade, payment methods,

access of electronic devices, economic backgrounds, interest and willingness of both the merchants and customers towards implementation and usage of e-commerce in our country observed from online retailers during industrial survey and observation as mentioned in section 3.6.1. The English version of developed questionnaire is annexed in Appendix-1.

Twenty close-ended questions and twenty open-ended questions were prepared and distributed for supermarkets, wholesalers and retailers in Addis Ababa and Hawassa city based sample sizes determined above. Among 302 respondents determined previously in Addis Ababa and 15 respondents in Hawassa; supermarkets, wholesalers and retailers were included in the survey. Out of the twenty open-ended questions, the first ten questions were arranged in the concept of five point Likert scale. The five point Likert scale questions focused customers' situation towards accepting e-commerce technology, knowledge of electronic devices (computer literacy), accessibility of infrastructures, etc. The second and last open-ended questions were with variable answers that mainly to address the issues of the research such as online market infrastructures, e-logistics and delivery, payment methods, legal aspects and other major problems of implementing e-commerce.

### **3.7 Secondary data**

The secondary data from various sources and particular related literatures done around the study area are collected and analyzed. These particular secondary data sources were typical related works of e-commerce challenges and adoption factors that were reviewed in chapter two of this thesis. Various numbers of journal articles, books and other forms or documents connected with the same field of study were reviewed systematically. The relevant supportive theoretical evidence for the eminent literature review of the thesis was obtained.

The secondary data sources obtained from related work literature review was conducted for the purpose of identification of e-commerce adoption challenges, to find the gaps of those literatures and finally to propose theoretical e-commerce adoption model based on those challenges and gaps. The gaps obtained from these literature reviews were clearly stated in section 2.10 of chapter two. However, most of the identified challenging factors of e-commerce adoption were only slightly reflects the present critical factors that are identified by the field observation.

The discovered e-commerce adoption barriers and significant challenges obtained from the field survey/observation as primary data and identified from the related literatures of the secondary data. These e-commerce adoption factors are the major challenges, which are common in Ethiopian e-commerce handling environment. The field observation was conducted on online sellers who officially commenced and launched websites to sell their products online in Addis Ababa in order to discover these e-commerce factors.

### **3.8 Data analysis technique**

The collected data were analyzed using simple and linear approaches of statistical and mathematical computations commonly known as Statistical Package for social science (SPSS) tool that displays figures, graphs and tables of analyzed data. The raw qualitative data first needs to be coded into simplistic and numerical form to be easily inserted to the data spread sheet of the SPSS dialogue box.

The software package has different important modules in the analyses menu to analyses qualitative data for researchers. There are two views on the main spreadsheet dialogue box; i.e. the data view which is dedicated to show the entered data and variable view which is dedicated to setup the entered variable data.

The major variables to be analyzed in this research were identified during the questionnaire development and these variables are the basic requirements of e-commerce. These includes; online market infrastructures, customer behaviors, electronics devices, hardware and software components, government online market transaction regulations, payment methods and other attractive and safe environments for starting e-commerce.

The determinant research variables identified by the researcher were the requirement elements of e-commerce adoption. They are possibly practiced in Ethiopia for the successful implementation of e-commerce. By benchmarking e-commerce practices from the abroad and the Ethiopian current situation in terms of stakeholders, trade companies and customers were first observed for the identification of the variables. Knowing these determinants of e-commerce, the researcher studied significant challenges of adoption of e-commerce in Ethiopia. For each element of implementation, the corresponding responses of interview and questionnaire data were analyzed in order to meet

the objective of this thesis. The data are first rearranged and coded in correspondence to the identified e-commerce implementation the elements or variable. For each variable of the research, the questions were set up in three categories. These categories were close ended; five point Likert scale and selective variable response questions.

### **3.9 Analysis of the proposed e-commerce adoption model**

In order to design the appropriate adoption model for Ethiopian infrastructure, the required model elements first need to be specified and schemed. Since the proposed model was theoretical, the features of model building blocks have to be the factors of e-commerce challenges. These factors were derived from both the literature review of previously done models from abroad and the identified challenges during the analysis of various data types in this research. Building blocks obtained from the literature reviews selected based on lateness of the model and best suits to the current situation technology infrastructure of Ethiopia. The model element taken from the identified challenges of this work was evaluated by using the analyzing software. There were different evaluation criterions for those elements like their current condition, accessibility, availability, cost of service, etc.

# CHAPTER FOUR

## FINDINGS AND DISCUSSION

### 4.1 Introduction

The relevant data and information incorporated to achieve the objective of this thesis was presented and analyzed in the previous chapter. Here in this chapter, an extension of results of analyzed data in the last portion has been discussed and interpreted with respect to the research questions and objectives. The findings of this study were discussed as much as possible in more descriptive and technical approach. The semi-structured interview data are presented in tabular form is the beginning of data presentation and discussion in this research. Following the presentation of interview data, the qualitative and quantitative data obtained from respondents of questionnaire presented and analyzed by SPSS would have been discussed first and followed by result summary table of those questionnaire data.

The results of the study were discussed in detail with figurative evidences from the analyzed data and information. During the analysis of both the interview and questionnaire data, infrastructure, e-logistics, payment methods and government legal issues to secure online transactions from fraudulent actions are found to be the most influential factors to identify the challenges of e-commerce adoption and implementation in Ethiopian business and industries. However, other factors such as customer awareness and computer literacy, customer interest and readiness, cost of implementation and benefit of implementing e-commerce are also identified as great influential elements of making decisions on barriers to e-commerce adoption with suitable benchmarking adoption factors found and selected from abroad literatures.

### 4.2 Online shopping websites

Online shopping sites located in Addis Ababa was interviewed for find understanding of their operations of dealing products online. Websites on which the interview has been conducted were found by searching from the internet. Since there is no an authorized body in our country that manages and administers online sellers, it was difficult to find the exact statistical figures of these online selling websites available in Ethiopia. Thus, 17 potentially available populations of online

selling websites are taken in to consideration generate survey data and technical analysis were made on the obtained data from these sites.

After finding and selecting the potentially available online shopping site in Ethiopia, interview questions were developed by the researcher. These interview questions were mainly focused on the experience of conducting their businesses online in Ethiopia within the existed technological infrastructures and relating requirement facilities of e-commerce. The effects of online shopping on the physical distribution of products were also discussed separately using various measuring criteria of inventory and delivery tasks.

Table 4.1 Interviewed data set of online shopping sites in Addis Ababa

Online shopping websites	Type of marketing	Age of website	Delivery types	Payment method	Portal type
Sheromeda	Own store	6 years	Own courier Postal SMS	Visa/credit card & cash on delivery	Internet & telephone
Merkato online	Own store & market venture	2 years	Own courier	Cash on delivery	Internet & telephone
Qefira	Market venture & own store	1 year	Own courier	Cash on delivery & mobile payment	Internet & telephone
Sholamart	Market venture	3 years	Own courier	Cash on delivery	Website & telephone
Sodere	Own store	5 years	Postal SMS	Visa/credit card & mobile payment	Web, app & phone
Ethiosuq	Market venture	2 years	Own courier	Cash on delivery	Internet & telephone
Asebeza	Own store	3 years	Own courier	Cash on delivery mobile payment	Internet & telephone

HelloMarket	Own store	2 years	Own courier	Cash on delivery & hello cash	Internet & telephone
Deliver Addis	Delivery service	2 year	Own courier	Amole & mobile payment	Internet & telephone
Zmall	Market venture	1 year	Own courier & postal SMS	Amole & ETT card	Internet & telephone
Fetan Mart	Own store	1 year	Own courier	Cash on delivery & bank transfer	Internet
Brundo	Market venture	2 year	Own courier & postal SMS	Mobile payment , PayPal & visa cards	Internet
Addis Mercato	Logistics service provider	3 years	Own courier & postal SMS	Mpesa, visa cards PayPal & CBE birr	Web
Deamat	Market venture	2 years	Own courier	Cash on delivery & mobile payment	Website & phone
Mekina	Market venture	3 years	-	Bank transfer & mobile payment	Website & apps
Utopia	Own store	1 year	Own courier	Cash on delivery	Website & phone
FloMart	Market venture & payment	3 years	Postal SMS	Mobile payment & visa cards	Website & apps

From the Table 4.1 above, when we consider the two columns delivery option and payment methods implemented by those respected online shopping websites as the identified challenging factors of e-commerce adoption. All of the online retailing websites mentioned above was discussed based on these manners.

Except sheromeda and sodere, other retailers deliver the sold products by using their own vehicles. As they mentioned during the interview delivery of products for each customers by their own private car is charged high cost and they plan to outsource the delivery service for local delivery service providers. If local delivery service provider companies in our country are existed, online retailers are interested to outsource the delivery process of their online system. However, they did not find the local delivery service providers that take permanent contracts to deliver online sold products of those online retailers. As shown in the table above sodere and sheromeda send their online sold products to outside countries via postal SMS. However, they have no longer contract deal instead, they send single product at a time for their customers whom bought the product from them.

The payment system was the major concern and objective in conducting interviews on online dealing websites available in Addis Ababa. According to the survey, most of these online dealers collect their money from the online buyer customers by cash on delivery. Cash on delivery is the process of receiving the payments from the buyers during the time of delivering the sold products. Thus, the payment method in this fashion is known to be offline payment method. As shown in table above, sheromeda and sodere have collected their money through online payment method particularly by visa card or dept/credit cars from their foreign customers. On the other hand, qefira and sodere receive their money via mobile payment from the local customers. However, according to their report, even if they are implemented various payment options to provide payment system, most of the customers have no interest to pay by mobile payment due security and trust cases.

### **4.3. Result and discussion of online retailers data**

The interview data are coded and rearranged in to suitable manner as shown on Table 4.1 to incorporate in the SPSS data analyzer package. The results of analyzed data have been displayed in the following consecutive tables and discussed.

#### **4.3.1 Distribution of payment methods used**

As depicted in the table, cash on delivery payment system was most frequently applicable method of payment in Ethiopian online retailers. This reveals that many online dealers are hesitating to fully implement other smarter methods of payment such as visa card, mobile payment, PayPal and so on. Even if the percentage of cash on delivery users (23.5%) are exceeded by the collective

users of visa card & mobile payment users (29.4%), it has been used as optional payment strategy by most of online shopping site as shown on Table 4.2. More specifically, it covers 23.5% percent with mobile payment 5.9% with credit card and 5.9% with bank transfer payment methods.

Table 2.2 Practically applied payment methods on e-commerce

Applicable payment system	Frequency	Percent	Cumulative Percent
visa card & mobile payment	5	29.4	29.4
Cash on delivery & mobile payment	4	23.5	52.9
Cash on delivery	4	23.5	76.4
Mobile payment	1	5.9	82.3
Credit card & cash on delivery	1	5.9	88.2
Cash on delivery & bank transfer	1	5.9	94.1
Mobile payment & bank transfer	1	5.9	100.0
Total	17	100.0	

#### 4.3.2 Possibilities of online portals

Types of online selling mediums or portals are Website, Website & phone, website and application, website, phone & application. They also use social Medias like telegram and Facebook to post details of their product descriptions for buyers and complete the transaction via telephone. Since all of the respondents use social Medias as optional online portal, it did not included in the analysis to show the frequencies. The Table 4.3 below shows the frequency distribution of online sellers' online portal usage options.

This section has been designed to discuss the possibilities of electronic mediums or portals through which customers or buyers can access and contact sellers to complete online shopping process. Most of these online dealers under this study have designed their Owen internet website. However, there are some online sellers in preliminary stages to sell their products only via telephone and other social Medias. In addition to website and telephone, some of them have developed online selling android and desktop application for their products.

The Table 4.3 shows that 64.7% of online sellers have their own internet website and provide phone number to make easy the online transaction process. The collective users of both website and application are 11.8% while only website users are 17.6%. 5.9% of them use the three mediums website, telephone and application commonly.

Table 4.3 Online transaction portal of electronic commerce

Online portals	Frequency	Percent	Cumulative Percent
Website & phone	11	64.7	64.7
Website	3	17.6	82.3
Website & application	2	11.8	94.1
Website, phone & application	1	5.9	100.0
Total	17	100.0	

### 4.3.3 Delivery types used

Depending on the survey data, the delivery activities including home delivery can be clustered as follows to ease analyze interpretation. These are own courier, postal SMS, own courier & postal SMS. There are some exceptional considerations in the analysis of delivery systems performed by online sellers. This apparent case was happened on some fixed property sellers that does not require delivery operations like houses, vehicles and land. Hence, the delivery option data are analyzed using missing value system analysis of the SPSS software as shown on Table 4.4.

