



**ADDIS ABABA UNIVERSITY**  
**COLLEGE OF BUSINESS AND ECONOMICS**  
**DEPARTMENT OF ACCOUNTING AND FINANCE**

**Determinants of Financial Inclusion in an Era of Technology: In  
the Selected Commercial Banks in Ethiopia**

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**ADDIS ABABA UNIVERSITY  
SCHOOL OF GRADUATE STUDIES:  
ACCOUNTING AND FINANCE**

**Declaration**

I, the undersigned, declare that this study prepared for partial fulfillment of the requirements of the degree of Master of Business Administration MBA entitled “Determinants of Financial Inclusion in an Era of Technology: In the Case of Commercial Banks in Ethiopia” is my original work and has not been submitted to any other college, institution or university for academic credit.

Name: Tilahun Gugssa

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**CERTIFICATION**

This is to certify that Mr. Tilahun Gugssa has carried out this research work on the topic entitled “Determinants of Financial Inclusion in an Era of Technology: In Case of Commercial Banks in Ethiopia” under my supervision. This work is original and it is sufficient for submission for partial fulfillment for the award of an MBA.

**Advisor:- Habtamu Berhanu(Phd)**

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AND FINANCE**

I hereby certify that the research entitled "Determinants of financial inclusion in an era of technology: in case of commercial banks in Ethiopia" submitted in partial fulfillment of the requirements for the Degree of Master of Business Administration in Finance complies with the regulations of the university and meets the accepted standards concerning originality and quality.

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Chair of Department or Graduate Program Coordinator

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## **Acronyms and abbreviation**

AG	Age of the respondent,
AFI	Alliance for Financial Inclusion.
ADB	Asian Development Bank
ATM	Automatic Teller machine
GFI	Global financial inclusion
INC	Average monthly income of the respondent
SACCOS	Saving and Credit Cooperatives Society
SME	Small and Medium Enterprises
TR	Trust of the respondent on financial institutions,
WBG	World Bank Group
EDU	Educational status of the individual (respondent),
FINC	Financial Inclusion
FL	Financial literacy (knowledge) level of the respondent

## **Abstract**

*Financial inclusion refers to a manner of providing financial institutes and smooth financial transaction mechanisms in an easy way. In addition, to exchange goods and services using that easy way of accessibility, availability, or proper implementation of the system for the people living in an economy. Financial inclusion enables the economy to grow sustainably by improving social well-being. In this era, technological innovation is one of the key successes for businesses to strengthen the maturity life of product life cycle, including the financial industry. Nowadays a need for speed in the delivery of products or services included in financial services. The role of financial inclusion in the economic and financial discourse has gained a lot of interest among both academia and practitioners. By what method could address financial inclusion becomes an interesting subject on the agendas of researchers, policymakers, regulators, and financial institutions. This is fundamental in developing countries like Ethiopia's marketplaces, where banking accessibilities and financial inclusions are comparatively low. The objective of this study is to investigate the determinants of financial inclusion in the era of technology in Ethiopian commercial banks. The type of research applied in this study is explanatory or causal. After a thorough review of previous empirical studies and current observations, a research questionnaire is developed as a means of data collection. Data collected from a total of 334 actual respondents from eighteen banks were used. The responses were evaluated with descriptive statistics and binary logistic regression analysis using SPSS version 25 software. The study revealed the variable electronic devices, occupation, education, and income are positive and significant factors in financial inclusion, whereas documentation has a negative and significant effect. As a result, the study recommended that policymakers, governments, financial institutions, and development organizations take into account the aforementioned financial inclusion elements in their attempts to address the problem of financial exclusion and combat poverty among certain segments of the population.*

**Keywords:** *Financial inclusion, commercial banks, Binary logit, Addis Ababa, Ethiopia*

# CHAPTER ONE

## 1. INTRODUCTION

This chapter presents the introductory part of the study by describing the background of the study, statement of the problem, general and specific objectives of the study, research hypothesis, scope of the studies, significance of the studies, limitations, and organizations of the paper.

