



# Factors Affecting the Prevalence of Electronic Transaction in Ethiopia

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# **Factors Affecting the Prevalence of Electronic Transaction in Ethiopia**

## Declaration of Originality

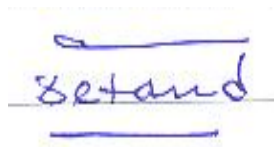
I, Eman Abdella Ali, hereby declare that this research entitled “**Factors Affecting the Prevalence of Electronic Transaction in Ethiopia**” is my original work. I prepared it independently except for the guidance and suggestion of the Research Advisor. This study has not been submitted anywhere for any award. And any reference to work done by any other person that has been used in this research paper has been duly acknowledged.

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## **Abstract**

*The Ethiopian economy has been growing at an impressive rate over the last few decades. Although commercial transactions have grown as a result of the economic growth, electronic transactions have not shown similar level of growth; especially when compared to peer developing nations. This study was conducted with the main objective of identifying and measuring the major factors which affect the prevalence of electronic transactions in Ethiopia. Data collected through questionnaire distributed to respondents in Ethiopia was used in this study. The major factors identified as independent variables are existence of adequate telecommunication infrastructure to support electronic transactions, awareness of availability of electronic transactions, availability and use of electronic payment system services, digital literacy, and perceived legal protections for electronic transaction users. Multiple linear regression model was used to measure or analyze the effect of the independent variables on the dependent variable, prevalence of electronic transactions in Ethiopia. The study found that each of the major factors identified have significant effect on the prevalence of electronic transactions in Ethiopia. In particular, this study found that digital literacy among ecommerce customers is the most significant factor which affects the number of electronic transactions in Ethiopia, with one unit increase in digital literacy having a 0.424 effect on the dependent variable. The existence of adequate telecommunications infrastructure to support electronic transactions and availability and use of electronic payment system services also significantly affect the prevalence of electronic transactions in Ethiopia, with one unit increase in each of these variables representing a 0.211 and 0.146 increase in the dependent variable respectively. Finally, awareness of availability of electronic transactions and perceived legal protections for electronic transaction users was also found to significantly affect the prevalence of electronic transactions with one unit increase in each of these factors respectively representing a 0.088 and 0.085 increase. The study shows that positive interventions in each of these factors by the government and all relevant stakeholders will have a positive impact on the prevalence of electronic transactions in Ethiopia.*

**Key Words:**

- Electronic transaction
- Electronic Payment
- Electronic and Communications Technology
- Telecommunications infrastructure
- Digital economy
- Digital literacy

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# **CHAPTER ONE: Introduction**

## **1.1 Background of the Study**

An electronic transaction is an occasion when a person buys or sales something or when money is exchanged through electronic means. The advancement of electronic and communication technology has revolutionized the way we live our daily lives. It has had a great impact on the way we transact with each other. Electronic transactions and the overall development of digital economy are very important for the economy of any country. For businesses, finding more convenient ways to transact is invaluable. In this world of globalization, businesses which are facing increasing competition need to be proactive in finding ways to increase efficiency in transaction and be a part of the digital economy (OECD, 2019).

In the Ethiopian context, as the country continues to increasingly liberalize its economy, businesses will face increasing competition from foreign businesses which have more experience in transacting electronically. It is therefore essential to ensure that businesses in Ethiopia become well versed in how to effectively participate in the developing global digital economy (Lemma, E-Commerce Challenge and Opportunity in Ethiopia, 2017).

The use of information technology provides countries with a great opportunity to improve their economic performance. One study has found that the use of internet has contributed more than ten percent (10%) of the total GDP growth in Brazil, China and India over the period from 2009 to 2013 (McKinsey&Company, 2013). Accordingly, countries with increased use of the internet in economic transactions experience an increased GDP growth performance. There are several studies which also assess the positive impact of information technology for the individual performance of businesses. To illustrate, a study has found that the adoption of information technology offers a competitive advantage to businesses, provided that such changes are properly integrated with other resources of the business, including human resources (Powell & Dent-Micallef, 1997).

In today's world, the role of electronics and communications technology in facilitating commercial transactions has become invaluable. The creation of a strong and reliable digital

economy presents countries with a unique resource which, if properly utilized, can bring a transformative level of economic growth (Federal Democratic Republic of Ethiopia, 2020). To aid in the development of an inclusive and thriving digital economy, scholars have identified a number of important factors which affect the prevalence of electronic transactions. The most important factors which have been identified to be decisive factors which affect the prevalence of electronic transactions in an economy. These factors which have been identified include the existence of adequate telecommunication infrastructure to support electronic transactions, awareness of availability of electronic transactions, digital literacy, availability and use of electronic payment system services, and perceived legal protections for ecommerce users. These factors are particularly important because they present important opportunity for policy intervention by the government. (Pathways for Prosperity Commission, 2018)

The digital economy in Ethiopia is at a very initial stage of development. However, there is clear policy direction taken by the Ethiopian Government to build an advanced and inclusive digital economy. The digital economy is considered by the Government as a way to foster growth in other economic sectors. It is important for governments to proactively enact the necessary policies and legal framework to cope with the development of technology mediated and more efficient transactions (Cepheus Research and Analytics, 2019).

This study will evaluate factors which affect the growth of the electronic transactions, with a particular focus on understanding the extent to which these factors affect the prevalence of electronic transactions. As we will see in this study, the factors identified above are important contributors to transactions and may have serious implications for the volume of transactions made in any country. For this reason, the government must be able to put in place effective policies and regulations which encourage and control the growth of the digital economy.

## **1.2 Statement of the Problem**

Trade has always been a part of the development of society. With the increase in number of trade (or transactions), human beings have tried to find ways to bring efficiency to the way we

transact. As technology advanced, individuals have found a way to use technology to bring efficiency in transactions. Electronic transactions are therefore a result of human innovation to trade more productively. Increase in the use of electronic transactions and the resulting development of a digital economy delivers concrete advantages to a country's economy. The use of information technology catalyzes growth in all sectors of the economy. Leveraging information technology can bring about high levels of growth to the economy.

Despite the advantages which can be brought about with the use of electronic transactions, prevalence in the use of electronic transactions in Ethiopia has lagged behind significantly. An estimate by scholars indicates that the current market size of the Ethiopian digital economy (electronic transaction value) stands at about three hundred and fifty billion birr or about ten percent (10%) of the GDP (Gross Domestic Products) of the country. (Cepheus Research and Analytics, 2019) As we will see in detail, although the Ethiopian economy has registered high level of overall growth over the past decades, the growth of the digital economy has not been as impressive.

The lag in the development of an inclusive digital economy in Ethiopia costs the country a lot in potential earnings. The current economic growth performance could have been and could be greatly enhanced with the aid of information technology. What is more, lag in the development of digital economy reduces the country's economic competitive advantage. This is also true for individual businesses that fail to make use of information technology. Ethiopian businesses cannot globally compete with other businesses if they fail to utilize advantages brought with the use of information technology.

In light of the extensive economic benefits which can be delivered due to the increase in use of electronic transactions, it is important to clearly understand factors which will encourage the use of electronic transactions. While there are generally many different factors which affect the prevalence in use of electronic transactions, some of the factors more profoundly affect the prevalence in use of electronic transactions. These factors are the existence of adequate telecommunication infrastructure to support electronic transactions, awareness of availability of electronic transactions, availability and use of electronic payment system services, business environment for entrepreneurs, and perceived legal protections for ecommerce users.

Although these factors are important for the prevalence of electronic transactions, there is a gap in the study of these factors in relation to electronic transactions. There have been some studies which have studied the challenges and opportunities presented by electronic transactions. However, there have not been studies which analyze these five major factors collectively from the ecommerce consumer point of view. Additionally, there is a gap in the existing research with regard to identifying the extent to which these five major factors affect the volume of use of electronic transactions from the consumers' perspective. The current status of these factors in the identified areas of the country, the contribution of each of these factors for use of electronic transactions has not been adequately studied. Particularly, the role of use of electronic payment systems in increased use of electronic transactions has not been studied in the Ethiopian context.

This study aims to close this gap by providing concrete data on the current status of each of the five factors. Furthermore, with the continued relatively poor performance of volume of electronic transactions, it is essential to identify factors which can be leveraged to increase the use of electronic transactions in Ethiopia. This study also aims to measure the extent to which each of these factors affect the prevalence of electronic transactions. Understanding the extent to which each of these factors affect electronic transactions is also important in prioritizing factors which are most effective in increasing the use of electronic transactions in Ethiopia.

### **1.3 Research Objectives**

This study intends to identify major factors which affect the prevalence of electronic transactions in Ethiopia. The five major factors which are the focus for this study are: adequate telecommunication infrastructure to support electronic transactions, awareness of availability of electronic transactions, availability and use of electronic payment system services, digital literacy, and perceived legal protections for ecommerce users are then studied. This study will also evaluate the rate in which these factors affect the adoption of electronic transactions in Ethiopia.

The general research objectives of this study are:

- i. To identify and study the major factors which affect the prevalence of electronic transactions in Ethiopia.

The specific research objectives of this study are:

- i. To analyze the effect of adequate telecommunication infrastructure to support electronic transactions and availability and use of electronic payment system services on the number of electronic transactions in Ethiopia.
- ii. To analyze the effect of awareness of availability of electronic means of transaction, digital literacy and perceived legal protections for ecommerce users on the number of electronic transactions in Ethiopia.
- iii. To analyze the extent to which each of these factors affect electronic transactions.

### **1.5 Significance of the Study**

The Government has a special interest in encouraging digital transactions for a number of reasons. Firstly, ensuring that people transact through digital means will save resources used to print paper money. Additionally, the push towards a digital financial service is expected to assist the Government's bid to increase financial inclusion. Security wise, it is far easier to use online payment to mitigate and even eliminate counterfeiting and theft of currency. Further, increased digitalization of transaction will assist in tracking informal economic transactions, and to bring it within the confines of formal economic transactions. It is also important to consider that businesses which will invest in this sector will contribute toward economic growth and increase employment in the country.

In addition to the reasons proposed above which have increased the Government's interest in encouraging usage of electronic transactions, recent difficulties caused by the COVID-19 Global Pandemic and the political and military conflict in Ethiopia has pressured the Government to encourage methods of transactions with minimal risk. Electronic transactions generally bring an ease of transactions by making payments fast, convenient and easy. For large-scale business, electronic transactions will augment business transactions by making them more expedient. The

digitalization of payments as a replacement of the outdated cash transaction, saves time and other resources by providing a simpler way of money transfer.

The Ethiopian digital economy is at an important juncture, set to grow significantly within the next few years. In order to bring about this growth, it is important to identify and positively stimulate factors which positively affect the number of electronic transactions. Further, with digital economy being vastly advanced in some countries and still at the initial stages of development in other countries, particularly in developing countries like Ethiopia, it is important to understand the conditions favorable for the flourishing of a digital economy.

This study will identify the major factors which affect the prevalence of electronic transactions in Ethiopia and assess the status of these factors within the Ethiopian context. Upon identifying factors which affect electronic transactions in Ethiopia, this study will examine the extent to which each of these factors affect the use of electronic transactions. This study will also analyze the correlation between use of electronic payment systems and the overall use of electronic transactions in Ethiopia. This is important because the effect of use of electronic payment systems on overall electronic transaction is scarcely studied within the Ethiopian context. Furthermore, seeing the important changes which have taken place in recent years regarding the digital economy in Ethiopia, this study will also be the most up to date publication on the major factors which affect the use of electronic transactions in the country.

## **1.6 Scope**

The study applies a definition of the electronic transactions used by the Organization for Economic Co-operation and Development (OECD). The OECD provides that electronic transaction means the sale or purchase of goods among different persons (including entities and individuals) over computer mediated networks. (OECD, 2001) Under this definition, this study aims to evaluate the factors which significantly affect the volume of electronic transactions in the Ethiopian context.

The study identifies a list of five factors which affect the number of electronic transactions in Ethiopia and studies their status in Ethiopia. For this purpose, the study utilizes data collected among adult citizens living in the Addis Ketema Sub-city of Addis Ababa city, Ethiopia. The data for this study was conducted from the perspective of customers of electronic transactions. The study is therefore limited within this scope.

### **1.7 Limitation of the Study**

The main limitation for this study was lack of directly relevant literature. Resources directly related to the topic were hard to find. Local resources with regard to this topic were extremely limited. The novelty of the topic combined with lack of local data related to the topic have made this study relatively hard to conduct. The lack of general and consistent practice in the area has also presented a great challenge. Limitation with regard to time and other resources have also contributed to the difficulty faced while conducting this study.