Table 4.4 Delivery methods currently used by online retailers

Delivery types used		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Own courier	10	58.8	62.5	62.5
	Own courier & postal SMS	4	23.5	25.0	87.5
	Postal SMS	2	11.8	12.5	100.0
	Total	16	94.1	100.0	
Missing	System	1	5.9		
Total		17	100.0		

Out of the total e-commerce sites investigated under this study, 62.5% have delivered the sold products using their own couriers as shown in Table 4.4. 12.5% of them send the products to their customers via postal SMS and 25% perform the delivery process by using both own courier and postal services.

### 4.3.4 Age distribution of online shopping sites

In order to study the working experiences of these e-commerce sites and as the same time to assess the advancements in terms of technology, human resource, capital, and materials the age of

establishment was classified as 0-2, 3-5, 6-10 and above based on survey data. For example, the significant impact of age of the online shopping has been seen on delivery systems and payment methods they experienced.

Thus, the analysis result reveals that most of online retailers are starting online selling in recent two years. The age range of 58.8% is in 0-2 years, which are in preliminary stage of establishment and experience. 35.3% are in the range of 3-5 years of experience, 5.9% are in the age range of 6-10 years and there is no experienced online shopping site above 10 years as depicted in Table 4.5.

Table 4.5 Age distribution of online shopping sites in Ethiopia

Age	Frequency	Percent	Cumulative Percent
0-2	10	58.8	58.8
3-5	6	35.3	94.1
6-10	1	5.9	100.0
Total	17	100.0	

#### 4.3.5 Market types they are operating

The e-commerce websites started to make online trade in Ethiopia are not doing only a common type of buying and selling different products using internet and other means of online shopping. Furthermore, various e-commerce sites are dedicated to make different types of online trades. These online market types are; Market venture, Own store, payment providers and Delivery Companies. Depending on the type of market, there are unique online business activities. To make clear this idea, let us consider market venture type of online shopping and discuss the details of conducting the business.

As the respondents mentioned, online market ventures primary function is to provide online market platform for both buyers and sellers by developing a well-designed and structured e-commerce website or webstore. They do not have their own product and stores rather they allow other retailers and traders to post products on the provided webstore. Then these retailers and traders who posted their products on this online platform are charged regular monthly charge depending on their terms of agreement. In this type of e-commerce, buyers or customers are contacting and dealing directly with retailers and complete the online transaction process. Transportation and delivery processes are the duty of retailers in this type of online market. The other online market type is conducted

by the retailers themselves whom developed their own online shopping websites. All the transaction processes and other agreements are completed with their customers via this website. Delivery services can be offered by themselves or outsourced to other logistics service providers. Delivery service providers have done contracting agreements with various online sellers to transport sold products to customers nearest destination.

The study result below shows the classification percentage of online market in functional types. The frequency of online sellers who have their own store and website is 35.3% and online markets that operate, as market venture are 35.3% which is the same as own stores. Delivery service providers cover 11.8% of e-commerce sites in Ethiopia. 17.6% are online markets that have both own store and market venture services.

Table 4.6 Operated market type

<b>Market type they operate</b>	<b>Frequency</b>	<b>Percent</b>	<b>Cumulative Percent</b>
Own store	6	35.3	35.3
Market venture	6	35.3	70.6
Own store & market venture	3	17.6	88.2
Delivery provider	2	11.8	100.0
Total	17	100.0	

#### **4.3.6 Main product types**

Home appliance, properties (home, land and cars), electronics, fashion wears & beauty, cultural clothes, asbeza, groceries, agricultural products, furniture and other types are mainly available products in Ethiopian online shopping websites. The study of online markets by product type enables to predict the delivery system since various products have various physical aspects and situations. For example, fixed properties like houses and assembled vehicles do not need delivery, products like food items require refrigerated delivery and brittle products like electronics need special care to deliver.

The Table 4.7 shows the distribution of e-commerce sites found Addis Ababa in products type depending on survey data. Hence, asbeza and groceries have a great share that is 23.5% of total product type. Fashion and beauty is the next large product type promoted in Ethiopian online shops having 17.6% of share. Electronics, furniture and accessories have the same share of 11.8% and

home appliances, fixed properties (houses & vehicles), cultural clothes, and agricultural products contribute the same share of 5.9% of online markets.

Table 4.7 Products marketed on the online shopping site

Main product type	Frequency	Percent	Cumulative Percent
Asbeza & groceries	4	23.5	23.5
Fashion & beauty	3	17.6	41.1
Electronics	2	11.8	52.9
Furniture	2	11.8	64.7
Accessories	2	11.8	76.5
Home appliance	1	5.9	82.4
Property (house, land & car)	1	5.9	88.3
Agricultural products	1	5.9	94.2
Cultural clothes	1	5.9	100.0
Total	17	100.0	

#### 4.4 Barriers in e-commerce sites

According to the table 4.8 above, the mean responses represent barriers of e-commerce adoption in various numerical results. It has been observed that the mean response of technology infrastructure limitation is mean of 4.41 indicating the 2<sup>nd</sup> highest e-commerce barrier next to absence of coordinated e-logistics, which has the mean response of 4.47. Absence of payment methods, lack of government policy & support, lack of trust & security issue and lack of awareness in customers perspective are the higher barriers of e-commerce adoption with all having the mean responses of 3.94, 3.59, 4.24 and 3.71 respectively. All these the above mean results reveal that the above fore mentioned barriers highly affected the adoption of e-commerce in Ethiopian online shopping sites. The other barriers such as inconvenient transportation service, lower economic background of customers and computer hardware & software illiteracy having the mean responses of 3.12, 1.47, 2.59 and 3.24 have relatively lower influence on the adoption process of e-commerce.

Table 4.8 Descriptive statistics of e-commerce barriers

	Range	Minimum	Maximum	Mean	Std. Deviation
Absence of Coordinated e-logistics	2	3	5	4.47	.624
Technology Infrastructure limitation	2	2	5	4.41	.712
Lack of trust and security issues	2	3	5	4.24	.752
Absence Online Payment methods	3	3	5	3.94	.966
Lack of awareness in customers perspective	4	1	5	3.71	1.404
Lack of government policy & support	4	1	5	3.59	1.278
Computer hardware & software illiteracy	3	2	5	3.24	.831
Inconvenient transportation & delivery service	4	1	5	3.12	1.317
Lower economic background of customers	4	1	5	2.59	1.278
Lack of investment cost	1	1	2	1.47	.514

#### 4.5 Effect of e-commerce on logistics & distribution

Table 4.9 describes statistics in five Likert scale score (1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree) of the effect of e-commerce on logistics and distribution. The mean responses on table above showed that application of e-commerce contributed great positive effects at least on five operational areas of logistics and distribution of products. These logistics operational areas of online shopping business are; information flow quality, number of sales, business development strategy, save time and customer satisfaction with the mean response values of 4.18, 4.12, 3.88, 3.68 and 3.53 respectively. All the remaining functional elements of logistic with the mean responses of less than 3.5 are slightly affected by e-commerce adoption on online retailing companies.

Table 4.9 Descriptive Statistics of effect of e-commerce on logistics

	Minimum	Maximum	Mean	Std. Deviation
Information flow quality	3	5	4.18	.636
Increase number of sale	3	5	4.12	.781
Business development	1	5	3.88	1.166
Save time	1	5	3.68	1.380
Customers satisfaction	1	5	3.53	1.179
Service quality	1	5	3.4	1.300
Lead time efficiency	1	5	3.35	1.115
Procurement management	2	5	3.29	.985
Inventory performance improvement	2	4	3.12	.697
Order tracking & processing quality	1	5	2.94	1.029
Storage cost decreased	1	5	2.29	1.213
Service flexibility	1	4	2.24	1.091

#### 4.6 Delivery performance evaluation indexes in e-commerce

Evaluating delivery performance status is the critical issue in online shopping businesses in terms of various perspectives such as customer satisfaction, product safety, and timely delivery, inventory management and so on. Table 4.10 above depicts mean responses about delivery performance condition in surveyed online retailers. According to the responses of the respondents the 5 point Likert scale indicate the extent they agree with the statements that is: 5-Strongly Agree, 4-Agree, 3-Neutral, 2-Disagree and 1- Strongly Disagree. A mean score of 0-1.5 means that the respondents strongly disagreed, between 1.50 to 2.50 means they disagreed, 2.50 to 3.50 means the respondents were neutral, 3.50-4.50 means they agreed, and a mean above 4.50 means the respondents strongly agreed.

Depending on the results on table 4.10, the five delivery performance evaluation indexes such as on time delivery, convenient & safe delivery, low risk delivery, last mile delivery and home delivery were scored with values between 3.50 and 4.50. This implies that majority of respondents agreed to the fact that the company supply chain performance was good. The other evaluating indexes of delivery performance lie in the range of neutral mean response (2.50-3.50) indicating that they are either in good or bad conditions.

Table 4.10 Descriptive Statistics of delivery performance evaluation indexes

Evaluating indexes	Minimum	Maximum	Mean	Std. Deviation
Lower risk delivery	2	5	4.12	.928
Home delivery service Reduced	2	5	4.06	.899
On time delivery	2	5	3.76	1.033
Convenient and safe delivery	1	5	3.71	1.105
Last mile delivery	1	5	3.47	1.419
Information homogeneity	1	5	3.24	1.251
Delivery reliability	1	5	3.24	1.091
Delivery speed	1	5	2.94	.966
Accessibility of delivery service providers	1	5	2.76	1.393
Cost of delivery	1	5	2.53	1.328

#### 4.7 Implemented online shopping operational tools

The intension of conducting this specific survey was to investigate how these online retailers implemented and familiar with the technological and operational tools on their retailing business with regard to e-commerce practice. Hence, the results were shown on Table 4.11 in frequency distribution percentage and means of descriptive statistics. Thus, as shown on table above, close-ended yes or no questions responded for each e-commerce tool implementation status.

The six e-commerce operational tools such as order data management, inventory management, on time delivery, resource & supply replenishment, order tagging & coding and SC management were relatively implemented by majority of online retailers with the response rate of percentage of 70.6, 88.2, 82.4, 70.6, 88.2 and 70.6 respectively as shown on Table 4.11.

Table 4.11 Implementation of operational tools in online shopping sites

E-commerce operational tools	Percentage		Mean	Std. Deviation
	Yes	No		
Order tagging and coding	88.2	11.8	.88	.332
Inventory management	88.2	11.8	.88	.332
On time delivery	82.4	17.6	.82	.393
Supply chain management	70.6	29.4	.06	.243
Order data management	70.6	29.4	.71	.470
Resource & supply replenishment	70.6	29.4	.71	.470
Delivery & transportation management	47.1	52.9	.47	.514
Demand forecasting	47.1	52.9	.47	.514
Electronic data interchange (EDI)	35.3	64.7	.65	.493
Customer relationship management	23.5	76.5	.24	.437
Electronic Procurement	29.4	70.6	.29	.470
Order location tracking	41.2	58.8	.41	.507
Geographical positioning system (GPS)	11.8	88.2	.12	.332
Radio frequency identification (RFID)	5.9	94.1	.06	.243
Bar code	5.9	94.1	.71	.470

#### 4.8 Response rate of questionnaire data for traditional retailers

As it has been seen in the previous section, sample size of Addis Ababa city retailers were 302 and according to population ratio for retailers in Hawassa city are 15. The questionnaires have been dispatched to both cities respectively based on the above ratio value. However, the tendency of respondents to return the given questionnaire in the two cities was not same. The rate of respondents to return the given questionnaire in Addis Ababa was 285 out of 302 questionnaire papers dispatched to traditional retailers. Hence, 285 correctly filled responses were collected in Addis Ababa and remaining 17 questionnaires were left unreturned.

In case of respondents of Hawassa city, all the 15 dispatched questionnaire papers were returned back since the respondents were filled all the questions immediately at the time of the receipt it. During the filling, the researcher was waiting for respondents while they fill all the questions get back the answered questionnaires as they finished filling. Some of the respondents were talking about the issues of online shopping while they are filing the questionnaires. The idea raised by these individuals was taken in considerations as informal interview and some types of discussions to strengthen the data. Thus the 300 responded questionnaire data were collected from both cities

and undergone the analysis in the SPSS package. The discussion of results was presented as shown below.

#### 4.9 Analysis & result presentation technique of questionnaire data

Based on the type and context of the questions, each response were adjusted and rearranged as five point Likert scale question responses, multiple response question variable and close-ended question responses. The coded and incorporated data were set up in this fashion and entered to the SPSS software to display the results presented as shown below in figures and charts. The analysis of the data was made to know the statistic of the collected data and to evaluate the percentage value of each identified challenges of e-commerce adoption. These e-commerce adoption-challenging factors were discussed and analyzed in chapter two. The analyzed data presented below were shown in the order of how these factors can influence more the adoption of e-commerce.