### 1.1 Background of Study

Technology fosters economic development and is key to sustaining high living standards around the world. Information and communication technologies (ICT) fuel the greatest wave of technical innovation currently spreading across the globe, affecting new areas of social and economic activity. Unsurprisingly, financial businesses everywhere have been in the throes of organizational changes and innovation based on new possibilities opened up by ICT. Money, after all, is just information about who owes what to whom. Much innovation happens in advanced economies yet new technology has the potential to unleash radical change in developing economies (Lucas, 2005).

The world has witnessed the information and technology revolution. This revolution has touched every aspect of people's lives including banking. Over the years, banking has risen from a traditional brick-and-mortar model of customers queuing for services in the banks to modern-day banking where banks reached any point to deliver their services. Today, banks have welcomed wireless and mobile technology into their boardroom to offer their customers the freedom to pay bills, and plan payments while stuck in traffic jams. Today, more people than ever process banking on the move rather than attending bank offices. Technology has introduced new ways of delivering banking services and products to the customers, such as ATMs, and Internet banking (IB). Hence, banks have found themselves at the forefront of technology adoption for the past three decades. These changes and developments in the banking industry have impacts on service quality, future of the banking activities, and consequently, its continually competitive ability in the world markets since going along with technology is one of the most important factors of economic organizations' success in general and banks in particular (Siemi, 2006).

Ovia,(2001) argues that the use of information technology in banking operations is called electronic banking. Electronic banking is a product of e-commerce in the field of banking and financial services. Digital finance is a financial service provided through mobile phones, personal computers, and cards linked to a reliable digital payment system using the Internet. It is a response to technological development in the financial sector. It also involves all electronic financial services and products, including financing, investment, payment, insurance, and financial information delivered through digital channels (Gomber, Koch, & Siering, 2017; Ozili, 2018).

However, the provision of digital finance involves the participation of different players such as banks/financial institutions, mobile network operators, financial technology providers, regulators, agents, chains of retailers, and clients. It can eliminate transaction costs and provide affordable, convenient, and secure banking services to poor individuals in developing countries (Haider H, 2018).

Financial inclusion refers to the access and application of a set of adequate financial services by households and firms essential for advancement to help poor family units by improving their lives. There is empirical data that recognizes it as a tool that can help to accomplish financial development and economic growth, reduce income disparity, and bring households out of poverty (Beck et al., 2009; Demircuc-Kunt and Levine, 2009). It is important to note that direct access to and use of financial resources is not the only way that financial inclusion can benefit people; there are also indirect benefits such as consumption smoothing and protection from shocks such as catastrophic events and other economic challenges (David & Varaidzo, 2020).

According to NBE (2017), the Ethiopian government's National Financial Inclusion Strategy aimed to increase financial inclusion in the country from 22 percent in 2014 to 66 percent by 2020. The financial inclusion strategy was also one of the second Ethiopia's Growth and Transformation.

In Ethiopia, only a few researchers have conducted a study on financial inclusion, and the result of the study discovered that it is determined by both demand and supply-side determinants. Furthermore, several scholars such as Mhlanga & Dunga (2020) and David (2021) acknowledge that global development challenges, global financial crises, and other unknown challenges that threaten human prosperity require an all-inclusive approach to implementing policies to improve financial inclusion.

According to Rahel (2015), the benefits of technological innovations like E-banking are well-known by the banks and represent a formidable force to drive the implementation of E-banking systems. In recent years, the banking sector has shown massive growth and development. Much of the growth of the banking sector has witnessed in branch expansion and growth in capital base. Despite the previous efforts to find the factors that influence financial inclusion, this study will fill the empirical gap in determinants of financial inclusion factors that foster inclusion in Ethiopia.

## **1.2 Statement of the Problem**

Nowadays due to the emerging global economy, electronic commerce and electronic, the business has increasingly become a necessary component of business strategy and a strong catalyst for economic development. The integration of ICT strategy in business has revolutionized relationships within organizations, between, and among organizations and individuals. New information technology is becoming an important factor in the future development of the financial services industry, especially the banking industry (Alipour & Mahdi, 2010). Electronic business and associated technologies. Therefore, continues to have a major impact on the way organizations conduct business (Troshani & Rao, 2007).