Further, the author of this study, in collecting the data for this research, has obtained feedback from consumers. The Author of this study believes that a different but equally important perspective on the research question would be obtained by turning this perspective to digital products and services providers. Due to lack of resources, such a detailed and extensive study has not been made by this author.

## **CHAPTER TWO: LITERATURE REVIEW**

### **2.1 An overview of the Ethiopian Digital Economy**

According to the World Statistics Pocketbook, the Ethiopian population was over one hundred and fourteen million in 2020, growing at a rate of 2.6% (UNSD, 2019). In 2018, the GDP of Ethiopia had reached 84.292 billion USD growing at an annual rate of 6.8% (UNSD, 2019). The increasing population and economic growth in the country creates a favorable condition for rise in the number of digital goods and services providers. There is high correlation between economic growth and the prevalence of electronic transactions (Slozko & Pelo, 2014).

Unfortunately, the assessment of the economic environment of Ethiopia has been highly altered due to the outbreak of the COVID-19 pandemic and the violent conflict which has engulfed Northern Ethiopia since November 2020. When we consider the economic effect of the Covid-19 Pandemic, scholars estimate that Ethiopia, in the best-case scenario, had experienced a fall in GDP of 6.6% (Geda, 2021). Furthermore, reliable assessments are yet to be made regarding the economic impact of the prolonged military conflict in the Northern Ethiopia, but it is believed that the negative effect will be significant. Data shows that the Ethiopian economy grew at a rate of 8.4% in 2019 and 6.1% in 2020 (African Development Bank , 2021). However, this decline only accounts for the economic downturn caused by the Covid-19 pandemic and does not account for the negative effects of the military conflict in the northern Ethiopia. To elaborate on the current uncertainty surrounding Ethiopia's economic performance, the International Monetary Fund under its latest World Economic Outlook indicated a GDP growth projection of 2% for 2021 but failed to indicate growth projections for the year 2022 (the only other countries excluded from the projections were Afghanistan, Syria and Libya) (Collins, 2021).

Nevertheless, the general negative consequences of Covid-19 seem to have less of an impact on electronic commerce and payment platform service providers. This is because electronic transactions were considered as a way to conclude transactions without risking the spread of Covid-19 through physical contact. Cashless transactions were particularly encouraged as the preferred alternative by the Ethiopian Government during the past few years mainly: to monitor and control all financial transactions in the country in an effort to counter threats of money

laundering and financing of terrorism in the country, to encourage the cost saving digital mode of transactions in Ethiopia, to prevent cash hoarding, and to combat the spread of the Covid-19 Pandemic (Gobena & Kebede, 2021). As an illustration of the impervious nature of technology companies to the economic downturn caused by the Covid-19 Pandemic, a Report by the United Nations Conference on Trade and Development provides that businesses geared towards digital business models have been more resilient to the Covid-19 outbreak, outlining that e-payment enabling companies have particularly experienced fast growth in the uptake of their services (Vitale & Cyron, 2020).

The use of technology as a driver for economic development presents an important and underutilized opportunity for businesses in Ethiopia. Ethio telecom, the public enterprise which is the principal provider of communications services in Ethiopia, boasts a total customer of more than 60.8 million people (Ethio telecom, 2022). Ethio telecom further reports that there are over 58.7 million mobile subscribers and over 23.4 million data and internet users (Ethio telecom, 2022). In addition, in a striking policy decision, the Ethiopian government had recently decided to open the telecommunications sector to private investment. In line with this commitment, it has recently issued a national communications service provider license to a foreign investor, Safaricom Telecommunications Ethiopia Private Limited Company. This is expected to boost Ethiopian's communications services usage by lowering costs of communication services and in turn encourage digitalization of commerce (Al Jazeera and News Agencies, 2021).

In relation to payments, in 2018, 99% of the adult population relied on cash in order to make payments (to pay bills). Despite a significant increase in telecom subscription recorded, Ethiopia has shown significant failure in utilizing advancements in digital financial services. Although the low usage of digital payment services provides a relatively untapped market to new entrants, it also presents a challenge in that new entrants will be forced to newly acquaint the population with their services, which may prove to be difficult. The global Findex indicates that only 0.3% of Ethiopians have mobile money accounts compared to 73% in Kenya and 31% in Rwanda (World Bank Group, 2018). A limited number of electronic payment service providers currently operating in Ethiopia have made a small headway in the market. However, an overwhelming

majority of Ethiopians still depend on paper money for transactions. (Cepheus Research and Analytics, 2019)

Information technology, including information technology which enable electronic transactions, are now used in almost all aspects of a business ranging from aiding in the production process by providing more efficient products and production processes to providing access to a wider marketplace for businesses to promote and sale their products of services. A number of studies outline the particular importance of competitive advantages obtained through the adoption of information technology, provided that such changes are properly integrated with other resources of the business (Powell & Dent-Micallef, 1997). But studies also rightly state that competitive advantages delivered by information technology which are usually quickly outdated may become short lived (Powell & Dent-Micallef, 1997). Indeed, a number of commercial banks in Ethiopia concede that their digital products sometimes become obsolete before they cover the costs of their adoption (Kebede, 2020). It is therefore important for businesses to adopt and integrate the right technology at the right time.

## **2.2 Electronic Transactions**

The term electronic transaction is a wide concept which incorporates electronic transactions and digital payment within its ambit. The Organization for Economic Co-operation and Development (OECD) on its glossary of statistical terms provides that electronic transaction means the sale or purchase of goods among different persons (including entities and individuals) over computer mediated networks (OECD, 2001).

The value of the global digital economy is estimated to be worth above \$11.5 trillion in 2019 and this figure is set to reach above \$ 23 trillion by 2025. The digital economy provides an incredible opportunity for countries to achieve economic growth and for businesses to gain an enhanced and convenient access to trading and investment opportunities. Most hold that the digital economy will be a major tool in reducing poverty and creating jobs in low-income countries like Ethiopia (Economic Commission for Africa, 2019). Failure to utilize the opportunities presented by the digital economy also brings the risk of having an inefficient economy which will lag behind its competitors in all aspects. This is why the Digital Ethiopia 2025 policy document

issued by the Ethiopian government stresses the need for urgency in catching up with the digital advancements gained by peer countries (Federal Democratic Republic of Ethiopia, 2020).

The Ethiopian digital economy landscape reveals that Ethiopia is still at the early stages of digital development. However, researchers note that the digital economy is at a “lift-off phase” because of a number of favorable conditions. An assessment of electronic service providers in Ethiopia indicates that there are over five hundred and fifty (550) private sector electronic service providers, with some gaining impressive levels of acceptance than others. Private electronic service providers in the Ethiopian digital economy are mainly engaged in the digital finance, ecommerce/e-classifieds, and transport and logistics sector. In addition to this, the Ethiopian government has also made some progress in providing different services electronically (Cepheus Research and Analytics, 2019).

### **2.3 An Assessment for Major Factors which Affect the Prevalence of Electronic Transactions**

As discussed previously, electronic transaction means the sale or purchase of goods among different persons (including entities and individuals) over computer mediated networks. Electronic transactions form an important component to the concept of digital economy. The digital economy is an important asset for any country which can be used to enhance the growth of a country’s economy. In today’s world, every economic sector can be greatly benefited by technologic advancements (OECD, 2020).

There are a number of factors which have been found by researchers to be important for the flourishing of electronic transactions. Different studies have identified a number of factors which significantly affect the prevalence of electronic transactions. However, the author of this study has examined research which aimed at identifying factors which are important from consumers perspective and can be altered through intervention by the government. Accordingly, a study by the World Bank Group (2020) shows that the key factors which affect electronic transactions are digital infrastructure, digital public platforms, digital financial services, digital business, and digital skills. Digital infrastructure refers to the existence of infrastructure to support widely accessible, reliable and affordable internet connection. (World Bank Group, 2020) Digital public

platforms refers to the increase in availability of electronic provision of public services. (World Bank Group, 2020) Increase of access to and usage of digital financial services is also another element identified under this publication. (World Bank Group, 2020) The remaining two factors are the existence of digital businesses and digital education in education institutions and the workplace. (World Bank Group, 2020) On the other hand, a study by Oxford's Charting Pathways for Inclusive Growth indicates that infrastructure, people, finances, and policy or regulation are the factors which more profoundly affect the prevalence of electronic transactions. (Pathways for Prosperity Commission, 2018) Finally, a study by McKinsey & Company (2013) provides that government initiatives (national ICT strategy), infrastructure, a healthy business environment, financial capital, and human capital with ICT skills are the factors which affect the prevalence of electronic transactions (McKinsey&Company, 2013).

Another publication which provides a list of factors which are important to enable digital activities is Cisco's Country Digital Readiness: Research to Determine a Country's Digital Readiness and Key Interventions, Cisco Corporate Affairs (2018). According to this research, a countries digital readiness can be assessed and scored by evaluating the seven key factors which enable digital activities. Factors used for the assessment are technology infrastructure, technology adoption, human capital (skilled labour force), basic needs (life expectancy, mortality rate, access to electricity), ease of doing business, business and government investment in innovation and technology, and encouraging start-up environment. Ethiopia scores a 7.01 on this measure of which scores can range from 0 to 25, being grouped among countries which are at the lowest stage of digital readiness. (Cisco Corporate Affairs, 2018) The United Nations Development Programme's Digital Transformation Framework on the other hand provides that connectivity infrastructure, people (digital literacy), government (digital public services), business (start-up environment, financing initiatives), and regulation are important factors for increase in number of electronic transactions. (United Nations Development Programme, 2022)

Based on information from the above and other research done on the topic, the author of this study has summarized the most important factors which affect the prevalence of electronic transactions are existence of adequate telecommunication infrastructure to support electronic transactions, awareness of availability of electronic transactions, digital literacy, availability and

use of electronic payment system services, and perceived legal protections for ecommerce users. These elements will briefly be discussed below in relation to Ethiopia.

#### **a. Telecommunication Infrastructure**

Until recently, the public enterprise Ethio Telecom has enjoyed a monopoly over the provision of communications services and is now one of the biggest telecom companies in Africa (Shaban, 2017). The Government has also made an important decision to allow private sector participation in the telecom sector. Based on this policy decision, the government issued the Communication Services Proclamation No. 1148/2019 which established the Communications Services Authority (Communications Services Proclamation No. 1148/2019, 2019). The privatization was decided to be undertaken by offering minority shares of Ethio Telecom to private investors (although this has now been postponed) and issuance of two additional licenses for telecom operators. Based on this, the Authority has issued a national telecommunications operator license to a foreign private investor, Safaricom Telecommunications Ethiopia PLC (Fick, 2019).

These efforts to attain more private sector participation in the telecom sector is expected to boost capacity to provide a widely accessible, reliable and affordable telecom connectivity. It is also important to note that Ethio Telecom has invested heavily in telecom infrastructures over the years, increasing geographical coverage of communications around the country. Ethio Telecom has also recently significantly reduced the cost of telecommunications services, making telecom services cost in Ethiopia in par with other large African economies (Cepheus Research and Analytics, 2019).

#### **b. Digital Payment**

The financial sector is one of the most highly regulated sectors in Ethiopia. This tight regulation has had a negative impact in private sector participation in this sector. Ethiopia has had a National Payment System legislation since 2011. But implementing regulations and directives have been delayed and restrictive. Furthermore, financial inclusion in the country is said to be very low, with reports showing that only 37% of Ethiopians have accounts in formal institutions in 2017 (World Bank Group, 2018) As a result of these and other factors, digital payment services have been slow in uptake and development in Ethiopia.

However, over the past few years, there are positive actions being taken which have achieved significant results in increasing use of digital payment services among Ethiopians. In terms of the law, the National Bank of Ethiopia, guided by the National Payment Proclamation, had previously issued the Mobile Agents Banking Services Directive in 2012 which only allowed for a bank-led (only allowed in partnership with financial institutions) mode of payment services provision. But the National Bank has since issued the Licensing and Authorization of Payment Instrument Issuers Directive No. ONPS/01/2020 and the Licensing and Authorization of Payment Service Operators Directive No. ONPS/02/2020 which introduced a notable departure from the bank-led model of payment service providers to allow local investors to independently invest in the provision payment services. The National Bank of Ethiopia has also issued the National Digital Payments Strategy (2021-2024) in an effort to modernize the country's retail payment system.