##### 4.9.1 Analysis of E-logistics based responses

The analysis of e-logistics question data shows the statistical values of the responses and the percentage results to describe the evaluation of influence of e-logistics on the adoption of e-commerce. The existent and current situation of e-logistics also was determined by the result. However, logistics were found to be the basic variable of this research and to examine the participants' response of the selected logistics questions, the descriptive and frequency analysis was made using SPSS software. The categories of e-logistics responses were analyzed separately in order to understand and interpret the results easily.

**The five point Likert scale E-logistics response analysis:** - there are two questions in five point Likert scale analyzed the e-logistics responses in the following table and histogram chart respectively.

Table 4.12 Frequency table of analysis of customers need for home delivery service

Responses	Frequency	Percent	Valid Percent	Cumulative Percent
None	40	13.3	13.3	13.3
Some	122	40.7	40.7	54.0
Half	85	28.3	28.3	82.3
More than half	33	11.0	11.0	93.3
All	20	6.7	6.7	100.0
Total	300	100.0	100.0	

**Remark** - In the frequency tables of each SPSS software analysis result, the software considers both the missing and valid data values are shown as percent and valid percent respectively. The results in the percent column indicate by considering missing data and results in the valid percent column are only for valid data. However, in this particular case since there are no missing data, the results in both columns are the same. This also applies for all the rests of the presentations.

Table 4.13 Frequency table of analysis of customers' access for transportation service

Responses	Frequency	Percent	Valid Percent	Cumulative Percent
None	56	18.7	18.7	18.7
Some	138	46.0	46.0	64.7
Half	59	19.7	19.7	84.3
More than half	36	12.0	12.0	96.3
All	11	3.7	3.7	100.0
Total	300	100.0	100.0	



Figure 4.1 Bar chart illustration of customers' access for transportation service

**Multiple response questions E-logistics analysis:** - here a multiple response of e-logistics analysis is presented below.

Table 4.14 Frequency table of analysis of transport alternatives for home delivery

Responses	Frequency	Percent	Valid Percent	Cumulative Percent
Regular transport	101	33.7	33.7	33.7
postal service	98	32.7	32.7	66.3
SMS	40	13.3	13.3	79.7
DHL	21	7.0	7.0	86.7
All	40	13.3	13.3	100.0
Total	300	100.0	100.0	

**Close-ended type question E-logistics response analysis:** - there are four close-ended type questions were analyzed under the e-logistics category of analyzing the responses.

Table 4.15 Frequency table of analysis of retailers' willingness for home delivery

Responses	Frequency	Percent	Valid Percent	Cumulative Percent
No	137	45.7	45.7	45.7
Yes	163	54.3	54.3	100.0
Total	300	100.0	100.0	

Table 4.16 Frequency table of analysis of delivery improvement by online sale

Responses	Frequency	Percent	Valid Percent	Cumulative Percent
No	95	31.7	31.7	31.7
Yes	205	68.3	68.3	100.0
Total	300	100.0	100.0	

Table 4.17 Frequency table of analysis of retailers' access of transport facility

Responses	Frequency	Percent	Valid Percent	Cumulative Percent
No	186	62.0	62.0	62.0
Yes	114	38.0	38.0	100.0
Total	300	100.0	100.0	

#### 4.9.2 Analysis of infrastructure questionnaire responses

The analysis of infrastructure variable for the challenges of e-commerce adoption in Ethiopia was drawn by the research as telecom and ICT infrastructures are the basic elements for the successful implementation of online market in Ethiopia. As compared to other variables infrastructure is found to be the major challenge or problem to implement e-commerce according to this research. This has been proved true since Ethiopian telecom service and ICT infrastructures are very small coverage and very expensive.

**Close-ended question analysis of infrastructure responses:** - the four close-ended type questions under the infrastructure category of analyzing the data were presented here in three tables and one bar chart.

Table 4.18 Frequency table of analysis of importance of internet for online market

Responses	Frequency	Percent	Valid Percent	Cumulative Percent
No	44	14.7	14.7	14.7
Yes	256	85.3	85.3	100.0
Total	300	100.0	100.0	

Table 4.19 Frequency table of analysis of website owner retailers

Responses	Frequency	Percent	Valid Percent	Cumulative Percent
No	289	96.3	96.3	96.3
Yes	11	3.7	3.7	100.0
Total	300	100.0	100.0	

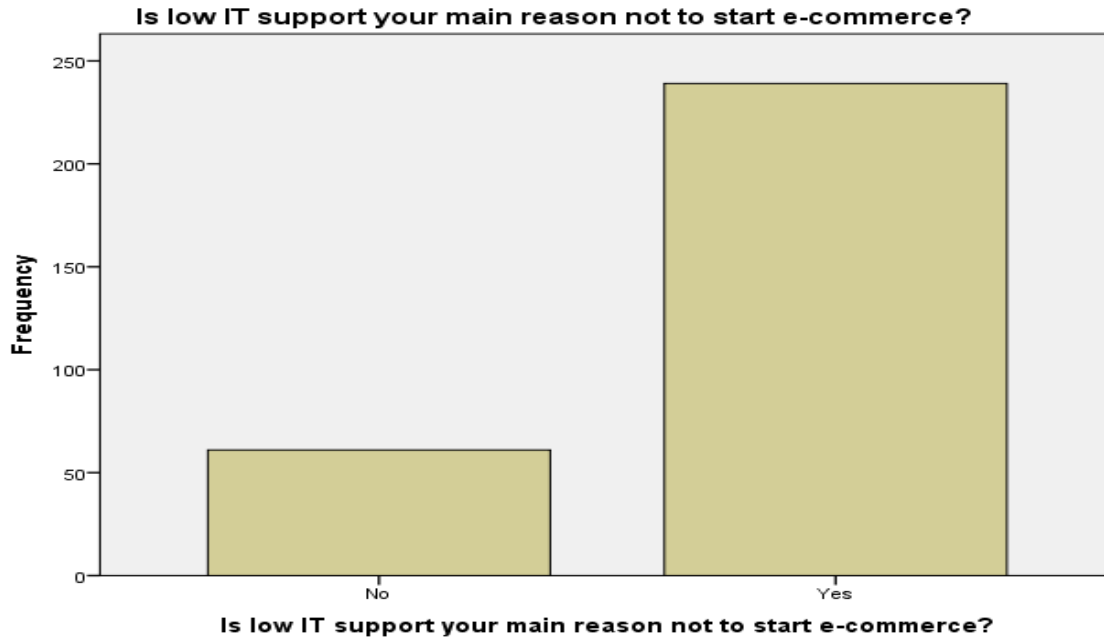


Figure 4.2 Bar chart illustration of slow internet can be problem for e-commerce

Table 4.20 Frequency table of analysis of slow internet can be problem for e-commerce

Responses	Frequency	Percent	Valid Percent	Cumulative Percent
No	61	20.3	20.3	20.3
Yes	239	79.7	79.7	100.0
Total	300	100.0	100.0	

**Five point Likert scale question infrastructure response analysis:** - the frequency table below shows five point Likert scale question of infrastructure analysis.

Table 4.21 Frequency table of analysis of customers' internet & telecom access

Responses	Frequency	Percent	Valid Percent	Cumulative Percent
None	28	9.3	9.3	9.3
Some	161	53.7	53.7	63.0
Half	80	26.7	26.7	89.7
More than half	22	7.3	7.3	97.0
All	9	3.0	3.0	100.0
Total	300	100.0	100.0	

**Multiple response question infrastructure response analysis:** - two multiple response type questions were analyzed in the infrastructure category. These are presented in the next bar chart and frequency table.

Table 4.22 Frequency table of analysis of frequently used social media by the respondent

Responses	Frequency	Percent	Valid Percent	Cumulative Percent
Facebook	127	42.3	42.3	42.3
telegram	111	37.0	37.0	79.3
Instagram	6	2.0	2.0	81.3
twitter	5	1.7	1.7	83.0
none	51	17.0	17.0	100.0
Total	300	100.0	100.0	

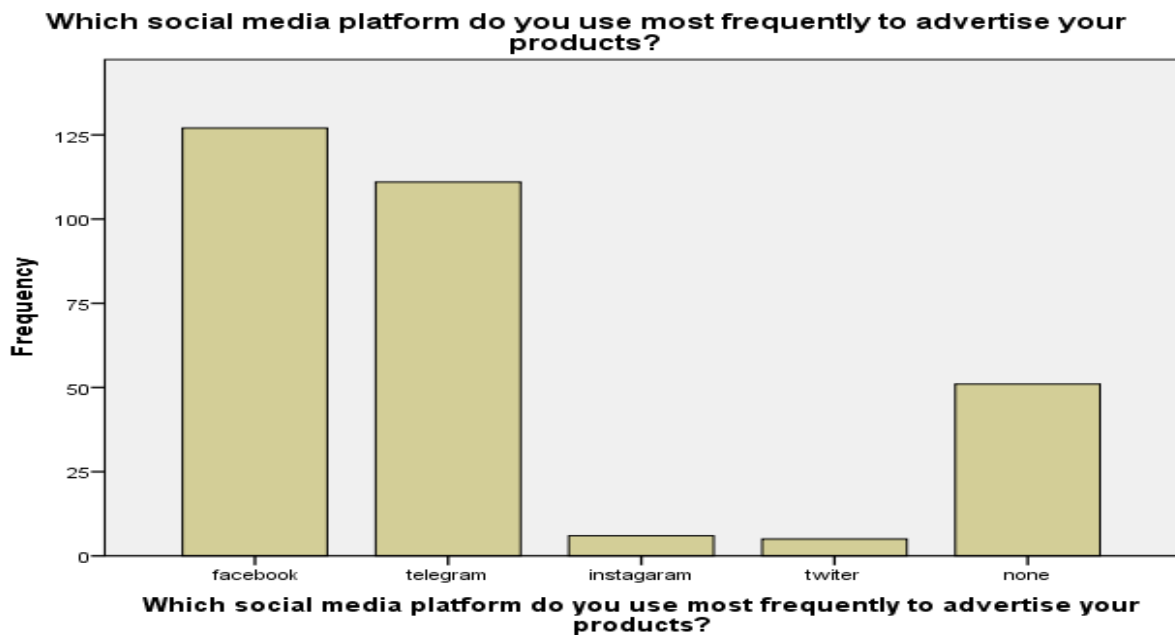


Figure 4.3 Bar chart illustration of frequently used social media by the respondent

Table 4.23 Frequency table of analysis of obstacles for retailers to start online selling

Responses	Frequency	Percent	Valid Percent	Cumulative Percent
Lack of customer's awareness	12	4.0	4.0	4.0
Low customer interest	12	4.0	4.0	8.0
Inaccessibility of Internet	24	8.0	8.0	16.0
Online payment difficulties	33	11.0	11.0	27.0
All	219	73.0	73.0	100.0
Total	300	100.0	100.0	

#### 4.9.3 Analysis of Government regulations and legal policy frameworks response

Analysis of government rules and regulation variable to present the results to meet the objective of identifying e-commerce implementation challenges. The deep discussions of this result could be presented in the next portion. Legal aspects and frameworks of e-commerce adoption are presented in this section. The qualitative data of necessity and availability of government rule and regulation regarding online market was evaluated by stating couple of questions. These questions are two multiple response questions and one close-ended question. The statistics of descriptive and frequency analysis was made using SPSS to evaluate and verify the influence of government rule and regulations go e-commerce adoption.

**Multiple response government regulations and legal policy frameworks analysis:** - the multiple response category of government regulation and legal policy data were analyzed in the following two consecutive frequency tables and pie chart.

Table 4.24 Frequency table of analysis of important government regulation on e-commerce

Responses	Frequency	Percent	Valid Percent	Cumulative Percent
commercial trust	13	4.3	4.3	4.3
payment regulation	23	7.7	7.7	12.0
E-commerce shipping & delivery policy	32	10.7	10.7	22.7
all	232	77.3	77.3	100.0
Total	300	100.0	100.0	

**Multiple response question government regulation & legal policy analysis:** - Table 4.25 represents multiple response question data analysis of government regulation & legal policy. The

frequency table shows descriptive analysis of problems of absence of government regulation and legal policy framework.

Table 4.25 Frequency table of analysis of absence of government regulations & policy

Responses	Frequency	Percent	Valid Percent	Cumulative Percent
Fraud	16	5.3	5.3	5.3
lack of trust	22	7.3	7.3	12.7
lack of transaction safety	22	7.3	7.3	20.0
all	240	80.0	80.0	100.0
Total	300	100.0	100.0	

**Close-ended government regulations and legal policy frameworks analysis:** - Table 4.26 below shows the analysis of close-ended type question category of government regulation.

Table 4.26 Frequency table of analysis of necessity of government regulations & policy

Responses	Frequency	Percent	Valid Percent	Cumulative Percent
No	39	13.0	13.0	13.0
Yes	261	87.0	87.0	100.0
Total	300	100.0	100.0	

#### 4.9.4 Analysis of online payment method response

The analysis of each variable response for online payment method data was presented in the same fashion as other challenging factors were presented above. However, questions to obtain payment method data have little variation. Five point Likert scale questionnaire and close-ended questionnaire data are employed in payment method data collection and analysis technique. The results of each payment data are described in tables and charts of SPSS software. First two yes or no answer data are depicted and then the five point liker scale data are presented.