Africa's low level of financial inclusion is a result of demand constraints, such as low levels of financial literacy, and supply constraints, including the insufficient capacity of many African financial institutions (Oji, 2015). Even though Africa is now the world's second-fastest-growing region after Asia, with annual GDP growth rates above 5% over the last decade, A global survey by Global Index, (2017), revealed that only 35% of adults (15 years \*) opened accounts for official financial institutions, to a review of their access and use of financial services individuals in Ethiopia. The percentage of adults with an account rose to 35% in 2017 from 22% in 2014. Account usage has also improved. Currently, 26% of adults save with financial institutions (compared to 14% in 2014), and 11% borrow from financial institutions (compared to 7% in 2014). In Kenya, for example, 82% of adults have an account, while in Rwanda account ownership is 50%. In addition, in the wider region, 43% of adults have accounts.

Furthermore, several scholars such as Mhlanga & Dunga (2020) and David (2021) acknowledge that global development challenges, global financial crises, and other unknown

challenges that threaten human prosperity require an all-inclusive approach to implementing policies to improve financial inclusion.

For example, a study by Beza et al. (2020) found that residence, financial literacy, documentation, trust, awareness, accessibility, availability, and income have a significant influence on financial inclusion. A study by Esmael & Mohammed (2021) sought to analyze the determinants of financial inclusion in the Afar Region and found that financial inclusion is positive and strongly connected to age, usage, financial knowledge, and mobile banking.

Thus, no literature carried out on financial inclusion in the era of technology on commercial banks in Ethiopia.

Therefore, the purpose of this study is, to investigate determinants of financial inclusion in the era of technology in commercial banks of Ethiopia. In addition, the variables integrated such as electronic device, education, trust, occupation, financial literacy, documentation, income, and network connectivity has examined.

### **1.3 Objective of the research**

#### **1.3.1 General Objective**

The general objective of the research was to investigate determinants of financial inclusion in an era of technology in selected commercial banks in Ethiopia.

#### **1.3.2. Specific Objectives**

More specifically, the study attempts to:

1. To examine the effect of electronic devices on financial inclusion
2. To examine the effects of education on financial inclusion.
3. To examine the effect of trust on financial inclusion
4. To examine the effect of occupation on financial inclusion
5. To examine the effect of documentation on financial inclusion
6. To examine the effect of income on financial inclusion
7. To examine the effect of Internet connection on financial inclusion
8. To investigate the effect of financial literacy of individuals on financial inclusion.

## **1.4. Hypotheses of the study**

To achieve the objectives of the study, the following hypotheses tested regarding the determinants of financial inclusion relying on different empirical research and theoretical reviews. Accordingly, there were eight alternative hypotheses stated:

H1: The educational level of the individual has a positive and significant effect on financial inclusion

H2: Financial literacy has a constructive and significant effect on financial inclusion.

H3: Occupation has a positive and significant effect on financial inclusion.

H4: Income has a positive and significant effect on financial inclusion.

H5: Documentation has a negative and significant effect on financial inclusion.

H6: Network Connectivity has a positive and significant effect on financial inclusion.

H7: Trust has a positive and significant relationship with financial inclusion.

H8: Electronic device has not a positive and significant effect on financial inclusion

## **1.5 Scope and Limitation of the Study**

### **1.5.1 Scope of the Study**

The study performed on Commercial Banks in Ethiopia, in banks active in their business operation in 2022. The researcher tries to look into factors affecting financial inclusion using respondents only in the geographical boundary of Ethiopia.

### **1.5.2 Limitations of the Study**

This study is limited to detecting the effect of independent variables and the financial inclusion of Ethiopian commercial banks. On the other hand, this study emanates from the variables listed. Even if many variables affect commercial banks' financial inclusion the study only concentrated on the eight variables. Secondly, there would be a few problems in the model adopted and methodology designed.

## **1.6. Significance of the Study**

In light of the stated objectives, this study is set to achieve the application of information technology in banking services delivery and identify the factors affecting financial inclusion in the banking industry. It will also help to find out the reasons why banks today have to forgo their former ways of operation to modern banking and as such identify the problems arising from the operational systems of the commercial banks in Ethiopia.

It would also contribute to the existing literature by identifying the most effective technologies to be adopted and promoted in the banking sector. The study will also be a valuable source of information for students, academic institutions, and an individual who want to know more about the relationship between the use of technology and the service provision of banking sectors.