With regard to financial inclusion, as a result of the government's policies over the past few years which introduced limitations on cash usage, account ownership and digital payment is said to have increased significantly. The data which shows account ownership of adults in Ethiopia to be at 37% is currently said to be misleading in light of these recent developments. Data from the National Bank at the end of 2020 shows there are over 52 million account holders (which after accounting for double and non-personal accounts) is estimated to be about 60-70% account ownership among adults in Ethiopia (Cepheus Research and Analytics, 2019). Considering the record level of performance of digital service providers (CBE for example has reported 62% of its customer transactions carried out through digital channels) as well, we can conclude that utility of digital payment services among adults in Ethiopia has increased significantly (Cepheus Research and Analytics, 2019).

With respect to building infrastructure to enable digital payments, the National Bank of Ethiopia has launched the Ethiopian Automated Transfer System, which is a modern digital clearing and settlement system. The National Bank of Ethiopia also owns and manages the payment systems infrastructure which allows real time settlement of payments above 200,000 Birr. Further, EthSwitch, the national electronic payment switch, was established by the Ethiopian banks, and

functions to allow interoperability between automated teller machines, mobile money and point of sale networks (The World Bank Group, 2019).

### **c. Digital Literacy**

According to the World Statistics Pocketbook, the Ethiopian population was over one hundred and fourteen million in 2020 (UNSD, 2019). According to estimates, the literacy rate among adults (15-years-old and above) in Ethiopia was 51.8% in 2017 (UNESCO Institute For Statistics, 2022). Unfortunately, there is a lack of reliable data on the current status of literacy and digital literacy in the country.

There is no commonly accepted definition of digital literacy. However, in its more comprehensive sense, digital literacy is the ability to access, manage, understand, integrate, communicate, evaluate and create information through digital technologies. It includes skills that are variously referred to as computer literacy, ICT literacy, information literacy and media literacy (Dagnaw & Tsigie, 2019). In general, literacy and digital literacy have a positive correlation, with digital literacy often building on basic literacy. This is because usually electronic interfaces often require basic literacy skills in order to understand and use (Dagnaw & Tsigie, 2019).

Basic literacy rates are great indicators to understand digital readiness and literacy in a country. For example, a literacy rate of 70% in Rwanda and 79% in Kenya is said to have greatly aided the rapid uptake of electronic transactions in both countries. In Ethiopia, the current 51.8% literacy rate presents a great challenge for digitalization. According to the Digital Ethiopia 2025 Strategy now, the human capital with digital skills in Ethiopia is difficult to estimate. However, as is the case for basic literacy, the number of people which have digital literacy is estimated to be relatively low (Federal Democratic Republic of Ethiopia, 2020).

The Ethiopian Ministry of Science Higher Education has issued the Digital Skills Country Action Plan 2030 for higher education and technical and vocational education and training institutions. This Action Plan is part of the World Bank's Digital Economy for Africa initiative which provides that enhancing digital capacities of the workforce is an important component for the development of a digital economy. The Action Plan is aimed at training students in higher

education institutions to enhance their employability in the digital economy over the coming ten (10) years (Misikir, 2021). Moreover, there are currently initiatives by the Ministry of Innovation and Technology to increase digital literacy through programs which aim to help 70% of Ethiopians become literate by 2025 (Federal Democratic Republic of Ethiopia, 2020).

#### **d. Awareness of Availability of Electronic Transactions**

Awareness is defined as knowledge that something exists or understanding of a state of being. Raising awareness is and will remain to be one of the key factors which affects the adoption level of electronic transactions. Lack of awareness of electronic commerce solutions is one of the main reasons for the lack of prevalence of electronic commerce in developing countries (Yindi, Maumoh, & L., 2020). A review of research done on this topic further indicates that awareness is often a complex notion which may have different levels. To illustrate, while consumers may be aware of the possibility of transacting electronically, additional awareness regarding where online to make the purchase, which brand of item to purchase, and how to complete the purchase (available payment methods and available delivery methods) can have more of a positive impact on customers becoming more engaged in electronic transactions. As such, the different levels of awareness of customers may differently affect the prevalence of electronic transactions (Al-Husban, Yaseen, & Alhosban, 2017).

In the Ethiopian context, there is lack of literature with regard to current status of awareness of availability of electronic transactions. However, there are some studies which identify the lack of awareness of electronic transactions as a challenge for the adoption of electronic transactions in the Ethiopian context (Andavar, Sandaram, Sowjanya, & Reddy, 2018).

#### **e. Policy and Regulatory Framework for the Digital Economy**

Individually, law and technology are inevitable results of human development and civilization. To live together as a community, laws are important. Laws in turn are guided by policies governments put in place as guiding principles.

The law is regarded by some scholars as a reflection of the majority of the society itself. Scholars who uphold this view assume that there is some collective view held by the society. Such a collective view may be held on various issues including human rights, women's rights and other

issues (W/Gebriel & Mohamed, 2008). For our purpose however, we can note that as leaders (including law makers) rise to power after ensuring support from the society in exchange for implementing the wishes of the majority of the society, the beliefs of the society are reflected in the law. On the other hand, other scholars believe that laws should be forward looking. Here the law is regarded as a policy instrument which allows leaders to shape the future of the society. In reality, the law is a reflection of the past and the present, and a way to shape the future (W/Gebriel & Mohamed, 2008).

## **I. The Policy**

The information and communication technology (ICT) sector of Ethiopia is characterized by increased regulation, high public sector participation and expenditure, and low private sector involvement. In the telecommunications sector in particular, the monopoly which the public enterprise Ethio telecom enjoyed has had advantages and disadvantages. For our purpose, the most important disadvantage of restrictions imposed in the telecommunications sector has been the creation of an overall environment which is not conducive for the development of a competitive private sector. For these and other reasons, Ethiopia has failed to properly utilize the potential economic advantages offered by technological advancements. However, this is changing as the government has been taking actions which encourage the role of technology for the development of the country.

To this end, the government has commendably included the technological advancement of the country in the various policies and strategies it has issued. A recent notable example of this action is the Ten-Year Development Plan 2020/21 to 2029/30 which was issued with the objective of developing an inclusive knowledge based and prosperous society. One of the most important goals of this policy is increasing the technological and skills base of the Ethiopian economy. (Federal Democratic Republic of Ethiopia, 2020). Another important policy document adopted by the Ethiopian government is the Homegrown Economic Reform Agenda: A Pathway to Prosperity (2019-2022) which is the main reference document for Ethiopia's current economic reform policy. This policy emphasizes the need to sustain the economic growth already achieved primarily by creating an economic environment conducive for higher private sector participation and structural reforms (Federal Democratic Republic of Ethiopia, 2019). Among structural

reforms, sectoral reforms designed to utilize new growth opportunities in sectors like ICT have been addressed (Federal Democratic Republic of Ethiopia, 2019). One area of structural reform outlined in the policy document is implementing a telecom sector reform to enhance efficiency, reliability, and affordability of telecom services (Federal Democratic Republic of Ethiopia, 2019). After it rightly notes that reforms in the telecom sector are necessary for the development of digital product and service providers, the document provides that liberalization in the sector is essential to increase private sector participation (Federal Democratic Republic of Ethiopia, 2019). In terms of ICT sector or digital economy specific reforms, it identifies promotion of use of ICT for the delivery of public services, promotion of ecommerce and the use of ICT for finance and logistics services, expansion of ICT infrastructure, investing in increasing ICT literacy, an enabling regulatory and business environment, and promoting the export of IT enabled services as important steps in the reform process (Federal Democratic Republic of Ethiopia, 2019).

A more specific policy document which was used to map the digital policy of the country is the “Digital Ethiopia 2025 – A Strategy for Ethiopia Inclusive Prosperity” (Digital Ethiopia 2025). This elaborate policy document which aims to guide the digital transformation of the country was prepared with the involvement of a various local and international stakeholders (Federal Democratic Republic of Ethiopia, 2020). This policy document provides several justifications for its adoption. In particular, it notes that low internet and mobile penetration, high data costs, low access to formal financial services and lack of awareness of existing digital financial services are among the major challenges for the adoption of digital payment systems (Federal Democratic Republic of Ethiopia, 2020). Further, this document rightly points out that regulatory restrictions is the reason for the infancy of the fintech industry (Federal Democratic Republic of Ethiopia, 2020), With regard to electronic commerce, the lack of developed digital financial services, weak regulation and low internet adoption were identified as major constraints (Federal Democratic Republic of Ethiopia, 2020). Since the lack of adequate regulation is identified as a major challenge in the area of electronic commerce and digital financial services, the Government has recently gone to great lengths to ensure that necessary legislations are issued (Federal Democratic Republic of Ethiopia, 2020).

One of the most striking objectives of the Digital Ethiopia 2025 is to emphasize on the sense of urgency (Federal Democratic Republic of Ethiopia, 2020). The document seems to acknowledge the lack of advancement in the digitalization of the Country (Federal Democratic Republic of Ethiopia, 2020). The monopoly which the state owned Ethio telecom has had in the telecommunications market seems to have excluded a healthy competition in this sector and has therefore resulted a private sector in the telecommunications sector which is at its infancy. Additionally, the total exclusion of foreign investment in the financial sector and various limitations imposed on local investors in the financial sector seem to have contributed for the lack of digitalization in the financial sector (Adame, 2021).

The Digital Ethiopia 2025 aims to coordinate digitalization initiatives and create an inclusive digital economy (Federal Democratic Republic of Ethiopia, 2020). The policy notes that the main challenge with regulating the ICT sector in Ethiopia is limited understanding of the sector and how to regulate it and lack of consultation and communication of policy and regulation to the public (Federal Democratic Republic of Ethiopia, 2020). To overcome this, the document proposes the adoption of a consultative and collaborative approach to policy and regulation crafting (Federal Democratic Republic of Ethiopia, 2020).

The National Bank of Ethiopia has also issued the National Digital Payments Strategy (2021-2024). The strategy is meant to work as a guide to private and public stakeholders to significantly develop the Ethiopian payment system (National Bank of Ethiopia, 2020). Noting that the Covid-19 Pandemic has accelerated the need to adopt digital payment methods, the document provides the regulatory framework of digital economies in Ethiopia and outline steps to be taken to bring about the transformation wanted in the area (National Bank of Ethiopia, 2020).

As a general policy direction, the Government of Ethiopia seems to be anxious of the benefits which can be delivered by developing the digital economy of Ethiopia. In addition to the general benefits discussed, the government intends to encourage electronic transactions in order to formalize and control economic activities. The recent political and economic developments in Ethiopia have made clear that financial regulation is greatly lacking in the country. The government therefore has included digitalization and the overall development of the digital

economy as a priority. Further, the proper implementation of these policies should also be a priority for the government.

## **II. The Legislation**

Regulation of electronic transactions often have wide dimensions. For example, an act of electronic transaction will involve a merchant presenting items on a digital platform, a customer browsing the platform to identify the item to be bought, the customer choosing to buy the item, customer ordering payment for the item, a payment processor settling the payment for the item and delivery of the item to the customer. It is beyond the scope of this study to explore all regulations in this regard. However, to simplify the discussion on regulation of electronic transactions, it is necessary to identify and focus on some categories of electronic transaction regulation. Below, we will see a number of categories of regulation of electronic transactions.

### ***a. Electronic Contracts***

At the basis of the law are obligations. The concept of obligation in legal studies, which existed as far back as during the time of the Roman law, is defined by jurists as a legally binding promise or an undertaking to perform or not perform some act(s). The source of obligation maybe contractual or beyond contractual relationships (Kifelew & Shiferaw, 2009). The focus of this paper is on obligations which are formed through contractual relationships.

Our daily life is dictated through negotiations and agreements. A lot of these agreements are not regulated by the law. However, some agreements are legally binding and, as such, are regulated by the law. Contracts are agreements which have the backing of the law. In legal studies, a contract is considered as a way of forming legally binding relationships where one undertakes (or promises) to perform some act(s). The law, next to the terms of the contract, determines which agreements are enforceable, the nature and extent of obligations imposed by the agreement and the remedies if obligation is not performed. This forms an important function of the law of contract which is bringing security in transaction. This means that persons will be able to make transactions without being discouraged because of assuming too much risk (Kifelew & Shiferaw, 2009).

The law regulates binding agreements from manner of conclusion to enforcement. Contracts create binding rights and obligations between the parties. In Ethiopia, the legislation which regulates contracts is the 1960 Civil Code of Ethiopia. This law defines a contract as “an agreement whereby two or more persons as between themselves create, vary or extinguish obligations of proprietary nature” (Civil Code of Ethiopia Proclamation No 165/1960, 1960). The law provides us with general provisions of contract which apply to all contracts regardless of their nature. Even though there are specific provisions set out for different types of contracts as we will see, understanding these general provisions is very important as they form the basic principles for contractual relationships.