**Close-ended question payment method response analysis:** - payment method analysis under the category of close-ended type response is presented in the next two frequency tables, Table 4.27.

Table 4.27 Frequency table of analysis of customer awareness of online payment methods

	Frequency	Percent	Valid Percent	Cumulative Percent
No	177	59.0	59.0	59.0
Yes	123	41.0	41.0	100.0
Total	300	100.0	100.0	

**Five point Likert scale and different variable payment method analysis:** - the frequency descriptive table below represents the five point Likert scale question analysis of payment method. The percentages of frequency of customers who have used credit cards or other payment methods are presented.

Table 4.28 Frequency table of analysis of customers with credit card

	Frequency	Percent	Valid Percent	Cumulative Percent
None	198	66.0	66.0	66.0
Some	60	20.0	20.0	86.0
Half	27	9.0	9.0	95.0
More than half	8	2.7	2.7	97.7
All	7	2.3	2.3	100.0
Total	300	100.0	100.0	

**Multiple response question payment method analysis:** - multiple response question of payment method is analyzed as follows in the frequency Table 4.29 of how to receive payments for sold products.

Table 4.29 Frequency table of analysis of way of receiving money for retailers

	Frequency	Percent	Valid Percent	Cumulative Percent
Bank transfer	77	25.7	25.7	25.7
online payment	45	15.0	15.0	40.7
mobile banking	31	10.3	10.3	51.0
Cash on delivery	107	35.7	35.7	86.7
all	40	13.3	13.3	100.0
Total	300	100.0	100.0	

#### **4.10 Result Summary and discussion of questionnaire response**

Table 4.30 below summarizes the statistical results of questionnaire data of the most significant variable of e-commerce challenges and adoption factors of online shopping in Ethiopian trade companies. As shown on the summery table, the results in percentage values for some evaluating criteria's are only the critical values for some respondents of the corresponding questionnaires.

For example in e-logistics challenging factor, the need of customers for home delivery is 40.7%. However, there is no logistics service that provides home delivery service currently in our country. Moreover, in spite of their need for home delivery service even only 46% of them have access to regular transportation. When we come to company side response analysis results, 33.7% of merchants use regular transport for supply of the product to their store to reduce costs for express delivery and 54.3% of them are willing to deliver their sold products to their customers' home.

The assessment on product delivery and distribution improvement if there will be e-commerce has been conducted by asking the target respondents and 68.3 % of them answered that e-commerce can improve product delivery. However, 62% of target merchants responded that they could not easily access transport for home delivery service in the current situation. They think that they could be beneficial if e-commerce could be existed and logistics facilities can be improved in future development strategy of their business.

The strength and accessibility of internet and telecom service to start e-commerce currently according to the respondents was 33.3% fast and 53.7% accessible for some of customers. Even though, 79.7% of the respondent merchants believe that internet slowness is the main reason to establish electronic commerce on their businesses. Due to the reason of low speed internet, only 3.7% of them have their own websites to promote and sell their products online but steal they do not have official online webstore for the products they deal.

Table 4.30 Result summary of analyzed data

<b>Challenging Factors</b>	<b>Evaluation Criteria</b>	<b>Evaluation</b>	<b>Values in%</b>
E-logistics	Customers need for home delivery	Only some of them	40.7%
	Customers transport access	Only some of them	46.0%
	Companies transportation preference	Regular transport	33.7%
	Companies willingness for home delivery	Willing	54.3%
		Not willing	45.7%
	Improvement of product delivery by online sale	Can be improved	68.3%
		Can't be improved	31.7%
	Easy of transport accessibility by companies for product delivery	Easy	38%
		Difficult	62%
	Availability of express logistics service providers in Ethiopia	Available	37.3%
		Not available	62.7%
	Infrastructure	Necessity of internet to establish electronic commerce	Necessary
Not necessary			14.7%
Companies who have their own websites to sell products online		Website	3.7%
		No website	96.3%
		Fast	33.3%

	Ethiopian internet strength to start electronic commerce	Slow	66.7%
	Internet slowness can be the main reason for not to start e-commerce	Can be reason	79.7%
		Can't be reason	20.3%
	Customers access to internet and telecom service	Only some of them	53.7%
	Companies trend to use social media for their business	Facebook	42.3%
		Telegram	37.0%
		Instagram	2.0%
		Twitter	1.7%
		None	17.0%
	Government regulation and legal policy of E-commerce	Importance of government regulation on E-commerce	Payment policy
Transaction policy			4.3%
Delivery policy			10.7%
All regulations			77.3%
Problem of absence of e-commerce regulations in Ethiopia		Fraud	5.3%
		Lack of trust	7.3%
		Lack of safety	7.3%
		All problems	80.0%
Importance of E-commerce regulations and policies		Important	87.0%
		Not important	13.0%

Online payment methods	How Companies know about online payment methods	They know	41.0%
		They don't know	59.0%
	Can absence of online payment method in Ethiopia be a cause not to start E-commerce	Yes	64.7%
		No	35.3%

# CHAPTER FIVE

## PROPOSED ONLINE SHOPPING ADOPTION MODEL

### 5.1 General consideration of the model

To propose the theoretical online shopping adoption model suitable for Ethiopian e-commerce infrastructures, the researcher performed an extensive literature review, together with the analyzed and identified e-commerce implementation challenges in the previous chapters in this study. The model obtained its major input for theoretical foundation from the literatures of previously done models abroad on e-commerce adoption and development in both developed and developing countries. Based on the findings under the identifying challenges of e-commerce implementation, the study built a conceptual model, which attempts to illustrate the essential requirements to help Ethiopian businesses, and trade industries successfully adopt e-commerce.

### 5.2 Technology infrastructure based e-commerce adoption model

Most technology adoption models developed previously by various researcher taken as a benchmarking for this research are focused on behavioral attitude of consumers, organizational capabilities, social and moral interests of respected communities rather than infrastructural availability, government policy and logistical service for integrity requirements. This is due to the supporting infrastructures, government role and logistics services are fully available and have insignificant influence on the e-commerce implementation.

However, as per the identified factors of e-commerce challenges in this research, technology-supporting infrastructures like ICT service and internet services, coordinated logistics service and government regulations of electronic transaction and online payment regulations in Ethiopia are remaining as the major problems to execute online business. Hence, the e-commerce adoption model to be suggested and developed by this research is infrastructure based e-commerce adoption model.

### 5.3 Model development approach

This model was adapted from the “barriers hindering e-commerce adoption and diffusion in developing countries” developed by (Japhet & Usman, 2010). However, the Japhet and Usman’s model was not the only model from which the researcher wants to adopt the new e-commerce

adoption model. Other e-commerce adoption models like “technology, organization and environment” model and “the e-business model” which were developed in 2014 and 2016 respectively are reviewed (in chapter 2 of this study) in order to extract some important concepts for the new model development.

The proposed model considers the identified challenging factors as constructs of the new adopted model instead of including all constructive elements of the original (old) model. The modification was made by substituting and shifting the elements of original model with new challenging factors that has been analyzed and evaluated by considering their current situation in Ethiopian as evaluation criteria. These evaluation criteria are setup in respect of the current situation of e-commerce adoption practice data obtained from responses of retailers found in the case study areas. Thus, the construct elements of the original model that matches with the identified challenging factors of this study have to be included to the elements of the new proposed adoption model.

More specifically, the modification has been made on the new model from Japhet and Usman’s e-commerce model is two constructing elements. These modification changes are socio-cultural barriers and socio-economic barriers that are substituted by coordinated e-logistics and payment method options respectively. The substitution or change made on the new developed model of this research from the old model was based on the study results of challenges of e-commerce adoption conducted on this study. Thus, socio-cultural and socio-economic barriers, which were the most critical elements for the old model, are not found significant for the new developed e-commerce model. Because, the systematically evaluated challenging e-commerce adoption factors in the previous chapters are the major objective elements that mainly taken as model constructs.

Most of the building blocks of this model are the previously discussed challenging factors found during the analysis of identification of challenges on e-commerce implementation in Ethiopian supermarkets, retailers and wholesalers. The remaining important model building elements are retrieved from the previously mentioned e-commerce adoption model literatures. These literatures are narrated briefly in the previous portion of this chapter. Here the model is shown in the Figure 5.1 below with the main elements or building blocks of the proposed e-commerce adoption model. The newly developed proposed adoption model has been constructed almost all of the characteristic elements existed on the figure of the model. The model is mainly composed of four

major building blocks i.e.; technology infrastructures, government rules and regulations, electronic logistics and payment options with sub features and other elements.

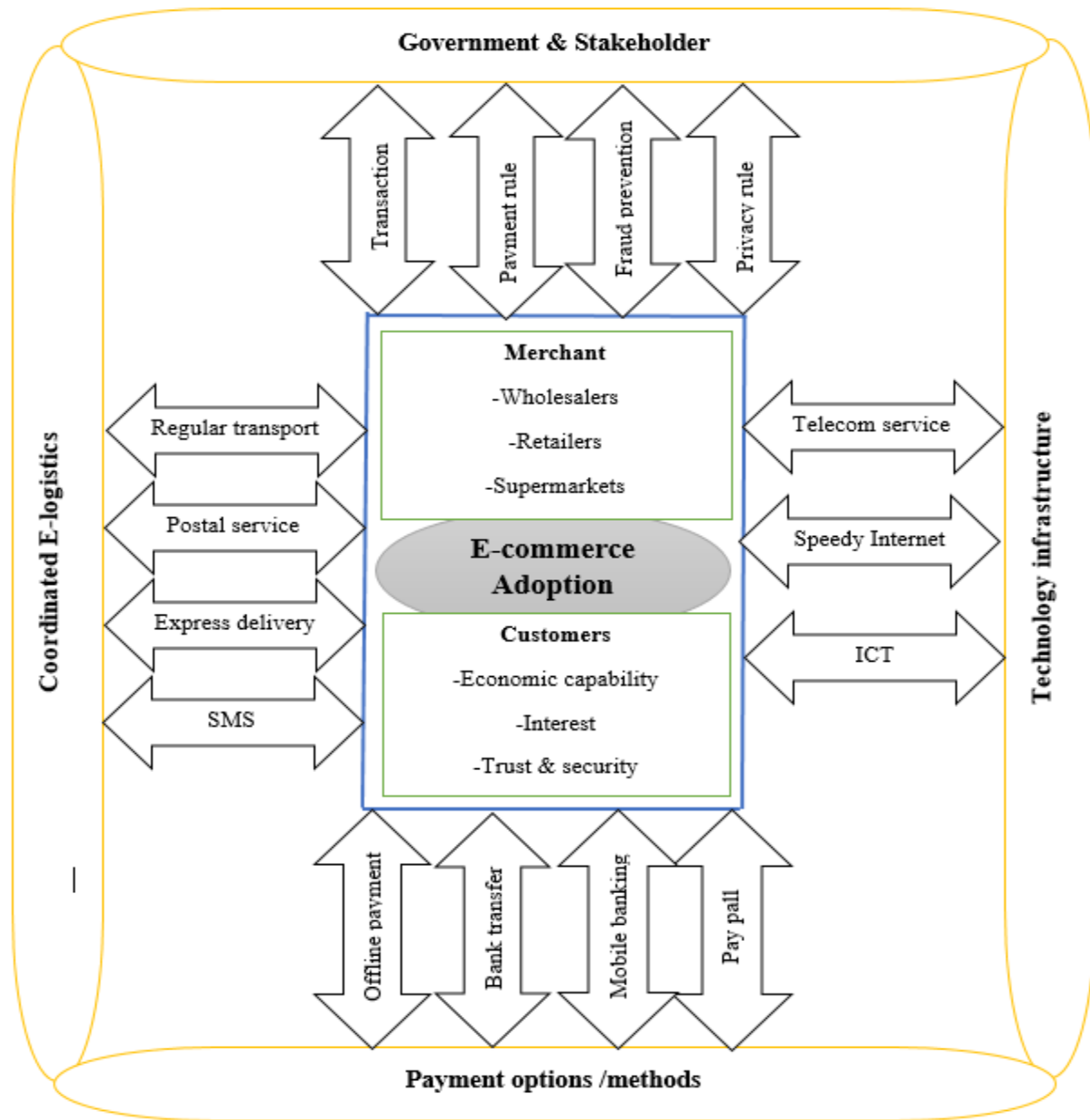


Figure 5.1 Proposed infrastructure based E-commerce adoption model

#### 5.4 Model justification by testing variables

Since the data used in this research to propose the model was qualitative data and as well, the proposed model itself is theoretical, it was difficult to validate such type of model by using mathematical relations or other simulation tools. It is obvious that the data required to make

simulation modeling are numerical data. Thus to verify this model using simulation modeling is not practical. Hence, the model has been validated by applying statistical analysis methods on the construct elements/factors of the model. This was achieved by conducting various statistical data validating tests on the variables of e-commerce adoption factors. Because these e-commerce adoption factors are the constructs/building blocks of the proposed e-commerce adoption model. The tests that have been applied are chi-square test, regression and correlation analysis of statistical data to measure the validity and relationships of independent and dependent variables of the model. These tests indicated the relation and interaction between variables of the model by considering e-commerce adoption as dependent variable and identified challenging factors as independent determinant variables.