### **1.7 Organization of the Study**

The study consists of five chapters. The first chapter deals with the introductory part which consists of the background of the study, a statement of the problem, the objective(s) of the study, the significance of the study, and the scope and limitation of the study. The second chapter deals with a review of the theoretical and empirical literature.

The third chapter deals with the methodology of the study. The fourth chapter presents the analysis and discussions of the results of the study and finally, the fifth chapter is based on the analysis summary of major findings, conclusions, and recommendations provided.

## CHAPTER TWO

### 2. LITERATURE REVIEW

This chapter briefly presents the theoretical literature review, empirical literature review, a summary of the literature and research gap, hypothesis development, and finally, a conceptual framework development.

#### 2.1. The Concept of Financial Inclusion

There are various definitions of financial inclusion. According to the Bank of Indonesia (2014), it is all the efforts to improve the access of people to financial services by removing all the barriers, both price and non-price. Thus, it can be concluded that inclusion is the effort to improve access for society, especially the non-bankable, by lessening the barriers.

At the core, financial inclusion is the easiness of access to the services or formal financial system by all economic stakeholders.

According to Tamilarasu (2014), family with low income has less access to the bank. They need more time and money to obtain the services of the bank (opening an account or getting a loan). They find it difficult to save or plan their finance. Similarly, Fadun (2014) states that microfinance institution plays a significant role in facilitating inclusion because they have a unique position in reaching marginalized people.

The introduction of financial inclusion to the village will have a broad impact on the local and national economy since it improves the economy and financial services at a rapid pace. According to Shyni and Mayoothu (2014), the targeted financial inclusion groups help to get access to the loan or credit and various services available. It improved income and living standards. The survey by the World Bank (2015), in the format of Global Findex) from 2011 to 2014, shows 700 million people have a new account in a bank or other financial institution, or the service supplier of mobile money. The number of those without bank accounts has decreased to 20%, which is around 2 million. They released the information that access to financial services helps society deal with poverty. "We have determined an ambitious goal, which is to provide financial access for all in 2020, and now we have proven that we have undergone great development," said the President of the World Bank Group, Jim Yong Kim. "The efforts need many partners from credit card companies, banks, micro-credit institutions, UN, foundations, and local figures. We can do it, and as a reward, millions of people will be no longer poor."

From the reports of Global Findex, by Demirguc-Kunt et al., (2014), financial inclusion is significant in providing the facilities for people to save their money as well as paying and receiving payment electronically. Various types of research show that broad access to financial services and participation in the system can encourage job vacancies, improve educational investment, and help marginalized people for manage the risks and survival of financial problems.

It has a general goal (economic goal), which is the growth, money mobilization, and expansion of financial service markets), and a specific goal (social and political), which is to eradicate poverty, sustainable development, expansive inclusion, and government program effectiveness (Shyni and Mavoothu, 2014).

There are five pillars of financial inclusion. Those are (1) Full access to financial services (loans, savings, insurance, and other payments). (2) Appropriate and suitable services according to the principles of dignity and consumer protection. (3) Equal services for everyone to able to use financial services, which includes disabled people, minority tribes, and marginalized or minority people). (4) Road financial service suppliers supported by adequate financial infrastructures as well as clear regulations; and (5) Society with understanding and capabilities to promote the use or benefits of the financial services (Fadun, 2014).

## **2.2. Benefits of Financial Inclusion**

Financial inclusion enables the nation to smoothen the country's transactions with less time and cost and benefits poor households by allowing them to exchange goods and services securely. It provides low-income individuals with the possibility to save for the future which fosters stability in personal finance, and a high level of use of bank deposits which contributes to securing a more stable deposit base for banks during distressed times (Han and Melecky, 2013). Greater financial inclusion can also provide poor households with opportunities to build savings, make investments, and access credit (Ellis, Lemma, and Rud 2010).

Financial inclusion also enables them to handle income shocks over unforeseen emergencies such as illness or loss of employment (Collins et al., 2009).