In general, contracts can only be made by those persons who have the legal capacity to enter contracts. Additionally, contracts are required to be based on the full and free consent of the parties to the contract. Similarly, contracts can only be made for an objective which is possible and lawful (Civil Code of Ethiopia Proclamation No 165/1960, 1960). A contract which lacks any of these ingredients is generally not enforceable. Contracts are made between two or more people. In addition, obligations created should be commercial in nature. The Ethiopian law does not make restrictions on the manner of making an agreement, except for specific contracts in which the form of making the agreements is restricted (for instance contracts relating to immovable are required to be made in writing) (Civil Code of Ethiopia Proclamation No 165/1960, 1960). In the absence of such restrictions, if one can show that consent has been given by the parties, contracts can be made through electronic means. However, the provisions of the Civil Code were drafted in 1960. This law, while advanced for its time, does not adequately address the modern complexities of electronic contracts.

As stated above, transactions are underpinned by agreements. For individuals to freely trade or perform other transactions electronically, they need to have confidence in the enforceability of the transaction i.e., there needs to be security in transactions. A great way to ensure confidence in electronic transactions is to give it legal recognition and backing. Contracts lawfully made are enforceable. But a question arises when we talk about some practical considerations of enforcing contracts. In the case of electronic contracts, for parties to ask for enforcement from the government (i.e. courts), the existence of the contract has to be proved in a way which is

acceptable by law. Here there is a problem of proper legal recognition of data message, issues associated with consummation of consent, recognition of electronic communication, time of contract formation, formalities of provision of notice, admissibility as evidence of electronic records, etc. (Desta, 2019)

A point to consider for the possibility of conclusion of lawful electronic contracts is the possibility of the parties giving their full and free consent over electronics. According to the law, contracts are made based on the offer by one party and acceptance by the other party of an offer. In general, offer or acceptance may be made orally, in writing, by signs normally used, or by conduct which leaves no doubt as to the party's agreement to be bound by the agreement. (Civil Code of Ethiopia Proclamation No 165/1960, 1960) Article 1692 of the Civil Code further provides that where contract is concluded between absent parties, the place and time in which acceptance is sent to the offeror is considered as the time and place of the conclusion of a contract. (Civil Code of Ethiopia Proclamation No 165/1960, 1960) Although these provisions were not directly intended to apply to electronic contracts, courts can interpret these laws to apply them to instances of conclusion of electronic contracts as appropriate. The Civil Code provides that where it is not required by law, a written form of concluding a contract is not required. (Civil Code of Ethiopia Proclamation No 165/1960, 1960)

The most important laws which have been issued to promote and regulate electronic contracts are the Electronic Signature Proclamation No. 1072/2018 and the Electronic Transaction Proclamation No. 1205/2020. The Electronic Signature Proclamation No. 1072/2018 regulates the modality in which an electronic signature can have legal effect. This Proclamation defines electronic signature as “information in electronic form, affixed to or logically associated with, an electronic message, which may be used to identify the signatory in relation to the electronic message and to indicate the signatory's approval of the information contained in the electronic message.” (Electronic Signature Proclamation No. 1072/2018, 2018) The Electronic Transaction Proclamation for its part defines electronic transactions as “conducting of businesses over computer mediated networks including mobile phones and other devices, and shall include, but is not limited to, electronic commerce and electronic government services.” (Electronic Transaction Proclamation No. 1205/2020, 2020) The Proclamation further defines electronic commerce as

“transaction of goods and services through the Internet or other information network.”  
(Electronic Transaction Proclamation No. 1205/2020, 2020)

The Electronic Transaction Proclamation closes a lot of gaps in terms of the regulation of electronic contracts. The proclamation provides that communication of offer and acceptance for the conclusion of a contract may be wholly or partly expressed by means of electronic message. (Electronic Transaction Proclamation No. 1205/2020, 2020) The electronic message may be sent by the originator himself, a person authorized by the originator or through automated means by the originator or its representative. (Electronic Transaction Proclamation No. 1205/2020, 2020) When it comes to the addressee, where the originator requests for an acknowledgment of receipt of message, any communication (automated or otherwise) or any conduct which sufficiently indicates that electronic message has been received is needed. (Electronic Transaction Proclamation No. 1205/2020, 2020) In principle, this proclamation provides that, the dispatch of electronic message occurs when it enters an electronic system outside the control of the originator. (Electronic Transaction Proclamation No. 1205/2020, 2020) For the addressee, the receipt of electronic message occurs when the electronic message enters the designated electronic system (where there is one) or when it enters the electronic system of the addressee. (Electronic Transaction Proclamation No. 1205/2020, 2020)

Both the Electronic Transaction Proclamation and Electronic Signature Proclamation dictate that information cannot be denied legal affect just because it is in electronic format. This means that the existence of an agreement can be evidenced through electronic means. As discussed above, although some agreements must be made in written form, where there is no such requirement, an agreement can be made through different means and the existence of the agreement can be evidenced through different means. The Electronic Transaction Proclamation provides that in instances where information is required to be in writing, an electronic message is acceptable if it is accessible and is capable of being retained (Electronic Transaction Proclamation No. 1205/2020, 2020). This Proclamation provides for the recognition of electronically affixed signed, including signature by witnesses. It is not yet clear if this practically extends to fulfilling the requirements for contracts to be made in written form (Electronic Transaction Proclamation No. 1205/2020, 2020).

The fact that these laws give recognition to information in electronic form is also important because where there is dispute among contracting parties one of the first questions which needs to be addressed is the existence of a legally acceptable agreement. Based on these laws, where these questions arise, a contracting party can present electronic information (such as email communication) to show the existence of a valid contract. Furthermore, the Electronic Signature Proclamation identifies reliable electronic signatures (digital signature) as electronic signatures that uses asymmetric cryptosystem and are uniquely linked to the signatory, capable of identifying the signatory, is created using a private key controlled by the signatory, and is linked to the electronic message in a way to make subsequent changes detectable. (Electronic Signature Proclamation No. 1072/2018, 2018) However, practical aspects of these relatively recent laws have not yet been tested.

Although we are currently far from having an internationally uniform law on electronic contract, the United Nations Convention on the Use of Electronic Communications in International Contracts (signed November 2005 and entered into force March 2013) can be used as a guide to evaluate local legislations on this topic. This convention, like the Electronic transaction Proclamation, states that a contract should not be denied validity or enforceability just based on the grounds that it is in electronic communication form. Willingness to use electronic contract can be inferred from the party's conduct. The convention also provides that where signature is required, electronic communications which can identify and indicate a party's intention can be used if it is reliable. When it comes to offer and acceptance, while time of dispatch of offer is when the electronic communication leaves the system under the originator's control while the time of receipt is at the time it becomes capable of being retrieved by the addressee (United Nations Convention on Use of Electronic Communications in International Contracts, 2005). However, this convention, which regulates contractual relations between parties whose places of business are in different states, has not been signed or ratified by Ethiopia.

#### ***b. Electronic Payments***

Another aspect involved in the digital transaction process are electronic payments. The ability to make payments electronically is one of factors which is identified as an important foundation for the flourishing of a digital economy. Since the importance of electronic transaction comes from

its convenience, being able to transact electronically may become meaningless if customers are required to make payments manually. (Pathways for Prosperity Commission, 2018)

In Ethiopia, the financial sector, which is generally highly regulated, was not enabled to establish electronic payment mechanisms until the issuance of the National Payment System Proclamation No. 718/2011 and implementing regulations and directives. The National Payment System Proclamation, where it explains its objective, states that a national payment system is an important component of a country's financial infrastructure which ensures financial stability, economic growth and financial inclusivity. (National Payment System Proclamation No 718/2011, 2011) This Proclamation also recognizes and validates the status of electronic communications and electronic signatures (National Payment System Proclamation No 718/2011, 2011).

The National Payment System Proclamation provides a wide definition for national payment systems. This Proclamation extends to those who provide services of sending, receiving and processing of orders of payment or transfers of money and other payment service providers. This Proclamation also importantly provides that no person may provide a national payment system without authorization from the National Bank of Ethiopia. While this Proclamation provided for general rules for payment service providers, the first enabling directive to be issued based on this Proclamation was the Regulation of Mobile and Agent Banking Services Directive No. FIS/01/2012 which was issued on January 1<sup>st</sup> 2013. Based on this Directive, the initial actors in the Ethiopian noncash payment systems were established. The Directive required electronic service providers to be financial institutions or to partner with financial institutions to provide their services (Mobile Agents Banking Services Directive FIS/01/2012, 2012). Due to this, the existing payment service providers are or have been linked with banks or microfinance institutions. This Directive has now been repealed and replaced by the Licensing and Authorization of Payment Instrument Issuers Directive No. ONPS/01/2020 which was issued on April 1<sup>st</sup> 2020.

The National Bank of Ethiopia, in a bid to increase innovative payment instruments and to increase the use of financial services, enacted the Licensing and Authorization of Payment Instrument Issuers Directive No. ONPS/01/2020. An important development in this new law lies

in the fact that share companies (fully owned by Ethiopians or foreign nationals of Ethiopian origin, or jointly owned by Ethiopians or foreign nationals of Ethiopian origin) are among entities which can be licensed as payment instrument issuers. As such, under the current Ethiopian law, both financial and non-financial institutions can give electronic payment services. Aside from financial institutions and private companies established as share companies, public enterprises are also legally allowed to engage in this business (Licensing and Authorization of Payment Instrument Issuers Directive No ONPS/01/2020, 2020). Companies that wish to be licensed as payment instrument issuers are required to have a minimum of ten (10) shareholders and a minimum capital of fifty million birr (ETB 50,000,000). (Licensing and Authorization of Payment Instrument Issuers Directive No ONPS/01/2020, 2020) So far, two public enterprises, i.e. Ethio-telecom and the Ethiopian Postal Services have been allowed to provide payment instrument issuer services. This law further states that a payment instrument is a physical or non-corporal instrument which can be used to make payments or transfer money. A payment instrument issuer is also defined as a person who is authorized to receive money in exchange for a payment instrument that it issues (Licensing and Authorization of Payment Instrument Issuers Directive No ONPS/01/2020, 2020).

Although the newly enacted legislation by the National Bank of Ethiopia represents an important leap forward within this industry, the service of electronic payment in Ethiopia is not a new concept. Indeed, there have been a number of strong companies (in partnership with financial institutions) which have been providing this service since the introduction of the first legislation on mobile and agent banking in 2012. After the issuance of this law, several private companies and public enterprises have joined the existing payment service providers. Currently, about fifteen percent (15%) of all digital service providers operating in the Ethiopian economy are digital financial service providers (this includes payment system, digital banking, remittance etc. service providers) (Cepheus Research and Analytics, 2019). It is also notable that the payment instrument by the public enterprise Ethio Telecom, i.e. telebirr, currently boasts over 18.9 Million customers and a transaction value of 10.4 Billion ETB since its release in May 2021 (Ethio Telecom, 2022).