This technique of validating theoretical models by testing variables of the model building factors (control and dependent variables) was applied by various literals in various studies. For example, Marta and Susana in 2016 have made the validation of “e-business adoption model” developed by Garcia Moreno in 2018. They made an empirical analysis of this e-business model with the title of “The Impact of Organizational Factors on E-Business Adoption: An Empirical Analysis” (Gofichah, 2018). They conducted the validation of the model by measuring the relationship of each variable of the model with itself and how these independent variables could influence the dependent variable (i.e. e-business adoption model) by applying multinomial logistic regression analysis. The data they use to validate the model was taken from e-business watch database, which was preset by the model developer. They categorized the hindering barriers of e-commerce adoption in to three major categories of factors called firm, technology and environment to made model verification.

## **5.5 Testing of model variables**

For conducting such types of model verification, the control variables have to be categorized in the manner of suitable for the variable testing module of the software. These major categories of variables are the four building blocks of the proposed e-commerce adoption model. Model verification by testing factor variable has been taken place by considering the e-commerce adoption model as the dependent variable and the four building blocks or the factors of e-commerce adoption as the main categories of the independent variables.

The independent/control variables are derived from the interview and questionnaires data that were developed previously in this research to identify barriers of e-commerce adoptions. Hence, the measurement of descriptive and statistical significance of these variables in the barriers identification analysis result has been shown in the previous chapter. From the previous sections in Table 4.8 and Table 4.33 the most critical e-commerce barriers observed are the four building block of the developed model (i.e. techno infrastructure, government regulation and support, coordinated e-logistics and payment method option). Thus, here in this section conducting the measurement of each categories of individual variable is worthless, and it could be simply repetitive work. Instead, rearranging and coding of the data for the final estimation of model justification was the critical task here and performed as shown on table 5.1 below. Eighteen dichotomous and four five-point Likert scale variables were selected and undergone tests to verify the proposed e-commerce adoption model. The variables that more describe the four building blocks of the model were selected and categorized in to four groups of techno infrastructure, e-logistics, government regulation and payment method factors/variables.

The dichotomous independent variables which are derived from close-ended type questionnaires with the response of YES or NO have been coded as YES=1 and NO=0. And the selected four five point Likert scale variable questionnaires with responses of None, Some, Half, More than half and All were coded as None =1, Some =2, Half =3, More than half =4 and All =5. Having the above set up of the variables arrangement, the model was verified by testing the relationship of each variable and the effect of these control variables contribution for the adoption of e-commerce. The process of this variable testing and model justification was taken place by subjecting the above variables with its response to the multinomial logistics regression of the SPSS software analyze menu. Under the multinomial regression analysis of this software, there are different relationship and relationship effect predictor options such as model fitting information indicator, likelihood ratio tests, goodness of fit and parameter estimates.

Table 5.1 Input variables of regression analysis for e-commerce adoption model verification

<b>Variables</b>	<b>Code</b>	<b>Variable category</b>	<b>Metrics description</b>
Necessity of internet connection	NIC	Infrastructure	Yes=1 & No=0
Knowing about online payment methods	NOPM	Payment	Yes=1 & No=0
Having e-commerce website	HEW	Infrastructure	Yes=1 & No=0
Understanding about online market	UEW	Infrastructure	Yes=1 & No=0
willingness to create e-commerce website	WCEW	Infrastructure	Yes=1 & No=0
Speed of available internet for e-commerce	SIE	Infrastructure	Yes=1 & No=0
Affordability of internet	AI	Infrastructure	Yes=1 & No=0
Internet slowness & inaccessibility could be main reason for absence of e-commerce	ISIRAE	Infrastructure	Yes=1 & No=0
Importance of e-commerce	IE	Infrastructure	Yes=1 & No=0
Inaccessibility of online payment can be a cause for absence of online shopping	IOPCAOS	Payment method	Yes=1 & No=0
Online shopping sites found in Ethiopia	OSSFEE	Government	Yes=1 & No=0
willingness to home delivery	WHD	E-logistics	Yes=1 & No=0
Necessity of government regulations on e-commerce	NGRE	Government regulations	Yes=1 & No=0
Online sale can improve delivery of products	OSIDP	E-logistics	Yes=1 & No=0
Online market increases number of sales	OMINS	E-logistics	Yes=1 & No=0

<b>Variables</b>	<b>Code</b>	<b>Variable category</b>	<b>Metrics description</b>
Impact of e-commerce on current market	IECM	Infrastructure	Yes=1 & No=0
Accessibility of transport facility to deliver sold products	ATFDSP	E-logistics	Yes=1 & No=0
Availability of logistics service providers in Ethiopia	ALSSPE	E-logistics	Yes=1 & No=0
Internet and telecom access of customers	ITAC	Government support	None=1, Some=2, Half=3, More than half=4 & All=5
Need of customers for home delivery service	NCHDS	E-logistics	None=1, Some=2, Half=3, More than half=4 & All=5
Accessibility of transportation service for customers	ATSC	E-logistics	None=1, Some=2, Half=3, More than half=4 & All=5
Accessibility of online payment systems for customers	AOPSC	Payment method	None=1, Some=2, Half=3, More than half=4 & All=5

Table 5.1 above shown the rearrangement of variables with the corresponding categories of elements of the developed model to be justified and coding of the respondents data. These variables are extracted from the raw interview and questionnaire data gathered previously for analysis purposes of this study. This extraction of variables for model justification purpose was based on the results of analysis made before that more describes the four categories of e-commerce adoption factors of this study. As such, there are nine variables under the category of techno infrastructure,

seven variables under coordinated e-logistics, three variables for payment options and three variables for government regulation and support as shown.

### 5.6 Model testing result and discussion

The out puts of multinomial regression analysis of the SPSS package has been presented in the next three consecutive tables. These are model fitting information, likely hood ratio test and parameter estimates test. The relation between each independent variable by grouping one of them as a reference variable and with the dependent variable. Since the major model elements of the e-commerce adoption model proposed in this study are considered as four independent variables, the significant influence on the dependent variable (e-commerce adoption) presented on parameters estimates test table.

Table 5.2 Model fitting information of multinomial regression out put

Model	Model Fitting Criteria	Likelihood Ratio Tests		
	-2 Log Likelihood	Chi-Square	Df	Sig.
Intercept Only	161.372			
Final	.000	161.372	93	.000

Table 5.3 Output of goodness-of-fit test

	Chi-Square	Df	Sig.
Pearson	.000	81	.000
Deviance	.000	81	.000

Table 5.4 Likelihood ratio test significance level of variables at 95% confidence interval

Effect	Model Fitting Criteria	Likelihood Ratio Tests		
	-2 Log Likelihood of Reduced Model	Chi-Square	Df	Sig.
Intercept	.000 <sup>a</sup>	.000	0	.
NIC	.000 <sup>b</sup>	.	3	.
NOPM	.000 <sup>b</sup>	.000	3	.000
HEW	.000 <sup>b</sup>	.000	3	.005
UOM	.000 <sup>b</sup>	.000	3	.000
WCEW	.000 <sup>b</sup>	.000	3	.003
SIE	.000 <sup>b</sup>	.000	3	.000
AI	.000 <sup>b</sup>	.000	3	.000
ISIRAE	.000 <sup>b</sup>	.000	3	.000
IE	.000 <sup>b</sup>	.	3	.
IOPCAOS	.000 <sup>b</sup>	.000	3	.0002
OSSF	.000 <sup>b</sup>	.000	3	.000
WHD	.000 <sup>b</sup>	.000	3	.000
NGRE	.000 <sup>b</sup>	.000	3	.020
OSCIDP	.000 <sup>b</sup>	.000	3	.000
OMINS	.000 <sup>b</sup>	.000	3	.000
IECM	.000 <sup>b</sup>	.000	3	.000
ATFDSP	.000 <sup>b</sup>	.000	3	.0014
ALSPE	.000 <sup>b</sup>	.000	3	.000
ITAC	.000 <sup>b</sup>	.000	9	.000
NCHDS	.000 <sup>b</sup>	.000	9	.0010
ATSC	.000 <sup>b</sup>	.000	9	.0001
AOPSC	.000 <sup>b</sup>	.000	9	.000

The chi-square statistic is the difference in -2 log-likelihoods between the final model and a reduced model. The reduced model is formed by omitting an effect from the final model.

a. This reduced model is equivalent to the final model because omitting the effect does not increase the degrees of freedom.

b. Unexpected singularities in the Hessian matrix are encountered. This indicates that either some predictor variables should be excluded or some categories should be merged.

### **5.6.1 The relationship between the dependent and independent variables**

The significance of the individual independent variables has been checked with two types of tests, the Likelihood ratio test and the Wald test. The likelihood ratio test evaluates the overall relationship between the independent variable and dependent variable while the Wald test checks the statistical significance of the independent variable in distinguishing the two groups of the independent variable; one of which is the reference category and the other is the one of the two groups under comparison. An independent variable may have an overall relationship with the dependent variable and may not have the statistical significance to distinguish between the pairs of the dependent variable at the same time. Hence, an overall relationship between an independent variable and the dependent variable does not necessarily provide statistical significance for the independent variable to distinguish between the groups of the dependent variable. However, in order to check the significance of an independent variable's role in differentiating the groups of the dependent variable, its overall relationship with the dependent variable should be verified first.

The likelihood ratio test enacts the comparison of the significance levels of the independent variables concerning the confidence interval of 95% defined in the statistical analysis of the variables. The likelihood ratio test output of the multinomial logistic regression can be seen in Table 5.4.

As can be seen in the Table 5.4, the overall relationship between independent variables and the dependent variable are found significant for some independent variables, while for some others cannot affect the independent variable. If the regression is applied with the 95% confidence interval independent variables, which have significance level less than 0.05, are supported to have significant relationship with the dependent variable. Hence, among the factors described and subjected to multinomial logistics regression, most of the independent variables effects are found to have a significant relationship with the dependent variable, adoption barriers. However, there are some independent variables are less significant effect on the dependent variable. For example if we consider only the techno infrastructure category of independent variables, willingness to create e-commerce website (WCEW), Online shopping sites found in Ethiopia (OSSFE) and willingness to home delivery (WHD) with significance level value of 0.784, 0.111, 0.113 respectively have lower significance of relationship as shown in Appendix-3

After the analysis of the likelihood of ratio tests, it could be better to move to the parameter estimates table next, where the effects of the significant independent variables on the dependent variable are analyzed deeper. The output of parameter estimates table can be seen in Appendix-3.

Regardless of some factors that are found insignificant in the likelihood ratio test, the role of the remaining independent variables in differentiating between different groups of the dependent variables is analyzed from the parameter estimates table as shown in Appendix-3. The parameter estimates table allows users to make comparisons between the pairs of dependent variable groups, where the reference category is illustrated in the footnote embedded to the table. Considering the table above, the reference category is the last independent variable, which is payment method and the other three independent variables on which the comparisons between them are represented. The reference category ‘payment method’ is compared with both the dependent variable ‘e-commerce adoption’ and the remaining three independent variable categories.

### **5.6.2 Critical Factors Affecting the Adoption of e-commerce model**

The significance of the critical factors affecting the adoption of the e-commerce model is analyzed according to the results obtained in the likelihood ratio tests and the parameter estimates outputs of the multinomial logistic regression. As we have stated before, most independent variables have significant effect on the adoption of the proposed e-commerce model. Hence, in this section, the factors /independent variables, which have great influence on the dependent variable, i.e. e-commerce adoption has been discussed here. The discussion was held by taking two variables randomly at a time from each category of independent variables. Starting by considering necessity of internet connection (NIC) and speed of available internet (SAI) from the techno infrastructure category are found to be significant in the likelihood of ratio test, having a significance level 0.000 which can be seen in both likelihood ratio tests and parameter estimate as shown in above Table 5.4 and Appendix-3. This confirms that both factors necessity of internet connection (NIC) and speed of available internet (SAI) are affected the dependent variable e-commerce adoption. Hence, the proposed e-commerce adoption model is influenced by various technological factors described previously in this research.