In addition, financial inclusion has helpful effects on financial stability by decreasing risk and considerable growth in the number of small savers by better financial inclusion. So it increases both the size and stability of the deposit base of banks which would reduce banks' dependence on "non-core" financing, which tends to be more volatile during a crisis, thus improving banking

system stability. Hannig and Jansen (2010) show that financial institutions catering to lower-end individuals tend to survive through macro crises well and help sustain local economic activity.

According to Dev (2006), financial inclusion can be viewed as both a business opportunity and social responsibility when self-help groups and microfinance institutions participate in inclusion programs because these two agents are important to improving financial inclusion.

### **2.3. Digital Finance and Financial Inclusion**

Digital Finance includes all mechanisms of providing financial services and products remotely by financial service suppliers. Manyika et al. (2016, p. 4) define digital finance as financial services delivered over digital infrastructure with low use of cash and traditional bank branches. Gomber et al. (2017) divide Digital finance into three dimensions: business functions, technologies, and institutions. They state that technological applications, including block chain, enable digital finance functions such as financing, investment, payment, insurance, and digital service providers perform these business functions. Moufakkir and Mohammed (2020) write that, in developing countries, DF offers secure financial services at a reasonable price to unbanked populations, helping them move from using cash transactions to digital transactions and enhancing financial inclusion (FI).

### **2.4. Theories of Financial Inclusion**

Ozili, (2020), Develop new theories that support financial inclusion. These theories are theories of financial inclusion beneficiaries, conflicting ideas or perspectives exist on who benefits from financial inclusion outcomes, theories of financial inclusion funding, and who should fund financial inclusion expenditure for the people. In addition, theories of financial inclusion delivery, (who should deliver, or provide formal financial service to the people (Aggarwal and Klapper, 2013) or categorized into demand-side theories and supply-side theories from an economic perspective.

#### **2.4.1. Systems Theory of Financial Inclusion**

Financial inclusion results realized through existing sub-systems (such as economic, social, and financial systems) which financial inclusion relies on, according to the systems theory of financial inclusion. Accordingly, enhanced financial inclusion will have helpful welfare for the organisms it depends on.

A significant change in a sub-system can have a significant impact on the estimated financial inclusion results. For example, commanding regulations on economic mediators and financial service providers who are part of the economic and financial system can make their interests parallel with those of basic financial service users, and convincing economic agents, and financial service providers to provide affordable and high-quality financial services to these agents. A substantial change at the whole system level, on the other hand, such as substituting to present national financial inclusion strategy by the government or national bank with an entirely new plan does not always suggest a change in the existing sub-systems, because a sub-system modification must be done at the sub-system level.

According to the theory, financial inclusion adds the efficiency and effectiveness of the sub-systems it relies on and the success or failure of a financial inclusion agenda determined by the efficiency and effectiveness of the sub-systems. However, from a systems theory perspective, the existing sub-systems (economic, financial, and social) in a country are the ultimate beneficiaries of financial inclusion (Ozili, 2020).

#### **2.4.2. Vulnerable Group Theory of Financial Inclusion**

The vulnerable group theory of financial inclusion stresses that a country's financial inclusion activities or plans should be directed towards the most vulnerable participants of society, such as the poor, young people, women, and the elders, who are the most affected by economic hardship and crises. Because vulnerable people are affected by financial disasters and economic recessions in different ways, it makes sense to bring them into the official financial sector. A government-to-person (G2P) social cash transfer into vulnerable people's formal accounts is one approach to this. Making G2P social cash allocation payments to the poor, young people, women, and the elderly will encourage other poor people, so young people, women, and the elderly will join the formal financial sector and open a formal account to benefit from the social cash transfer benefits, the fund can be addressed using the formal financial system. Thus, it improved the rate of financial inclusion for vulnerable groups.

Likewise, when social cash transfers and other tools for achieving financial inclusion are offered to disadvantaged people in society, it might make them feel as if they are compensated for the current economic gap that they face, allowing them to catch up with the rest of society. The theory implies that it categorizes some members of the population as vulnerable, implying that financial inclusion efforts should be directed at these individuals (Ozili, 2020).