### *c. Consumer and Data Protection*

The general legislation enacted to regulate trade competition and protect the rights of consumers is the Trade Competition and Data Protection Proclamation No. 813/2013. This law applies to any commercial activity or transaction which has an effect in Ethiopia. (Trade Competition and Data Protection Proclamation No. 813/2013, 2013) This scope provided by the law is broad and is often interpreted widely by the relevant authorities. (Trade Competition and Data Protection Proclamation No. 813/2013, 2013)

The Electronic Transactions Proclamation No. 1205/2020 provides a few provisions to protect consumers in a digital transaction. The Proclamation outlines a list of information that digital product and/or service providers are required to provide to customers. The required information here includes full name, address, relevant registration numbers, sufficient description of the main characteristics of the goods or services to be provided, the full price of the goods or services, terms of agreement, the security procedures and privacy policy of that supplier in respect of payment and personal data of the consumer. (Electronic Transaction Proclamation No. 1205/2020, 2020) The Proclamation also provides that a consumer may cancel an electronic transaction without reason and penalty and any related credit agreement for the supply of goods within seven (7) days after the date of the receipt of the goods; or of services within seven (7) days after the date he/she started to receive the services. (Electronic Transaction Proclamation No. 1205/2020, 2020)

The Proclamation importantly provides that the use of electronic messages for electronic transactions can only be based on consent. (Electronic Transaction Proclamation No. 1205/2020, 2020) It states that a supplier is required to complete an order within thirty (30) days of receiving an order. (Electronic Transaction Proclamation No. 1205/2020, 2020) Failure of the supplier to do this entitles the consumer to immediately terminate an agreement by serving a seven (7) days' notice. (Electronic Transaction Proclamation No. 1205/2020, 2020) Further this law provides that consumers cannot agree to limit consumer protection rights. (Electronic Transaction Proclamation No. 1205/2020, 2020) Additionally, the protections are applicable despite any foreign law which may be applicable. (Electronic Transaction Proclamation No. 1205/2020, 2020) It is also significant to note that a consumer may lodge a complaint regarding violations of

the Proclamation to the Ministry of Innovation and Technology. (Electronic Transaction Proclamation No. 1205/2020, 2020)

Particularly in two sectors, specific customer protective legislations have been issued. In relation to the financial sector, the national bank has issued the Financial Consumer Protection Directive No. FCP/01/2020. This law is intended to protect the customers of financial service providers (including payments, remittances, and insurance supplied through digital means). (Financial Consumer Protection Directive No. FCP/01/2020, 2020) This directive, among other financial services, regulates digital financial services including payment services and electronic banking services. (Financial Consumer Protection Directive No. FCP/01/2020, 2020) This directive requires the fair and equitable treatment of customers and institution of complaint handling and dispute resolution mechanisms. (Financial Consumer Protection Directive No. FCP/01/2020, 2020) The directive further provides that data should be kept confidential and secure and only be used or disclosed in a manner consistent with consent given by the financial consumer or as otherwise allowed by law. (Financial Consumer Protection Directive No. FCP/01/2020, 2020) This directive also regulates unfair fees and unfair credit practices and requires transparency and a requirement of disclosure from financial institutions. A financial service provider is further required to put in place a free internal complaint process and make consumers aware of other available external dispute resolution mechanisms. (Financial Consumer Protection Directive No. FCP/01/2020, 2020)

The Ethiopian National Payment System Proclamation has a few provisions which protects the rights of customers. For example, this law provides that payment service providers should have internal systems to resolve complaints or disputes with customers in relation to the processing of electronic fund transfers. (National Payment System Proclamation No 718/2011, 2011) The Licensing and Authorization of Payment Instrument Issuers Directive, stresses the importance of having a safe, efficient and dependable payment system. The new Directive particularly states that protecting the interests of users and maintaining reliability of payment instrument issuers is among the primary objectives of the legislation. (Licensing and Authorization of Payment Instrument Issuers Directive No ONPS/01/2020, 2020) Maintaining reliability in financial service providers, including digital payment service providers, requires the existence a few strong and

reliable service providers. As financial intuitions are susceptible to systemic risks in which the failure of one service provider may negatively affect all service providers in the sector.

The other notable sectoral law on consumer protection is the Telecommunications Consumer Rights and Protection Directive No. 832/2021. This law was issued with a view to protect the rights of communications services customers. This law requires all communications service providers to develop a code of conduct which outlines the rights and protections for customers, including the right to access basic telecommunications services at reasonable prices. (Ethiopian Communications Authority, 2021) Personal data should be kept protected and kept confidential and shall only be disclosed by court order or through agreement. (Ethiopian Communications Authority, 2021) This law also requires for consumer data to be processed on servers in Ethiopia, making this one of the only laws which require data localization in Ethiopia. (Ethiopian Communications Authority, 2021) This law also requires service providers to establish a complaint handling mechanism and allows consumers to lodge complaints with the Ethiopian Communications Authority where there is dissatisfaction with the decision of the communication service provider. (Ethiopian Communications Authority, 2021)

In terms of data protection, Ethiopia does not have a comprehensive law on personal data protection to date. As a wider protection, the 1995 FDRE Constitution and international agreements ratified by the country provide the right to privacy. Moreover, there are scattered protections in the different laws, including the 1960 Civil Code and the Computer Crimes Proclamation 958/2016. Although there have been reports which indicate that the Ministry of Innovation and Technology (MiNT) had prepared a Draft Data Protection Proclamation which contains detailed provisions on the collection, use, protection and processing of data, the government has so far failed to adopt this important law. Information from officers at this authority provide that this draft was prepared taking lessons from advanced data protection legislations such as the General Data Protection Regulation 2016/679 of the European Union.

#### ***d. Security Issues Involved in Electronic Transactions***

The security issues involved in electronic transactions are significant and can cause distrust among customers and hinder the development of electronic transaction. For consumers in

electronic transactions, the major security issues which they may face are privacy and cybercrime related issues. Even though scholars suggest that the biggest countermeasure to the security issues is investing in technology which prevents or detects breaches, as electronic transactions increasingly become popular, the law must be proactive in addressing security issues in electronic transactions (Sangeetha & Suchitra, 2016).

In relation to international instruments which aim to address security issues in electronic transactions, the African Union Convention on Cyber Security and Personal Data Protection is notable. This convention addresses issues of legality and fairness in electronic advertisement, legal and/or administrative approval and reliability of electronic transaction methods, personal data protection, and combating cybercrimes (African Union Convention on Cyber Security and Personal Data Protection, 2014). Although Ethiopia is not yet a signatory to this convention, the convention itself provides important insight into the dimension of security related issues which customers face in transacting electronically.

In Ethiopia, the relevant law which primarily regulates security related threats to information and communication technology is the Computer Crimes Proclamation. This law is the first attempt at putting in place a comprehensive law which aims to bring security in the use of information and communication technology in Ethiopia. Specifically, this proclamation criminalizes illegal access to computer system, computer data or network; illegal interception of non-public computer data or data processing service; interference with computer systems; causing damage to computer data; committing crimes relating to usage of computer devices, data, computer systems and/or networks; computer related forgery, fraud or theft; producing, in any way making available and/or selling illegal content; crimes against liberty and reputation of other persons; crimes against public security; and illegal advertisement. This proclamation also criminalizes three types of cybercrimes, i.e. hacking, dissemination of malware and denial of service attacks. The proclamation further provides for liability of service providers and provides a few procedural rules to regulate the investigative and court process of such cases (Computer Crimes Proclamation No. 956, 2016).

One of the reasons which prompted the issuance of the Computer Crime Proclamation No. 958/2016 is the failure of previous laws to properly address crimes borne of advancements in

technology, including computer crimes. The Computer Crime Proclamation declares that where crimes provided by other laws are committed by means of a computer, the relevant provisions for the crime will apply. (Computer Crime Proclamation No. 958/2016, 2016) This blanket provision goes far in addressing most criminal activities which may potentially endanger electronic transactions.

Unfortunately, the Computer Crimes Proclamation is also criticized for threatening some constitutionally protected rights of individuals. For instance, the provisions of the proclamation which regulate criminal defamation and inciting violence are considered problematic because they are seen as potentially hostile to the right to freedom of expression of individuals (Article 19, 2016). Furthermore, the discretion afforded to the authorities in investigating computer crimes is seen by some as problematic. Particularly, the ability of investigators to extend search warrants to multiple computer systems can risk investigative overreaches. The law also allows the possibility for courts to order the production or access of computer data without being requiring the appearance of the person concerned, i.e., without giving a chance for the person concerned to protest the order. Another significant procedural rule which goes against basic criminal justice principle is the provision in the proclamation which provides that if a public prosecutor proves just the basic parts of a case, a court may shift the burden of proof to the accused, i.e., the accused will be required to prove that he/she is not guilty. However, with the above shortcomings being noted, the law commendably provides that prevention, investigation, and evidence procedures shall be implemented and applied in a manner that ensures protection for human and democratic rights of individuals (Computer Crime Proclamation No. 958/2016, 2016).

Overall, the Computer Crimes Proclamation presents a comprehensive and relatively modern regulation of security threats in electronic transactions. However, it has missed an important opportunity to regulate some important security related concerns in electronic transactions, such as privacy related offences and intellectual property related offences.

In general, it can be asserted that a widespread use of information and communication technology is, for the most part, a recent phenomenon in Ethiopia. As a result, there has been very little experience in the practical application of these laws. However, the authorities have

been reporting an increase in cyber-attacks on the country. Particularly, the Information Network Security Agency has reported a record number of cyber-attacks, mainly directed at financial institutions, in the second half of 2021 (Ethiopian Monitor, 2022). Africa as a whole and Ethiopia, are generally vulnerable to cybercrimes because of availability of affordable and fast internet, increasing internet use and lack of proper regulation. With the continued increase in cybercrimes, it is important to recognize that investigators, prosecutors, judges and other legal professional in Ethiopia currently have very little experience in properly preventing and prosecuting cybercrimes. As such, it is important to conduct continuous capacity building on the prevention and prosecution of cybercrimes (Ayenew, 2021).

## **2.4 Summary of the Factors which Affect the Prevalence of Electronic Transactions**

As discussed, the author has examined some persuasive research documents (under Chapter 2.3) to identify and examine the factors affect the prevalence of electronic transactions from consumers' perspective. To be clear, the factors to be examined under this study are existence of adequate telecommunication infrastructure to support electronic transactions, awareness of availability of electronic transactions, digital literacy, availability and use of electronic payment system services, and perceived legal protections for ecommerce users.

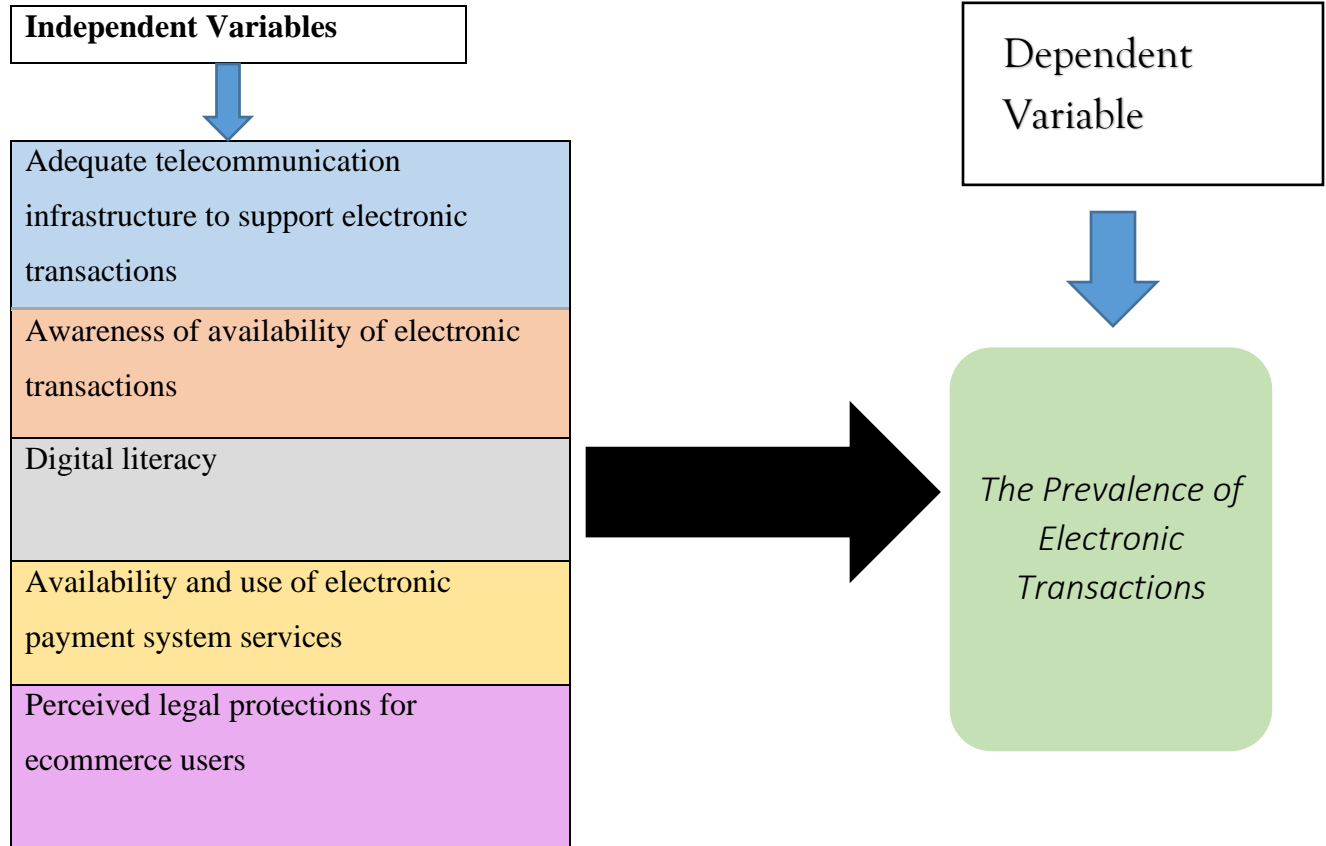
There are a number of additional studies which examine the prevalence of electronic transactions, particularly from the perspective of identifying the opportunities and challenges of ecommerce. For example, a study done by Lemma (2017) on e-commerce challenge and opportunities in Ethiopia provided that, among other factors lack of awareness, lack of ICT infrastructure and lack of legal and regulatory framework are identified to be among the major challenges for the Ethiopian ecommerce industry (Lemma, E-Commerce Challenge and opportunity in Ethiopia, 2017). Another research on the Challenges and Opportunities of ecommerce in Ethiopia also identifies and examines, among other factors, lack of adequate skilled manpower, sociocultural issues (awareness), and legal and policy issues as among the key challenges for ecommerce in Ethiopia (Sundaram, Sowjanya, Andavar, & Reddy, 2018).