Starting from the comparison between the reference category payment method and the other three categories of independent variables techno infrastructure, e-logistics and government regulation,

the significance of differentiating the dependent variable is checked by the significance levels. For example the factors necessity of internet connection (NIC) and speed of available internet (SAI), having a significance level of 0.000, are found to be significant in terms of distinguishing the four categories of the dependent variable 'e-commerce adoption'.

For examining the dependent variable that is preferred by this factor,  $\text{Exp}(B)$  values will be examined.  $\text{Exp}(B)$  value less than 1 indicates that the chances of being in the reference dependent variable increases for each unit increase in the related independent variable. Hence,  $\text{Exp}(B)$  values less than 1 show that the survey respondents, who rated the factor techno infrastructure higher than the others, will be more likely to be in the dependent variable. The value of  $\text{Exp}(B)$  for the factors necessity of internet connection (NIC) and speed of available internet (SAIE) are displayed as 0.83 and 0.76, which implies that for each increase in the rate of NIC and SAIE, the likelihood of being in the group of respondents who rate positive effect towards the e-commerce adoption.

The likelihood of ratio test verifies the significance of the factors accessibility of transport facility to deliver sold products (ATFDSP) and availability of logistics service providers in Ethiopia (ALSPE) under the e-logistics category of independent variables, which has a significance level of 0.014 and 0.000 respectively. This test implies that the adoption of e-commerce model are influenced by the e-logistics category of these two independent variables accessibility of transport facility to deliver sold products (ATFDSP) and availability of logistics service providers in Ethiopia (ALSPE). Provided these e-logistics factors influence on the adoption of e-commerce model, the comparison between the reference category 'payment method' and the other three categories of independent variables show significant relationship. Hence, it can be inferred that the factors under the e-logistics category are significant that differentiate respondents' e-commerce adoption intentions of the four categories of factors.

Necessity of government regulation on e-commerce (NGRE) under the category of government regulation significance level of 0.000 is found to be factor, having a significant in the likelihood of ratio test and in the parameter estimate. This implies that the relationship between government regulation and e-commerce adoption is significant. Thus, the independent variable necessity of government regulation has influenced the adoption model of e-commerce. Having the influence of government regulation on e-commerce adoption, the relationship between the variables should be

investigated further. The interpretations regarding the relationship between government regulation and e-commerce adoption can be made from the parameter estimates output of the regression analysis. The comparison between the reference category 'payment method' and the group 'the remaining three categories' have an acceptable significance level and the corresponding Exp(B) value is less than 1 which implies that respondents, who rate necessity of government regulation on e-commerce higher, are more likely to be in the reference category.

The independent variable accessibility of online payment system for customers (AOPSC) under the last category of payment method, which is reference category, is found to be significant according to the likelihood of ratio test shown in the Table 5.4. Having a significance level of 0.000, at the confidence interval of 95%, which supports the existence of a relationship between payment method and e-commerce adoption.

## **5.7 Implementation approach of the model**

For the implementation of the proposed e-commerce adoption model, the respected clients and stakeholders specifically mentioned in the model, but not the only ones have responsible for the successful implementation of this model. These respected bodies responsible for the model implementation are government, banks, internet and telecom service providers (Ethio-telecom in Ethiopia) logistics service providers, merchants and customers.

To make the online transactions practical in Ethiopia based on this proposed e-commerce adoption model, the government of Ethiopia has great role. As mentioned many times in this study, government regulations and rules on trade as well as technology infrastructures are significant challenging factors of e-commerce adoption and implementation. Since the Ethio-telecom, which provides telecom and internet, service in Ethiopia is owned by the government, the government of Ethiopia has double roles in implementation of this model. The first is to formulate and approve rules and regulation for e-commerce security trust and the second is allow the Ethio-telecom to improve and do the expansions of its service for every area of the country. Improving the road expansion and quality for the efficient transportation and logistics service is also the responsibility of the government in terms of transport infrastructures convenient for e-logistics providers.

The other responsible bodies are banks, logistics service providers, merchants and customers. Coordinated logistics service was one of the basic building blocks of this model and it needs to be improved for the delivery services of online sold products. Banks have the responsibility of issuing and acquiring the online payment options for both the customers and the merchants. Finally, merchants have to start and practice of selling their products within the available infrastructure and other existing favorable opportunities gradually for their customers. Customers need to change the attitude towards trust and security and have to start buy goods and services online.

### **5.7.1 Implementation procedure of the model**

Different stakeholders have different responsibilities for the implementation process of this e-commerce adoption model as per the study result showed. Even if there are various stakeholders and clients who have the role of involvement in realizing this model, the major responsibilities lay on government, financial institutions, telecom service providers, logistics companies, online retailers and society or customers. The reason why the for mentioned parties have primary responsibilities for the implementation of this model is that, the basic factors identified in this study are closely linked with those institutions. Here on function and responsibilities of the parties are discussed in detail as follows.

Since all factors studied as barriers to adopt the e-commerce in Ethiopia are directly or indirectly linked with the government, then government has great role for implementation of the proposed e-commerce adoption model. For example, in case of technology infrastructure barriers Ethio-telecom is the only provider of telecom network and internet service. Ethio-telecom is owned by the government; hence to allow and introducing the new emerging telecom technology to provide advanced services requires government decisions. Government regulation and policy was one of the major e-commerce barriers to changed and enacted by the government concerning the implementation of e-commerce on Ethiopian retailers as well as other companies. Regarding trade rules, the government of Ethiopia has formulated and approved new regulations of trade that includes e-commerce as mentioned in SWOT analysis section.

When considering Ethio-telecom it as independent institution, which is responsible for telecom and internet service infrastructure improvement in the country, should have its own role in implementing this model. One of the barriers of e-commerce adoption was technology

infrastructures like internet and telecom network. Thus, the expansion and accessibility of these services have been done by Ethio-telecom. Not only accessibility service quality also needs improvements for the seek of e-commerce business to be successful.

Logistics service is very important for the successful implementation of e-commerce. Since online customers are optimistic for the immediate delivery of products, they purchased online from online sellers. This has been proved in analysis of customers' interest for home delivery of products. Having this in mind, now the e-logistics service providers available in Ethiopia have great responsibilities to meet the demand for logistics services. Local carriers have significant contributions as it has been seen in delivery type analysis of this study. However, large logistics companies including international companies such as DHL has no significant involvements due to their highest cost barrier for local online retailers. Online retailers under this investigation that outsources the delivery service for local carriers have made contract agreement.

Payment methods are found to be very important factor for the adoption of e-commerce in Ethiopia. So far, in this study, payment types used by online retailers are; mobile payment, bank transfer and cash on delivery (offline payment), for local customers and visa cards, Mpesa, and pay pall for international customers. As it has shown, most of online payment options used are provided by the banks, therefore financial institutions have important role in implementation of e-commerce. This is done by providing security encrypted, convenient and easy online payment methods. Besides providing convenient and security encrypted payment methods, banks should integrate it with main customers account. It should be noted that online payment types could not be provided only by financial institutions. Hence, these payment methods can be made by anybody however linked with financial institutions to complete monetary transactions.

# CHAPTER SIX

## CONCLUSION AND RECOMMENDATION

### 6.1 Conclusion

Depending on the results of the previous chapters of this research, making and improving both individual and company businesses with the help of electronic and internet in various trade enterprises like supermarkets, wholesalers and retailers are very difficult. The observations conducted on the target groups in this study showed that, Ethiopia as developing country is in the first stage to introduce digital market as one sector of the economy. However, it is on the preliminary stage and the idea is not put to the ground due to various hindering factors.

The challenges in implementation of electronic commerce were identified. Based on the challenges in Ethiopia, the researcher proposed a customized e-commerce adoption model. The challenges were considered as basic common characteristic features of e-commerce implementation. The entire process of online shopping or electronic commerce contains various aspects of advanced technical and separately standing steps and elements. Then the operation of electronic buying or selling is accomplished with the network of these elements. The challenging factors that were identified in this study in Ethiopian context are also the parts of the network elements of e-commerce. These are technological infrastructures, e-logistics, government policy and regulations on trade and electronic payments, availability of payment methods, customer's access to electronic device, economic capability of merchants, awareness and interest are the basic influencing factors identified by the research.

The evaluation criteria were set to assess how these factors influenced on the adoption of electronic commerce and the more influenced factors considered as identified challenges of ecommerce implementation. The assessment was done with the analysis of responses of target respondents of questionnaire data using SPSS software. Interviews were made with online retailers and wholesalers played major roles in identification and analysis of the research problems and to obtain the desired research outcome.

Finally, the theoretical electronic commerce adoption model that suites best with the Ethiopian currently available techno infrastructures and other valuable situations was developed. This

theoretical model has been constructed with the building blocks found from the intuitively literature reviews of the benchmarking adoption model done previously in both developed and developing countries. In addition to benchmarking model reviews, the barriers of e-commerce were identified in this research also used to build the proposed adoption model.

The developed e-commerce adoption model was validated and verified using the theoretical model verification techniques like relationship analysis and multinomial logistics analysis on the critical variables or e-commerce challenges. The strength, weakness, opportunities and threats (SWOT) analysis of each model building block elements was made for the purpose both model justification and implementation approach. An implementation strategy of e-commerce adoption was also discussed after validating the model.

## **6.2 Recommendation**

In the case of our country's current condition in terms of technological delay to transform from traditional way to digital industrializations and economic operations, one can offer intellectual comments and recommendations or the respected body, stakeholders, business enterprises and customers. However, based on the study of this research made on challenges to implement electronic commerce in Ethiopia, the recommendations to overcome the major hindering factors are forwarded. They are used to develop and strengthen the advanced digital marketing system in the country.

- Firstly, it is important to recommend that the Ethiopian government has to make re-endorsements of trade rules and regulations by considering the newly emerging electronic commerce technology since it is highly essential and has vital role in today's market competitiveness for business enterprises and this leads to build strong economy in the country.
- It is also highly recommended that telecom and internet infrastructures should be improved in terms of both accessibility and effectiveness to provide consistent and smooth service for the community and business firms. This is why the technology infrastructure is the backbone for all type of ICT based business in the current competitive market condition.
- Local trade enterprises and merchants need to be recommended to start and practice promoting and selling their products online within the available infrastructure to bring the

future development on their business instead of simply waiting for the favorable conditions. This recommendation is suggested with the intention of the consideration of social media usage behaviors of our community that was observed while conducting the field survey during the data collection.

- The coordination of government officials with both public and private business enterprises is recommended to encourage transport facility and delivery logistics service providers to be existed in Ethiopia for the full adoption of e-commerce since the electronically advanced logistics is the major influential factor of e-commerce.
- Creating awareness by the government for both the traders and community regarding the necessity and benefit of running business with the help of electronic commerce and its influence on the country's economy by showing and telling the practices of e-commerce from the outside countries.

## **6.2 Future works**

The problems in the area of e-commerce in Ethiopian are yet unsolved and it needs the interest and effort of researchers to do extensive studies since e-commerce itself and related technologies are in the emerging stage in the country. Hence, the following topics can be list out as future works from this research.

- 1) The study of technology infrastructures on e-logistics improvement.
- 2) Evaluating the effect of logistics on e-commerce in Ethiopian online retailers.
- 3) Study of impact of e-commerce on supply chain integration.

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## **APPENDIX -1: Questionnaires developed by the researcher (English version)**



### **HAWASSA UNIVERSITY, INSTITUTE OF TECHNOLOGY**

#### **DEPARTMENT OF INDUSTRIAL ENGINEERING**

**To be filled by the manager or owner of the business**

Dear Sir/Madam

I am currently doing a research under Hawassa University, Institute of Technology. The purpose of the study is to investigate the challenges of online market and logistics service practice and to propose theoretical framework in Ethiopian supermarkets, wholesalers and retailers.

**IDENTIFYING CHALLENGES AND PROPOSAL OF THEORETICAL ADOPTION MODEL TO IMPLEMENT E-COMMERCE: A CASE OF RETAILERS IN ETHIOPIA**

I would be very grateful if you could spend a small amount of time answering the attached questionnaire. All the questions are designed for quick and easy response. I would also like to assure you that all response given also treated as strictly confidential and used for educational purposes only. If you need further clarification, please contact me with the following address.

I would like to thank you for your kind cooperation. Thank you!

Yours genuinely,

Department of industrial engineering

Hawassa University, Institute of technology

Ayengew Tsega (researcher/student)

Tel: +251-09-21-27-91-27

E-mail: tsegaayenew@gmail.com

Questionnaire form

Name of respondent's \_\_\_\_\_ Sex \_\_\_\_\_ Age \_\_\_\_\_

Job/ Position \_\_\_\_\_

Questionnaire for the respective trade company background

1. Trade company profile (Name and trade mark)

Name \_\_\_\_\_

Trade mark/license/ serial number \_\_\_\_\_ Established year \_\_\_\_\_

2. Address of the trade company:

Town \_\_\_\_\_ Kebele \_\_\_\_\_ Tel \_\_\_\_\_

P. O. Box \_\_\_\_\_ E-Mail \_\_\_\_\_

E-commerce site data questionnaires

1. To what degree the following barriers can affect your adoption of e-commerce.

(Score of 5 =Very Highly, 4 =Highly, 3 =Moderately, 2 =Lowly, & 1=Very Lowly).

S.N	Challenges to adopt e-commerce	Scores					Response
		1	2	3	4	5	
1	Technology Infrastructure limitation	1	2	3	4	5	
2	Absence Online Payment methods	1	2	3	4	5	
3	Inconvenient transportation & delivery service	1	2	3	4	5	
4	Lack of government policy & support	1	2	3	4	5	
5	Lack of investment cost	1	2	3	4	5	
6	Lack awareness in customers perspective	1	2	3	4	5	
7	Lack of trust and security issues	1	2	3	4	5	

8	Lower economic background of customers	1	2	3	4	5	
9	Computer hardware & software illiteracy	1	2	3	4	5	
10	Absence of Coordinated e-logistics	1	2	3	4	5	

2. How can you observe changes on your retailing business after you start selling online?

(Score of 5 = strongly agree, 4 = agree, 3 = neutral, 2 = disagree, & 1= strongly disagree).

S.N	Effect of e-commerce on logistics	Scores					Response
1	Increase number of sale	1	2	3	4	5	
2	Inventory performance	1	2	3	4	5	
3	Customers satisfaction	1	2	3	4	5	
4	Business development	1	2	3	4	5	
5	Order tracking & processing quality	1	2	3	4	5	
6	Lead time efficiency	1	2	3	4	5	
7	Procurement management	1	2	3	4	5	
8	Information flow quality	1	2	3	4	5	
9	Storage cost decreased	1	2	3	4	5	
10	Service quality	1	2	3	4	5	
11	Save time	1	2	3	4	5	
12	Service flexibility	1	2	3	4	5	

3. How can you observe changes on the status of delivery on your retailing business after you start selling products online?

(Score of 5 = strongly agree, 4 = agree, 3 = neutral, 2 = disagree, & 1= strongly disagree).

S.N	Delivery evaluation indexes	Scores					Response
1	Delivery speed	1	2	3	4	5	
2	Delivery reliability	1	2	3	4	5	
3	Reduced Cost of delivery	1	2	3	4	5	
4	Information homogeneity	1	2	3	4	5	
5	Accessibility of delivery service providers	1	2	3	4	5	
6	On time delivery	1	2	3	4	5	
7	Convenient and safety delivery	1	2	3	4	5	
8	Lower risk delivery	1	2	3	4	5	
9	Last mile delivery service	1	2	3	4	5	
10	Home delivery service	1	2	3	4	5	

4. What activities and supporting technological tools do you implement in your online business for the overall development and operational success of your online business?

(Score of 1= Yes and 0 = No).

S.N	Implemented Online shopping operations	Scores		Response
1	Order location tracking	1	0	
2	Order data management	1	0	
3	Inventory management	1	0	

4	Customer relationship management	1	0	
5	On time delivery	1	0	
6	Electronic Procurement	1	0	
7	Resource & supply replenishment	1	0	
8	Radio frequency identification (RFID)	1	0	
9	Geographical positioning system (GPS)	1	0	
10	Bar code	1	0	
11	Delivery & transportation management	1	0	
12	Order tagging and coding	1	0	
13	Electronic data interchange (EDI)	1	0	
14	Demand forecasting	1	0	
15	Supply chain management	1	0	

Closed ended type questionnaire: Please Tick the following questions YES or NO

No.	Question	Yes	No
1	Do you think Internet connection is essential to establish online market?		
2	Do you ever heard about any form of online payment method?		
3	Do you have a website to sell your goods online?		
4	Do at least half of your customers have an idea of online market?		
5	Do you want to create your own online sell web front if internet supports?		
6	Do you believe that the available internet connection is strong enough to implement online market?		
7	Do you think that internet cost is reasonable and affordable to start online business?		

8	Is low IT support your main reason not to start e-commerce?		
9	Do you think internet market is useful and important?		
10	Is inaccessibility of online payment method can be a cause not to start online shopping?		
11	Do you know online shopping site found in Ethiopia?		
12	Are you willing to deliver products you sold to your customer's home if they need home delivery?		
13	Do you believe that government regulations on e-commerce are necessary?		
14	Do you use any social media platform to advertise your product?		
15	What is literacy background of the customer can they understand easily the software and hardware components of electronic devices?		
16	Do you believe that online sale can improve delivery of products?		
17	Do you expect online market could result significant changes on the number of sales?		
18	Do you think that implementation of e-commerce would result positive impacts on the existing market situation in Ethiopia?		
19	Do you get easily transport facility to deliver your sold products to your customers if you want to sale products online?		
20	Do you know any logistics service providers in Ethiopia?		

Subjective type questionnaire: Please choose one and tick the box

- How many of your customers are interested to buy goods online?  
None  some  half  more than half  all
- How many of your customers have awareness about online market?  
None  some  half  more than half  all
- How many of your customers have computers or smart cell phones?  
None  some  half  more than half  all
- How many of your customers do you guess they have internet and telecom access?  
None  some  half  more than half  all
- How many of your customers can browse internet on computers to buy goods online?

- None  some  half  more than half  all
6. How many of your customers are well educated to understand the functionality and usage of electronic devices in order to facilitate the online transaction?  
None  some  half  more than half  all
7. How many of your customers have stable economic background to afford products online?  
None  some  half  more than half  all
8. How many of your customers do you guess they need home delivery service?  
None  some  half  more than half  all
9. How many of your customers can get transportation service to receive their online orders?  
None  some  half  more than half  all
10. How many of your customers have credit cards or any form of online payment systems?  
None  some  half  more than half  all
11. If you want to deliver sold products to your customers, which transport alternative do you prefer?  
Regular transport  postal service  SMS  DHL  all
12. Which government regulations of e-commerce are more important?  
Payment regulation  Commercial trust   
E-commerce shipping and delivery policy  All
13. Which social media platform do you use most frequently to advertise your products?  
Facebook  Telegram  Instagram  Twitter  None
14. What type of costs do you expect if you have decided to start online market?  
Internet cost  delivery cost  payment cost  all
15. What benefits do you expect from e-commerce when you implement it?  
Increased sale of products  Real time transaction   
Customer satisfaction  all
16. What additional investment cost is needed to implement internet market?  
Website creating cost  cost paid for infrastructures  service cost  all
17. How do you receive your money for sold products?

- Bank transfer  online payment  mobile banking  delivery on cash all
18. What are the obstacles you may face if you are decided to start selling products online?  
Inaccessibility of internet  low customer interest   
Online payment difficulties  lack of customer's awareness  all
19. What is the behavior of your customers towards accepting online shopping technology?  
Reluctant  passive  active  eager  very eager
20. What problems might be happen due to absence of legal government regulations on the process of online transaction?  
Fraud  lack of trust  lack of transaction safety  all

## APPENDIX-2: Collected data in the SPSS software spreadsheet

closed ended type questinnaires.sav [DataSet2] - IBM SPSS Statistics Data Editor

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1: Q1 1

	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20	var
1	1	0	2	0	1	0	1	1	1	1	1	1	1	1	1	1	1	1	0	1	
2	1	0	1	0	1	0	0	0	1	1	0	1	1	1	1	1	1	1	0	0	
3	1	1	0	1	1	1	0	0	1	0	1	1	1	1	1	1	1	1	0	1	
4	1	1	0	1	1	0	0	1	1	1	0	1	1	0	0	1	1	1	0	0	
5	1	0	0	0	1	0	0	1	1	1	0	1	1	0	1	1	1	1	1	1	
6	1	0	0	0	1	0	1	1	1	0	0	0	1	0	1	1	1	1	0	0	
7	1	0	0	1	1	0	0	1	1	1	0	1	1	1	1	1	1	1	0	0	
8	1	1	0	0	0	0	1	1	1	0	1	0	1	0	1	1	1	0	0	1	
9	1	0	1	1	1	1	1	1	1	1	1	1	1	0	1	0	1	1	1	0	
10	1	0	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	
11	1	0	0	0	1	0	0	1	1	0	0	1	1	0	0	1	1	1	0	0	
12	1	0	1	1	1	1	1	0	1	0	1	1	1	1	0	1	1	1	1	1	
13	1	0	1	1	0	1	0	1	1	1	1	1	1	0	1	1	1	1	0	1	
14	1	1	1	1	0	0	0	1	1	1	1	1	1	1	1	1	0	1	1	0	
15	0	0	0	0	0	0	0	1	1	1	0	1	1	0	0	1	1	1	1	0	
16	1	0	1	0	1	1	1	1	1	0	1	1	1	0	1	1	0	1	1	1	
17	1	0	0	1	1	1	1	1	1	0	0	1	1	0	1	1	0	1	1	0	
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26	1	1	0	0	1	0	0	0	1	0	0	1	1	0	0	1	1	1	0	0	
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28	1	0	1	0	1	0	0	0	1	1	0	1	1	1	0	1	1	1	0	0	
29	1	0	0	0	1	0	0	1	1	1	0	1	1	0	1	1	1	1	0	1	

closed ended type questionnaires.sav [DataSet2] - IBM SPSS Statistics Data Editor

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1: Q1 1

	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20	var	
31	1	0	0	1	1	0	0	0	1	0	1	1	1	0	1	1	0	1	1	1	1	
32	1	0	1	1	1	0	0	1	1	1	0	1	1	1	1	1	0	1	1	1	1	
33	1	0	0	0	0	0	1	1	1	1	0	1	1	0	1	1	1	1	0	0	0	
34	1	0	1	1	1	0	0	1	1	1	1	1	1	0	0	0	1	1	1	1	0	
35	1	0	1	0	1	0	0	1	1	1	1	0	1	0	1	1	1	0	0	0	0	
36	1	0	1	1	0	1	0	0	1	0	0	0	1	0	1	1	1	1	0	0	0	
37	1	0	0	0	1	1	0	0	1	1	0	1	1	0	0	1	1	1	0	0	0	
38	1	1	0	1	1	1	1	1	1	0	1	0	1	0	0	1	1	0	1	0	0	
39	1	0	1	1	1	0	0	1	1	0	1	1	1	0	0	1	1	1	0	0	0	
40	1	1	1	0	0	1	0	1	0	1	1	1	1	0	0	1	1	1	0	0	0	
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45	1	0	1	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0	1	0	0	
46	1	0	1	0	1	0	0	1	1	1	0	1	1	0	0	1	1	1	0	0	0	
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58	1	0	1	0	1	0	1	1	1	1	1	1	0	0	0	1	1	1	1	0	0	
59	1	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	0	

**APPENDIX-3: Output of parameter estimate showing effect of factors on adoption of e-commerce**

**Parameter Estimates**

E-commerce adoption by retailers		B	Std. Error	Wald	df	Sig.	Exp(B)	95% Confidence Interval for Exp(B)	
								Lower Bound	Upper Bound
Techno	Intercept	74.876	16.086	21.667	1	.000			
infrastru	[NIC=0]	1.423	10.069	11.458	1	.000	0.83	1.05	1.42
cture	[NIC=1]	0 <sup>b</sup>	.	.	0	.	.	.	.
	[NOPM=0]	14.206	2.513	31.948	1	.000	1.4	10	20.40
	[NOPM=1]	0 <sup>b</sup>	.	.	0	.	.	.	.
	[HEW=0]	-24.265	1.999	14.289	1	.000	0.281	.73	1.45
	[HEW=1]	0 <sup>b</sup>	.	.	0	.	.	.	.
	[UOM=0]	-26.464	2.783	90.433	1	.000	0.212	1.34	7.5
	[UOM=1]	0 <sup>b</sup>	.	.	0	.	.	.	.
	[WCEW=0]	1.515	5.541	.075	1	.784	0.52	8.74	34.6
	[WCEW=1]	0 <sup>b</sup>	.	.	0	.	.	.	.
	[SAIE=0]	12.354	2.275	29.45	1	.000	.76	23.30	27.72
	[SAIE=1]	0 <sup>b</sup>	.	.	0	.	.	.	.
	[AI=0]	24.033	2.187	12.71	1	.000	3.0	3	19
	[AI=1]	0 <sup>b</sup>	.	.	0	.	.	.	.
	[ISIRAE=0]	62.024	3.198	36.039	1	.000	4	16	45
	[ISIRAE=1]	0 <sup>b</sup>	.	.	0	.	.	.	.
	[IE=0]	83.114	8.344	99.211	1	.000	1.2	.98	1.543
	[IE=1]	0 <sup>b</sup>	.	.	0	.	.	.	.
	[IOPCAOS=0]	7.373	2.251	10.728	1	.001	1.75	19.314	136
	[IOPCAOS=1]	0 <sup>b</sup>	.	.	0	.	.	.	.
	[OSSFE=0]	3.377	2.120	2.538	1	.111	.276	.45	152
	[OSSFE=1]	0 <sup>b</sup>	.	.	0	.	.	.	.
	[WHD=0]	-12.744	8.037	2.515	1	.113	.91	4	20.0
	[WHD=1]	0 <sup>b</sup>	.	.	0	.	.	.	.
	[NGRE=0]	59.689	9.754	37.447	1	.000	.36	167	177
	[NGRE=1]	0 <sup>b</sup>	.	.	0	.	.	.	.
	[OSCIDP=0]	109.457	5.198	43.413	1	.000	3.14	1.29	9.14