The current study intends to examine the research gap which exists because these five factors have not exclusively been examined as the major factors which affect the prevalence of electronic transactions. Moreover, this study will be different as it will direct its focus on factors which affect prevalence of electronic transactions among consumers.

## **2.5. Conceptual Framework**

A conceptual framework is the process of consolidating the number of major literature review findings into one unit. The purpose of this consolidation is to present a narration or a drawing of the strategic position of the study in relation to what exists in the literature (Shikalepo, 2020). The conceptual framework is an organized presentation of the research problem (variables) to show relationships or interaction among the variables.

The conceptual framework for this study presents the various independent variables which were identified from the literature review to have an effect on the dependent factor, prevalence of electronic transactions. The five (5) independent variables identified from the literature review of this study are existence of adequate telecommunication infrastructure to support electronic transactions, awareness of availability of electronic transactions, digital literacy, availability and use of electronic payment system services, and perceived legal protections for ecommerce users. These independent variables which have an effect on the prevalence of electronic transaction are illustrated diagrammatically as follows:



## **CHAPTER THREE: METHODOLOGY**

### **3.1. Introduction**

This chapter will provide a narration of the research methodology of this study. It will present a description of the research design, the research philosophy, the research strategy, research method, the sample and sampling techniques, the target population and data collection and data analysis.

### **3.2. Research Philosophy**

Research Philosophy is a belief in how research should be done, i.e. the way in which data about a phenomenon is gathered, analyzed and utilized. According to Crossan (2003) identifying the philosophy in planning a research study is important because it aids in understanding the interrelationship between what is known and what can be known and how a researcher can discover what can be known. Accordingly, exploring the philosophy is important because: it can narrow down the research method to be used in the study, it will allow the researcher to explore different research methods and methodologies, and it will help the researcher be more insightful it adopting methods not considered previously (Crossan, 2003).

For this research the author has chosen to opt for a post-positivist paradigm. The post-positivist paradigm moves away from the belief that a researcher can be an independent observer and is more concerned with the subjectivity of reality (E-International Relations, 2021). Although it is difficult to pinpoint an absolute truth regarding the variables being studied in this research, the author has begun this study with a theory and has collected the relevant data in order to support or refute the theory.

### **3.3. Research Approach**

A research approach is the plan and procedure of a research which comprises strategies and methods for research that progress the research from broad assumptions to detailed methods of data collection, analysis and interpretation. There are three broad classifications of research approach, i.e. qualitative approach, quantitative approach and mixed approach (Creswell, 2014).

The research approach taken for this study is quantitative approach. In an effort to measure the extent to which the factors identified affect the dependent variable, qualitative research of multiple linear regression was undertaken.

### **3.4. Research Design**

According to De Vaus (2001) research design is the strategy which is used in order to address the research problem. As such, the research design is the mechanism chosen to integrate the different components of a study in a coherent manner in order to address the research problem (De Vaus, 2001).

The main aim of this study is to measure and analyze the extent to which the five factors, i.e. existence of adequate telecommunication infrastructure to support electronic transactions, awareness of availability of electronic transactions, digital literacy, availability and use of electronic payment system services, and perceived legal protections for ecommerce users, affect the prevalence in use of electronic transactions in Ethiopia. To conduct this study, the author employs a quantitative research method in which multiple linear regression model was used to understand how strongly the five factors (identified as independent variables) affect the prevalence of electronic transactions (the dependent variable).

### **3.5. Target population, sample size and sampling techniques**

With a view to measure the extent to which the identified factors affect the prevalence of electronic transaction in Ethiopia, the author aimed to obtain data from people who live in Ethiopia. Particularly, this study was conducted in the city of Addis Ababa. Addis Ababa was chosen for data collection for this study because most of the digital development in Ethiopia is happening in the capital Addis Ababa. (Cepheus Research and Analytics, 2019) This city is the largest urban center in the country accounting for about 25% (twenty five percent) of Ethiopia's urban population. (Erena, Berhe, Hassen, Mamaru, & Soressa, 2017)

Since obtaining data from a fair sample size from the entire city was seen as a major challenge by the Author who had limited resources to conduct this study, it was necessary to further decrease the data source. Accordingly, the author of this study further narrowed down the data

source to Addis Ketema Sub-city located in Addis Ababa. Since this sub-city, which is the most populous sub-city, enjoys a central location and hosts the very vibrant commercial area, Merkato, it was seen as the ideal sub-city to conduct this research.

As it is known, the last census was carried out in Ethiopia in 2007. Current demographic information on the country and the urban centers are therefore based on estimates. The UN estimates that the current Addis Ababa population has reached 5,228,000 (Five Million Two Hundred Twenty-Eight Thousand). Based on the 2007 population data, approximately 9.3% of the Addis Ababa population lives in the Addis Ketema Sub-city. In keeping with this, the current estimated population number of the Addis Ketema Sub-city is 486,204 (Four Hundred Eighty-Six Thousand Two Hundred and Four).

From this identified population size in order to determine the sample size, the simplified formula for proportions by Yemane (1967) was used. This formula was used in an effort to find out the sample size with 95% confidence level.

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

Based on this formula, the sample size identified from the population indicated above is 400 (Four Hundred). To collect the desired data a questionnaire which contained some seven close ended questions was used.

The sampling technique used for this study is convenience sampling technique in order to collect the required data. Convenience sampling is a type of non-probability sampling method which relies on data collection from population members who are conveniently available to participate in study (Dudovskiy, 2022). Accordingly, this study was conducted by speaking to individuals living in the Addis Ketema Area of Addis Ababa and, if they are willing, obtaining their responses for the questions.

### **3.6. Method of data analysis and presentation**

In this study econometric model is used for the analysis of data collected. This section employs a multiple linear regression model to measure to what extent the identified independent variables

affect the prevalence (number) of electronic transactions in Ethiopia. The data obtained from the questionnaires was cleaned and organized using the statistical package for social science (SPSS). The collected data is presented in tables and graphs using different statistical techniques.

### 3.7. Model and variable Specification

A multiple linear regression model is a linear approach for modeling the relationship between a dependent variable and several independent variables. This study applied the model to observe the effect of five (5) variables on the prevalence of electronic transactions.

The following multiple linear regression model is used in this study:

$$Y = \beta_0 + \beta_1 (\text{Age}) + \beta_2 (\text{Sex}) + \beta_3 (\text{Edu}) + \beta_4 (\text{Aw}) + \beta_5 (\text{Law}) + \beta_6 (\text{Inf}) + \beta_7 (\text{EP}) + \beta_8 (\text{DL}) + E$$

Variable	Definition
<b>Dependent Variable</b>	
<b>Y = Electronic Transactions</b>	Prevalence of electronic transactions
<b>Independent Variables</b>	
<b>Age</b>	Age
<b>Sex</b>	Gender
<b>Edu</b>	Education Level
<b>Aw</b>	Awareness of availability of electronic transactions
<b>Law</b>	Perceived legal protections for ecommerce users
<b>Inf</b>	Existence of adequate telecommunication infrastructure to support electronic transactions
<b>EP</b>	Availability and use of electronic payment system services
<b>DL</b>	Digital literacy

<b>E</b>	Error/ Residual
----------	-----------------

Table 1: Variables

### 3.8. Validity and reliability Tests

#### a. Validity Test

The validity of research became conceived because of the precision or correctness of the research finding. Or it became the degree via which the sample of test items represents the content the test was designed to measure. To test the Validity on this study, Pearson’s correlation was used. On the table below the significance on all the variables is below 0.05, this shows that the independent variables are significant. The values have also been crosschecked with the table of critical values Pearson’s r at 95% confidence interval and degrees of freedom at two-tailed N-2 (98). It shows that all the calculated values of the variables are greater than the table value which is 0.195.

		<b>Correlations</b>						
		Prevalence of ET	usage of EPS	adequate infrastructure	Awareness	Digital Literacy	law	Total
Prevalence of electronic transactions	Pearson Correlation	1	.298**	.681**	.739**	.438**	.294**	.736
	Sig. (2-tailed)		.000	.000	.000	.000	.000	.000
	N	400	400	400	400	400	400	400
Awareness	Pearson Correlation	.298**	1	.180**	.280**	.090	.056	.349
	Sig. (2-tailed)	.000		.000	.000	.073	.262	.000
	N	400	400	400	400	400	400	400
Adequate infrastructure	Pearson Correlation	.681**	.180**	1	.541**	.243**	.170**	.674
	Sig. (2-tailed)	.000	.000		.000	.000	.001	.000
	N	400	400	400	400	400	400	400
Digital Literacy	Pearson Correlation	.739**	.280**	.541**	1	.416**	.190**	.653
	Sig. (2-tailed)	.000	.000	.000		.000	.000	.000
	N	400	400	400	400	400	400	400

Usage of electronic payment systems	Pearson Correlation	.438**	.090	.243**	.416**	1	.119*	.459
	Sig. (2-tailed)	.000	.073	.000	.000		.017	.000
	N	400	400	400	400	400	400	400
law provides adequate protections	Pearson Correlation	.294**	.056	.170**	.190**	.119*	1	.458
	Sig. (2-tailed)	.000	.262	.001	.000	.017		.000
	N	400	400	400	400	400	400	400
Total	Pearson Correlation	.736**	.349**	.674**	.653**	.459**	.458**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	
	N	400	400	400	400	400	400	400
** . Correlation is significant at the 0.01 level (2-tailed).								
* . Correlation is significant at the 0.05 level (2-tailed).								

Table 2: Correlations

### b. Reliability Test

Reliability refers to tests for data collection instruments' ability to produce the consistency or stability of measurement and accurate results. The acceptance of 0.60 was used to cut-off the reliability for the study.

Reliability Statistics	
Cronbach's Alpha	N of Items
.702	6

Table 3: Reliability Statistics

The table above indicates that the data instruments were reliable with a Cronbach alpha value of above 0.60. The rule of thumb for Cronbach's Alpha is: > 0.9 excellent, > 0.8 good, > 0.7 acceptable, > 0.6 questionable, >0.5 poor and < 0.5 unacceptable (Tavakol & Dennick, 2011).

### 3.9. Research Ethical Considerations

The utmost care was exercised with regard to information obtained from respondents in this study. The respondents Everyone who participated in this study was assured that the data collected would be utilized for this research. Moreover, assurances were given that personal data (information which can identify the individual) will not be kept longer than necessary for this

study. As per the assurances, the information was kept confidential, and anonymity of the research participants was respected.

## **CHAPTER FOUR: DATA PRESENTATION, ANALYSIS, AND INTERPRETATIONS**

### **4.1. Introduction**

This Chapter will first briefly provide a presentation about the data collected. As discussed in the previous chapters, the main objective of this study is to understand how the five independent factors identified i.e. awareness of availability of electronic transactions, perceived legal protections for ecommerce users, existence of adequate telecommunication infrastructure to support electronic transactions, availability and use of electronic payment system services, and digital literacy, affect the number of electronic transaction in Ethiopia. As illustrated in detail in the previous chapter, a questionnaire with close ended questions was used to obtain data from a specific population identified for this study was used to collect the relevant data. The collected data was organized and analyzed using the statistical package for social science (SPSS).

### **4.2. Descriptive Analysis**

#### **A. Gender, Age and Education Level**

This section discusses the demographic characteristics of the data collected such as sex, age, and education level. The respondents were asked to indicate their gender in order to establish how these Demographic characteristics affect the prevalence of electronic payment system.

		Frequency	Percent
Valid	Male	210	52.4
	Female	190	47.7
	Total	400	100.0

Table 4: Gender

		Frequency	Percent
Valid	Below 12th grade	95	25.4

	High school Diploma	82	19.3
	Diploma or certificate in TVET or equivalent	85	21.0
	Degree or equivalent	96	23.6
	Second level degree or above (Masters, Doctorate, PHD) or equivalent	42	10.7
	Total	400	100

Table 5: Education Level

	Valid	400
	Missing	0
Mean		36.84
Median		34.00
Std. Deviation		14.723
Minimum		18
Maximum		87

Table 6: Age

The above tables show the gender, education level and age of the respondents. Table 1 shows that Out of the 400 respondents 52.4 were male and 47.6 were female. The distribution of the total sample respondents in terms of education level as described in Table 2, has shown that 25.4% of the respondents have not completed 12<sup>th</sup> grade, 19.3% have a high school diploma, 21.0% have a diploma, a certificate in TVET or equivalent, 23.6 % of them have a degree and 10.7% have Second level degree and above. The age composition of the survey result in Table 3, illustrates that the average age is 37, with a range of 18 to 87 years of age.

### *Infrastructure*

		Frequency	Percent
Valid	Strongly Agree	6	2.3
	Agree	47	13.1
	Neutral	177	42.6
	Disagree	120	29.2

Strongly Disagree	50	12.8
Total	400	100.0

Table 7: Adequate infrastructure

The above table shows the response of respondents on the existence of adequate telecommunication infrastructure to support electronic transactions. The results here show that 15.4% of respondents believe that Ethiopia has adequate infrastructure for a digital economy. Accordingly, 2.3% strongly agree and 13.1% agree that there is adequate infrastructure for the development of a digital economy in Ethiopia. By contrast 42% do not believe that there is adequate infrastructure in Ethiopia to facilitate electronic transactions. As such, 29.2% of respondents disagree and 12.8% strongly disagree that there is adequate infrastructure for the development of a digital economy in Ethiopia. 42.6% of respondents took a neutral position on this question. The result shows that the majority of respondents took a neutral position with regard to the existence of adequate infrastructure to facilitate electronic transactions in Ethiopia.

***Awareness of availability of electronic transactions***

		Frequency	Percent
Valid	yes	210	52.4
	no	190	47.6
	Total	400	100.0

Table 8: Awareness of availability of electronic transactions

The above tables illustrates if the respondents are aware that they can complete a transaction through electronic means. As the table presents, 52.4% are aware that they can use electronic means to complete transactions and 47.6% are not aware of this.

***Digital Literacy***

		Frequency	Percent
Valid	Yes	185	46.3
	No	215	53.7
	Total	400	100.0

Table 9: Digital literacy

The above table shows the results of how many of the respondents know how to effectively use electronic methods of transactions. how often the respondents use digital payment systems. It shows that 46.3% of the respondents know how to use digital means of transactions while 53.7% do not.

***Availability and use of electronic payment system services***

		Frequency	Percent
Valid	Yes	183	45.1
	No	217	54.9
	Total	400	100.0

Table 10: Availability and use of electronic payment

The table above shows that from among the respondents 45.1% use electronic payment services while 54.9% do not use electronic payment services.

***Perceived Legal Protections for Ecommerce Users***

		Frequency	Percent
Valid	yes	178	42.9
	no	152	37.8
	I don't know	70	19.3
	Total	400	100.0

Table 11: Law provides adequate protection for users

The above table shows 42.9% of respondents believe the law provides adequate protection to users, 37.8% don't think the law offers protection and 19.3% state that they don't know if the law provide adequate protections for electronic transaction users.

**4.3. Diagnostic Tests**

**A. Multicollinearity Test**

The term Multicollinearity indicates the existence of high correlations or linear associations between two or more independent variables in the regression model. If there is multicollinearity in the model, the regression coefficients of the independent variables may be undetermined with immeasurable standard errors (Gujarati, 2004). If VIF of variables exceed 10, the variable is said

to be highly collinear. The table below shows that all variables were under 10 VIF and all of the tolerance values are more than 0.1, there is no major multicollinearity concern in this model.

Model		Collinearity Statistics	
		Tolerance	VIF
1	(Constant)		
	Age	.911	1.098
	Gender	.973	1.027
	Educational Background	.916	1.091
	Awareness of availability of electronic transactions	.913	1.096
	Adequate infrastructure	.691	1.447
	Digital Literacy	.583	1.715
	Availability and use of electronic payment system services	.818	1.222
	Law provides adequate protections	.947	1.056
a. Dependent Variable: Prevalence of electronic transactions			

Table 12: Collinearity Statistics

### B. Homoscedasticity and Autocorrelation Test

Homoscedasticity assumes that the dependent variable shows an equivalent level of variance across the range of predictor variables; homoscedasticity is one of the assumptions required for multivariate analysis. The study uses Durbin-Watson statistic to test for homoscedasticity and the presence of serial correlation among the residuals. The residuals are not correlated if the Durbin-Watson statistic is about 2, and an acceptable range is 1.50 - 2.50. As it can be shown from the table below the Durbin-Watson statistics value is 1.875 and this value almost approaches 2 therefore, there is no autocorrelation problem in this model.

Model Summary <sup>b</sup>					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.837 <sup>a</sup>	.701	.695	.276	1.875

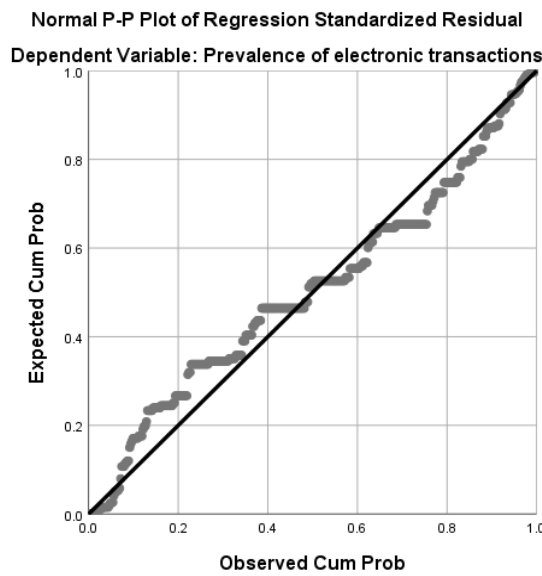
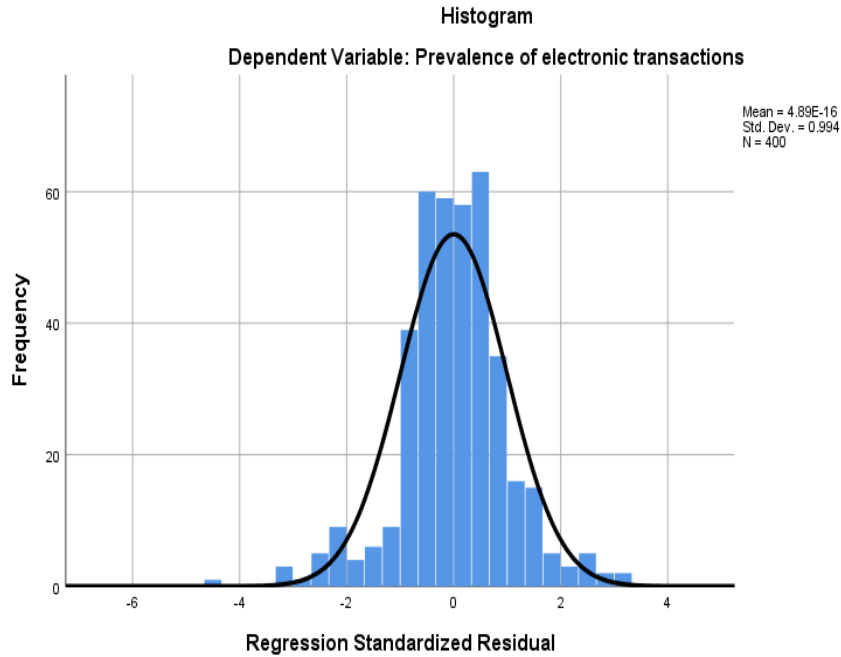
- a. Predictors: (Constant), law provides adequate protections , Educational Background, Gender, usage of electronic payment systems, Digital Literacy , Age, adequate infrastructure , Awareness
- b. Dependent Variable: Prevalence of electronic transactions

### C. Normality test

One of the assumptions for multivariate analysis is normality. This study used Skewness and kurtosis to test normality of data. Skewness is used to describe how symmetrical the distribution of data is; on the other hand, kurtosis is used to describe how flat or peaked the distribution of data is. According to (Hair, Black, Babin, & Anderson, 2010). Skewness and kurtosis should be between  $\pm 1.96$ . The table below shows all variables with corresponding Skewness and kurtosis values. The variables were between  $\pm 1.96$  showing that the data is normal.

Variables	N	Skewness		kurtosis	
		Statistics	Std. Error	Statistics	Std. Error
Prevalence of electronic transactions	400	.284	.122	.929	.243
Age	400	.842	.122	.055	.243
Gender	400	.232	.122	-1.856	.243
Educational Background	400	.087	.122	-1.213	.243
Awareness	400	.284	.122	1.213	.243
Adequate infrastructure	400	.017	.122	-.254	.243
Digital Literacy	400	.253	.122	1.946	.243
Usage of electronic payment systems	400	.151	.122	-1.887	.243
Law provides adequate protection	400	.515	.122	1.042	.243

The normality histogram plot as well as the normal P-P plot of residual depicted in the below figures indicates that the residual estimates are following the normal density.



#### 4.4. Econometric Analysis

In this section, the study presents the results of econometric analysis. In the econometric analysis, explanatory variables are included to explain the dependent variable. As described in the methodology part, to examine factors that determine the prevalence of electronic transactions, multiple linear regression model was used. The results of the multiple linear

regression are given below. As mentioned in the methodology section, 400 responses were used in the regression. As the result shows usage of electronic payment systems, adequate telecommunication infrastructure, awareness of electronic payment systems, digital literacy of users, laws and regulations that provide adequate protection for users significantly influence the prevalence of electronic transactions in Addis Ketema Subcity of Addis Ababa, Ethiopia. Among the independent variables used in the analysis age, sex and education level have very little statistical significance on the dependent variable.

<b>Coefficients</b>						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.062	.031		.346	.747
	Age	.001	.001	.027	.923	.357
	Gender	.006	.028	.006	.217	.828
	Educational Background	.011	.011	.029	.993	.321
	Awareness	.088	.029	.088	3.049	.002
	adequate infrastructure	.211	.018	.381	11.442	.000
	Digital Literacy	.424	.036	.423	11.682	.000
	usage of electronic payment systems	.146	.031	.146	4.770	.000
	law provides adequate protections	.085	.019	.126	4.423	.000
a. Dependent Variable: Prevalence of electronic transactions						

Table 14: Econometric Analysis

The above table illustrates the values of the coefficients. Below is the analysis of how the independent variables that have a significant impact affect the dependent variable. As mentioned above, gender, age and education level have no significant impact on the prevalence of electronic

payment systems as indicated by the P values. It is important to note that all the independent variables have a positive relationship with the dependent variable.

As indicated in the table, the education level has a less significant effect on the prevalence of electronic transactions in Addis Ketema sub-city, Addis Ababa. It shows that for a one-unit increase in education level there is a 0.011 increase in the prevalence of electronic transactions.

Awareness of availability of electronic transactions is one of the significant determinants for the prevalence of electronic transactions. According to the results, for a one-unit increase in Awareness of availability of electronic transactions, there is a 0.088 increase in the dependent variable. However, the P-Value shows that this variable has a slightly less significant impact on the dependent variable.

The results show that the existence of adequate infrastructure to support electronic transactions positively impacts on the dependent variable. For a one-unit increase in the existence of electronic infrastructure, there is a 0.211 increase in the prevalence of electronic transactions.

Digital literacy is the major variable that significantly impacts the prevalence of electronic transactions. The results show that for a one-unit increase in digital literacy there is a 0.424 increase in the dependent variable.

Availability and use of electronic payment system services is another independent variable that was analyzed. The results from the regression show that for a one-unit increase in the availability and use of electronic payment system services of the users, there is a 0.146 increase in the dependent variable.

Perceived laws and regulations that provide adequate protection to customers were one of the independent variables. The P-value shows that it has a significant impact on the prevalence of electronic transactions. For a one-unit increase in laws that protect users, there is a 0.085 increase in the prevalence of electronic transactions.

<b>Model Summary</b>				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.837	.701	.695	.276

- a. Predictors: (Constant), Perceived laws and regulations that provide adequate protection, Educational background, Gender, Availability and use of electronic payment, Digital literacy, Age, Adequate infrastructure, Awareness of availability of electronic transactions
- b. b. Dependent Variable: Prevalence of electronic transactions

Table 15: Model Summary

The above table shows that the R2 is 0.701, therefore, the regression model has been correctly explained by the independent variables. The R2 suggests that 70.1% of the variance of the dependent variable is explained by the independent variables.