	[OSCIDP=1]	0 <sup>b</sup>	.	.	0	.	.	.	.
	[OMINS=0]	79.817	5.299	22.855	1	.000	1.13	142	149
	[OMINS=1]	0 <sup>b</sup>	.	.	0	.	.	.	.
	[IECM=0]	31.775	10.798	8.60	1	.003	6.90	95.6	949
	[IECM=1]	0 <sup>b</sup>	.	.	0	.	.	.	.
	[ATFDSP=0]	22.756	3.478	42.12	1	.000	5.8	31	69
	[ATFDSP=1]	0 <sup>b</sup>	.	.	0	.	.	.	.
	[ALSPE=0]	-7.376	2.738	7.260	1	.007	.001	2.92	.13
	[ALSPE=1]	0 <sup>b</sup>	.	.	0	.	.	.	.
	[ITAC=1]	-15.621	5.644	21.37	1	.000	1.41	2.22	9.0
	[ITAC=2]	-89.555	5.660	20.32	1	.000	1.27	1.94	8.4
	[ITAC=3]	-61.168	6.164	98.46	1	.000	2.7	1.54	4.80
	[ITAC=4]	0 <sup>b</sup>	.	.	0	.	.	.	.
	[NCHDS=1]	-48.004	3.692	16.069	1	.000	1.4	1.02	1.97
	[NCHDS=2]	-4.481	3.090	2.102	1	.147	.011	2.65	4.83
	[NCHDS=3]	-98.292	5.648	30.873	1	.000	2.05	0.9	1.31
	[NCHDS=4]	-34.881	2.331	22.829	1	.000	7.10	3.6	6.8
	[NCHDS=5]	0 <sup>b</sup>	.	.	0	.	.	.	.
	[ATSC=1]	60.255	4.330	13.675	1	.000	1.47	30	71
	[ATSC=2]	-24.251	3.281	54.629	1	.000	2.9	0.73	1.8
	[ATSC=3]	-31.473	3.234	94.694	1	.000	2.14	0.78	1.21
	[ATSC=4]	0 <sup>b</sup>	.	.	0	.	.	.	.
	[AOPSC=1]	-24.039	11.389	4.455	1	.035	3.63	7.34	18.0
	[AOPSC=2]	-43.201	5.170	69.834	1	.000	1.73	3.8	4.3
	[AOPSC=3]	28.631	18.160	2.486	1	.115	2.71	.001	77
	[AOPSC=4]	0 <sup>b</sup>	.	.	0	.	.	.	.
E-	Intercept	-12.642	17.510	49.859	1	.000			
logistics	[NIC=0]	-97.432	10.596	84.557	1	.000	4.85	4.6	5.06
	[NIC=1]	0 <sup>b</sup>	.	.	0	.	.	.	.
	[NOPM=0]	25.559	3.702	47.659	1	.000	1.25	8.8	17.8
	[NOPM=1]	0 <sup>b</sup>	.	.	0	.	.	.	.
	[HEW=0]	-5.884	2.103	7.828	1	.005	.003	4.5	12.2
	[HEW=1]	0 <sup>b</sup>	.	.	0	.	.	.	.
	[UOM=0]	4.616	2.615	3.114	1	.078	1.01	6.0	17.0
	[UOM=1]	0 <sup>b</sup>	.	.	0	.	.	.	.
	[WCEW=0]	80.031	3.035	65.493	1	.000	.571	1.4	2.1

[WCEW=1]	0 <sup>b</sup>	.	.	0	.	.	.	.
[SAIE=0]	41.820	2.030	24.302	1	.000	.42	2.71	7.76
[SAIE=1]	0 <sup>b</sup>	.	.	0	.	.	.	.
[AI=0]	35.487	2.325	22.901	1	.000	2.5	20	24.6
[AI=1]	0 <sup>b</sup>	.	.	0	.	.	.	.
[ISIRAE=0]	4.057	3.762	1.163	1	.281	.81	.036	.920
[ISIRAE=1]	0 <sup>b</sup>	.	.	0	.	.	.	.
[IE=0]	44.564	9.254	23.192	1	.000	.2	0.129	0.169
[IE=1]	0 <sup>b</sup>	.	.	0	.	.	.	.
[IOPCAOS=0]	32.824	2.654	15.996	1	.000	1.80	2.91	326
[IOPCAOS=1]	0 <sup>b</sup>	.	.	0	.	.	.	.
[OSSFE=0]	37.975	2.371	25.550	1	.000	.310	29	32
[OSSFE=1]	0 <sup>b</sup>	.	.	0	.	.	.	.
[WHD=0]	13.761	2.694	26.092	1	.000	.947	4.8	8.6
[WHD=1]	0 <sup>b</sup>	.	.	0	.	.	.	.
[NGRE=0]	87.626	2.793	84.566	1	.000	1.136	2.47	2.70
[NGRE=1]	0 <sup>b</sup>	.	.	0	.	.	.	.
[OSCIDP=0]	99.594	4.981	39.850	1	.000	1.79	1.03	3.11
[OSCIDP=1]	0 <sup>b</sup>	.	.	0	.	.	.	.
[OMINS=0]	17.866	4.228	17.857	1	.000	.574	144	228
[OMINS=1]	0 <sup>b</sup>	.	.	0	.	.	.	.
[IECM=0]	-26.071	10.627	6.019	1	.014	.75	4.28	5.005
[IECM=1]	0 <sup>b</sup>	.	.	0	.	.	.	.
[ATFDSP=0]	-25.621	2.191	13.703	1	.000	.466	1.01	3.4
[ATFDSP=1]	0 <sup>b</sup>	.	.	0	.	.	.	.
[ALSPE=0]	-45.360	1.547	60.137	1	.000	1.99	3.63	4.13
[ALSPE=1]	0 <sup>b</sup>	.	.	0	.	.	.	.
[ITAC=1]	-58.456	9.748	35.960	1	.000	.410	2.06	8.13
[ITAC=2]	-35.892	8.236	18.993	1	.000	.58	2.52	2.64
[ITAC=3]	-76.112	8.504	80.104	1	.000	.80	5.084	5.526
[ITAC=4]	0 <sup>b</sup>	.	.	0	.	.	.	.
[NCHDS=1]	62.673	4.528	11.540	1	.000	1.65	2.11	2.18
[NCHDS=2]	12.763	4.346	33.244	1	.000	.45	1.9	2.2
[NCHDS=3]	75.265	3.482	47.158	1	.000	.486	28	44.7
[NCHDS=4]	75.150	3.577	41.421	1	.000	.433	39	48
[NCHDS=5]	0 <sup>b</sup>	.	.	0	.	.	.	.
[ATSC=1]	-10.143	2.972	11.645	1	.001	.93	1.162	1.3

	[ATSC=2]	-57.024	2.087	46.874	1	.000	.71	1.8	1.02
	[ATSC=3]	-80.172	3.656	40.848	1	.000	.5	1.17	1.9
	[ATSC=4]	0 <sup>b</sup>	.	.	0	.	.	.	.
	[AOPSC=1]	43.789	11.246	15.162	1	.000	.304	27	38
	[AOPSC=2]	67.501	8.386	64.793	1	.000	.206	1.50	2.8
	[AOPSC=3]	17.533	10.621	2.725	1	.099	.411	37	45
	[AOPSC=4]	0 <sup>b</sup>	.	.	0	.	.	.	.
Government regulation	Intercept	-6.017	26.692	.051	1	.822			
	[NIC=0]	-.514	.000	.	1	.	.598	0.58	0.598
	[NIC=1]	0 <sup>b</sup>	.	.	0	.	.	.	.
	[NOPM=0]	3.174	4.925	.415	1	.519	.23	32	37
	[NOPM=1]	0 <sup>b</sup>	.	.	0	.	.	.	.
	[HEW=0]	15.641	2.967	27.796	1	.000	.620	18	20
	[HEW=1]	0 <sup>b</sup>	.	.	0	.	.	.	.
	[UOM=0]	-23.488	5.137	20.903	1	.000	.30	2.67	3.4
	[UOM=1]	0 <sup>b</sup>	.	.	0	.	.	.	.
	[WCEW=0]	64.263	6.228	10.455	1	.000	.81	40	62
	[WCEW=1]	0 <sup>b</sup>	.	.	0	.	.	.	.
	[SAIE=0]	9.615	5.160	3.473	1	.062	.49	608	642
	[SAIE=1]	0 <sup>b</sup>	.	.	0	.	.	.	.
	[AI=0]	6.759	3.740	3.267	1	.071	.86	65	74
	[AI=1]	0 <sup>b</sup>	.	.	0	.	.	.	.
	[ISIRAE=0]	31.168	5.502	32.091	1	.000	.437	12	16
	[ISIRAE=1]	0 <sup>b</sup>	.	.	0	.	.	.	.
	[IE=0]	102.00	13.863	54.140	1	.000	.98	1.5	1.54
	[IE=1]	0 <sup>b</sup>	.	.	0	.	.	.	.
	[IOPCAOS=0]	2.997	5.591	.287	1	.592	.35	0.9	1.19
[IOPCAOS=1]	0 <sup>b</sup>	.	.	0	.	.	.	.	
[OSSFE=0]	10.920	3.528	9.578	1	.002	.55	54.83	55.62	
[OSSFE=1]	0 <sup>b</sup>	.	.	0	.	.	.	.	
[WHD=0]	27.104	7.646	12.565	1	.000	.59	181	190	
[WHD=1]	0 <sup>b</sup>	.	.	0	.	.	.	.	
[NGRE=0]	12.749	7.491	2.896	1	.089	.34	145	190	
[NGRE=1]	0 <sup>b</sup>	.	.	0	.	.	.	.	
[OSCIDP=0]	13.976	13.151	10.910	1	.000	1.132	1.23	1.76	

[OSCIDP=1]	0 <sup>b</sup>	.	.	0	.	.	.	.
[OMINS=0]	40.811	18.025	5.126	1	.024	.52	12	16
[OMINS=1]	0 <sup>b</sup>	.	.	0	.	.	.	.
[IECM=0]	-32.185	9.744	10.910	1	.001	1.05	1.34	2.07
[IECM=1]	0 <sup>b</sup>	.	.	0	.	.	.	.
[ATFDSP=0]	4.247	4.298	.976	1	.323	.98	15	31
[ATFDSP=1]	0 <sup>b</sup>	.	.	0	.	.	.	.
[ALSPE=0]	-33.048	6.139	28.980	1	.000	.44	2.64	7.46
[ALSPE=1]	0 <sup>b</sup>	.	.	0	.	.	.	.
[ITAC=1]	-92.877	23.650	15.423	1	.000	.61	3.41	6.23
[ITAC=2]	-18.672	7.503	6.193	1	.013	.72	3.19	4.19
[ITAC=3]	-23.838	9.190	6.729	1	.009	.43	6.68	7.03
[ITAC=4]	0 <sup>b</sup>	.	.	0	.	.	.	.
[NCHDS=1]	19.851	4.577	18.814	1	.000	.417	31	32
[NCHDS=2]	55.182	6.747	66.883	1	.000	.34	16	18
[NCHDS=3]	27.569	3.651	57.016	1	.000	.940	133	140
[NCHDS=4]	-50.008	8.903	31.553	1	.000	.913	5.057	7.241
[NCHDS=5]	0 <sup>b</sup>	.	.	0	.	.	.	.
[ATSC=1]	-53.258	9.551	31.094	1	.000	.421	5.504	6.000
[ATSC=2]	-43.743	3.355	16.954	1	.000	1.006	1.401	2.222
[ATSC=3]	-69.097	13.761	25.213	1	.000	.78	1.897	2.068
[ATSC=4]	0 <sup>b</sup>	.	.	0	.	.	.	.
[AOPSC=1]	14.797	19.743	.562	1	.454	.72	4.175	7.042
[AOPSC=2]	91.281	12.793	50.911	1	.000	.39	3.02	3.408
[AOPSC=3]	41.465	23.453	3.126	1	.077	1.01	8.11	9.356
[AOPSC=4]	0 <sup>b</sup>	.	.	0	.	.	.	.

a. The reference category is Payment method.

b. This parameter is set to zero because it is redundant.