ANOVA <sup>a</sup>						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	69.941	8	8.743	114.491	.000b
	Residual	29.857	391	.076		
	Total	99.798	399			

- a. Dependent Variable: Prevalence of electronic transactions
- b. Predictors: (Constant), Perceived laws and regulations that provide adequate protection, Educational background, Gender, Availability and use of electronic payment, Digital literacy, Age, Adequate infrastructure, Awareness of availability of electronic transactions

Table 16:

The above table shows the p value or sig. is less than 0.05 which suggests that the regression model used in this study is statistically significant.

#### 4.1.6 Summary of Findings

The main objective of this study was to analyze the major factors which affect the prevalence of electronic transactions. The major factors which were identified to have a significant positive effect on the prevalence of electronic transactions were the existence of adequate ICT infrastructure to support electronic transactions, the existence and use of digital payment services, digital literacy, and perceived adequate laws and regulations to protect customers in electronic transactions.

From these factors, digital literacy was found to be the most significant factor which affect the prevalence of electronic transactions in Ethiopia, with one unit increase in digital literacy representing a 0.424 increase in the electronic transactions. The next important factor found to significantly affect the dependent variable in this study was the existence of adequate infrastructure to support electronic transactions. Availability and use of electronic payment was also found to significantly affect the prevalence of electronic transactions, with one unit increase in the availability and use of electronic payment systems representing a 0.146 increase in the prevalence of electronic transactions.

The remaining factors of awareness of availability of electronic transactions and perceived laws and regulations that provide adequate protection were respectively found to have significant impact on electronic transactions. However, these factors were found to be less significant than the other factors identified in this study.

## CHAPTER FIVE: CONCLUSION AND RECOMMENDATION

### 5.1. Conclusion

Although the Ethiopian economy is currently grappling with a number of serious challenges, it has recorded impressive levels of growth over the past few decades. Even though commercial transactions have generally increased in the country, the prevalence of electronic transactions have not shown simultaneous impressive levels of growth. This is particularly significant considering the success of some other peer developing countries.

This research was done by leaning on previous studies which studied and identified the major factors which affect the prevalence of electronic transactions. The major factors identified were awareness of availability of electronic transactions, perceived legal protections for ecommerce users, existence of adequate telecommunication infrastructure to support electronic transactions, availability and use of electronic payment system services, and digital literacy. All of these factors were found to significantly affect the number of electronic transactions in Ethiopia.

This study found that digital literacy among ecommerce customers is the most significant factor which affects the number of electronic transactions in Ethiopia, with one unit increase in digital literacy having a 0.424 effect on the dependent variable. Next to this, the existence of adequate telecommunications infrastructure to support electronic transactions and availability and use of electronic payment system services respectively significantly affect the prevalence of electronic transactions in Ethiopia, with one unit increase in each of these variables representing a 0.211 and 0.146 increase in the dependent variable. Finally, awareness of availability of electronic transactions and perceived legal protections for ecommerce users was also found to significantly affect the prevalence of electronic transactions with one unit increase in each of these factors respectively representing a 0.088 and 0.085 increase respectively.

Overall, this research proves the hypothesis that the major factors identified to have an effect on the prevalence of electronic transactions do infact significantly affect the number of electronic transactions in Ethiopia. Analysis on the extent to which these factors affect the dependent variable in relation to each other were also made.

## 5.2. Recommendation

This study finds that the major factors identified significantly affect the prevalence of electronic transactions in Ethiopia. As such the development of each of these actors is essential for the increase in use of electronic transactions in Ethiopia. Based on the findings of this study, the author would like to make the following recommendations.

- As can be seen from the findings, digital literacy is the major factor which affect the prevalence of electronic transactions in Ethiopia. As such, the government has to take the necessary steps to increase digital literacy in the country. Digital literacy should be identified as an important component of the regular education curriculum of the country.
- The existence of adequate telecommunications infrastructure is also an important factor which positively affects the prevalence of electronic transactions. As such, policy interventions should prioritize this area. In terms of telecommunications network infrastructure, the Ethiopian telecommunications sector was until recently monopolized by a public enterprise and restricted for private investment. Recently, the government has made an important policy departure. As such, initiatives to lift restrictive laws and actively encourage private investment in the telecommunications sector should be further encouraged.
- The next factor which was found to significantly affect electronic transactions in Ethiopia was the availability and use of electronic payment system services. To enhance the use of electronic payment services, the government has issued permissive laws to encourage private investment in this area and has implemented restrictions against paper cash use. This has been important for the development of these digital payment providers. As such the government should continue to encourage investment and development in this area.
- The other factor which was found to significantly affect the prevalence of electronic transactions in Ethiopia was awareness of availability of electronic transactions. As the awareness among respondents on the fact that they can complete a transaction using electronic means was found to be a significant factor in overall use of electronic transactions, the government and digital products and service providers should do their best to create awareness in the society of the availability of electronic transactions.

- Perceived legal protections for ecommerce users was also another factor which was found to significantly affect electronic transactions in Ethiopia. In this regard, there have recently been important initiatives towards issuing laws to govern electronic transactions. But implementing regulations for these laws should also be issued in order to effect the implementation of these policies and laws. Laws which regulate electronic commerce and data protection are lacking. In terms of policy, while it is good that the government issued a comprehensive policy for the development of a digital economy, sector specific policies and implementation of these policies is woefully lacking. This should be corrected. The governments initiative towards digitalization should also be increased and coordinated. However, this study also found that in addition to factual protections, it is also important that individuals should be made aware that these protections exist in order to feel confident in using electronic transactions.

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## Annex

### Questionnaire Distributed to Electronic Transaction Consumers

Dear Respondents,

First and foremost, I would like to extend my deepest gratitude to you for your willingness to respond to these questions. This questionnaire is prepared by me, Eman Abdella Ali, a student at Addis Ababa University, in order to aid me in my research study entitled “**Factors Affecting the Prevalence of Electronic Transaction in Ethiopia.**” Therefore, please respond to these questions as earnestly and honestly as possible. Additionally, please be assured that the information provided here will be held confidentially and will only be used for the above stated study. Finally, I want to reiterate my deepest gratitude for your kind assistance.

Eman Abdella Ali ([ali.eman606@gmail.com](mailto:ali.eman606@gmail.com))

1. Age?
2. Gender?
  - A. Male
  - B. Female
3. Educational Background?
  - A. Below 12<sup>th</sup> grade
  - B. High-school diploma
  - C. Diploma, certificate in TVET or equivalent
  - D. Degree or equivalent
  - E. Second level degree or above (Masters, Doctorate, PHD) or equivalent
4. Do you use electronic transaction enabling products or services? (Prevalence of electronic transactions)
  - A. Yes
  - B. No
5. If yes, how often do you conduct transactions through electronic means? (Prevalence of electronic transactions)
  - A. Often (Daily to weekly)
  - B. Neutral (Monthly)
  - C. Occasionally (A few times in a year)
  - D. Rarely

6. Do you believe there is adequate telecommunication infrastructure in Ethiopia to support electronic transactions? (Existence of adequate telecom infrastructure to support electronic transactions)
  - A. Strongly agree
  - B. Agree
  - C. Neutral
  - D. Disagree
  - E. Strongly disagree
  
7. Are you aware that you can conclude your commercial transactions over the internet? (Awareness of possibility to conduct transactions electronically)
  - A. Yes
  - B. No
  
8. Can you (are you able) to conduct your commercial transactions over electronic means? (Digital literacy)
  - A. Yes
  - B. No
  
9. How often do you use electronic payment system services? (Availability and use of electronic payment system services)
  - A. Often (Daily to weekly)
  - B. Neutral (Monthly)
  - C. Occasionally (A few times in a year)
  - D. Rarely
  
10. Do you believe the law provides adequate protections for ecommerce users? (Perceived legal protections for ecommerce users)
  - A. Yes
  - B. No
  - C. I don't know

**ለኤሌክትሮኒክ ግብይት ተጠቃሚዎች የተሰጠ መጠይቅ**

በመጀመሪያ ከዚህ ስር የተቀመጡትን ጥያቄዎች ለመመለስ ፍቃደኛ ስለሆኑ ከፍተኛ ምስጋናናዎን ለማቅረብ እፈልጋለሁ። ይህንን መጠይቅ እኔ የአዲስ አበባ ዩኒቨርሲቲ ተማሪ የሆንኩት ኢማን አባደላ አለ ያዘጋጀሁት «የኤሌክትሮኒክ ግብይትን ብዛት ላይ ተፅእኖ የሚያሳድሩ ሁኔታዎች» በሚል ርዕስ የምሰራውን ጥናት ግብአት እንዲሆን ነው። በመሆኑም እባክዎትን የሚከተሉትን ጥያቄዎች በትክክል እና በእውነት ለመመለስ ይሞክሩ። በተጨማሪ የሚሰጡት መረጃ በሚስጥር እንደሚያዝ እና ለዚህ ጥናት ብቻ ጥቅም ላይ እንደሚውል አረጋግጣለሁ። በመጨረሻ በድጋሚ ለትብብርዎ እናመሰግናለን።

ኢማን አባደላ አለ ([ali.eman606@gmail.com](mailto:ali.eman606@gmail.com))

1. እድሜ?.....
  
2. ያታ?

A. ወንድ                      B. ሴት

3. የትምህርት ደረጃ?

- A. ከ12ኛ ክፍል በታች
- B. ከ12ኛ ክፍል የተመረቀ
- C. ዲፕሎማ፤ የቴክኒክና ሞያ ትምህርት ስርተፍኬት ወይም ከዚህ እኩል የሆነ የትምህርት ደረጃ
- D. ዲግሪ ወይም ከዚህ እኩል የሆነ የትምህርት ደረጃ
- E. ሁለተኛ ዲግሪ፤ ከዚህ እኩል ወይም ከዚህ በላይ የሆነ የትምህርት ደረጃ

4. ኤሌክትሮኒክ ግብይትን የሚያስችሉ ምርቶችን ወይም አገልግሎቶችን ይጠቀማሉ?

- A. አዎ አጠቀማለሁ
- B. አይ አልጠቀምም

5. የኤሌክትሮኒክ ግብይት በምን ያህል ድግግሞሽ ይጠቀማሉ?

- A. በተደጋጋሚ (በየቀኑ እስከ በሳምንታት ልዩነት)
- B. በተወሰነ ጊዜ ልዩነት (በወራት ልዩነት)
- C. አንድ አንድ ጊዜ (በአመት የተወሰነ ጊዜ)
- D. ከረጅም ጊዜ አንዴ (እንደ አጋጣሚ)

6. የኤሌክትሮኒክ ግብይትን ለመደገፍ በቂ የሆነ መሰረተ ልማት አለብዎልዎ?

- A. በጣም እስማማለሁ (ምንም ዓይነት ከኔትወርክ ግንኙነት ጋር የተያያዘ ችግር አያጋጥምም)
- B. እስማማለሁ (የኤሌክትሮኒክ ግብይትን የሚገታ ያህል የኔትወርክ ችግር አያጋጥምም)
- C. መካከለኛ ሃሳብ (አንድ አንድ ጊዜ ብቻ የኤሌክትሮኒክ ግብይትን የሚገታ የኔትወርክ ችግር ያጋጥማል)
- D. አልስማማም (የኤሌክትሮኒክ ግብይትን የሚገታ ያህል የኔትወርክ ችግር አለ)
- E. በጣም አልስማማም (የኤሌክትሮኒክ ግብይትን በጣም የሚገታ እና ከባድ የሚያደርግ የኔትወርክ ችግር በተጋጋሚ ያጋጥማል)

7. የንግድ ግብይትዎን በኤሌክትሮኒክ መንገድ ማድረግ እንደሚችሉ ያውቃሉ?

- A. አዎ አውቃለሁ
- B. አይ አላውቅም

8. የንግድ ግብይትዎን በኤሌክትሮኒክ መንገድ ማካሄድ ይችላሉ?

- A. አዎ እችላለሁ
- B. አይ አልችልም

9. የኤሌክትሮኒክ ክፍያ በምን ያህል ድግግሞሽ ይጠቀማሉ?

- A. በየቀኑ
- B. በተወሰኑ ቀናት ልዩነት
- C. በየሳምንቱ
- D. በጭራሽ

10. ህጉ ለኤሌክትሮኒች ግብይት ተጠቃሚዎች በቂ ጥበቃ ያደርጋል ብለው ያምናሉ?

A. አዎ ያደርጋል

B. አይ አያደርጋል

C. አላውቅም