### **2.4.3. Public Service Theory of Financial Inclusion**

According to the public service theory, it is the responsibility of the government to provide financial services to residents, and citizens expect the government to promote financial inclusion for them. According to this notion, the government should provide financial inclusion to all citizens, including the financially excluded, through public institutions. According to this view, only the government is responsible for achieving financial inclusion, which entails bringing all members of the population into the formal financial sector and providing them with access to formal financial products and services (Ozili, 2020).

### **2.4.4. Special Agent Theory of Financial Inclusion**

According to the special agent theory, a special agent considered proficient and highly skilled and better ability to bring the excluded population into the formal financial sector. In this theory, there is a special agent relationship with the principal. The special agent expected to understand the existing informal financial system in the communities where the excluded members of the population reside, detect areas for improvement, and develop a method of incorporating the local financial system into the formal financial sector. According to this view, the principal has a special agent connection. The primary could be often a local bank, non-bank institution, or other special institution originated for the exclusive aim of getting financial inclusion, whereas the special agent is frequently a national government, foreign government, or foreign organization. Special agents can also be financial institutions or technological companies, such as financial technology (Fintech) firms (Ozili, 2020).

### **2.4.5. Public Good Theory of Financial Inclusion**

According to the public good theory, Individuals have access to essential financial services without having to pay for them.

Access to financial services by one person does not imply that it is available to others, implying that all members of the population could brought into the formal financial sector and everyone could benefit. According to this view, everyone in the population benefits from financial inclusion, and no one should left out. In addition, any individual or small business that opens a formal bank account should get a free debit card and will be able to use an Automatic Teller Machine (ATM) without paying a transaction fee. Financial service providers, such as financial

institutions, will also have to absorb the expense of providing financial services as a sunk cost of doing business.

In addition, the government can provide financial institutions with subsidies to help them deal with any cost issues that may occur because of providing free financial services.

A government may even offer all residents cash deposits into their bank accounts, with the only condition that they have a formal bank account. When financial inclusion considered a public benefit, individuals who are unable to pay their debts and satisfy their necessities on a micro level will have a chance to become economically empowered (Ozili, 2020).

## **2.5. Financial Development and Financial Inclusion**

The development of the financial system, which includes a favorable environment for funding the economy, considered as a financial development. A well-designed financial structure, legal framework, and other institutional infrastructure are all part of this. Economic progress and general well-being supported by the use of financial services.

Beck and Levine (2008). Improving the quality and efficiency of financial services without expanding access is insufficient. This is because a vast part of the population could underserved due to a lack of better access to financial services. As a result, when more people have access to and use financial services, the full potential of financial development will realized. As a result, we can say financial development and increasing access to financial services are associated.

If a well-developed financial system does not go together with the use of financial services, the system may be termed ineffective. Even if the financial depth is thought to drive economic growth. The same authors summarize the empirical evidence of financial development's contribution to economic growth. Increased use of financial services is thought to help entrepreneurs develop; as well as lessen income disparity and poverty. In other words, not using financial services limits an entrepreneur's ability to grow, forcing them to rely on inefficient self-finance.

## **2.6. Financial Inclusion, Income Distribution, and Poverty**

Access to financial services has shown to play a variety of functions in the economy and social well-being. Lack of access to finance, according to Beck et al., (2008), is one of the potential causes of global income inequality and slow economic growth. Individuals and enterprises are disadvantaged when they lack access to borrow and are unable to invest. Similarly, increased access to finance can aid in the elimination of income inequality, as equal access to finance will

benefit both the rich and the poor. Where there is a lack of access to money, the poor will accumulate savings at a slower and smaller rate than the wealthy. As a result, there will be a significant disparity between the rich and the poor.

Becket al. (2007) looked at the impact of financial access on poverty and income distribution. They show that having access to finance reduces poverty and accelerates income development. Their findings are consistent with those of other researchers Beck et al., (2004) and Clarke et al. (2003) found that increasing access to finance enhances income distribution, reduces income disparity, and promotes poverty alleviation.

## **2.7. Empirical Literature Review**

Oyaro and Jackson (2019) examined the determinants of financial inclusion from eighteen journal articles focusing on factors that determine financial inclusion in various periods and countries and concluded that the factors that determine financial inclusion are both demand and supply-related factors. Individual or household income, education, collateral, participating in an employment guarantee scheme, income disparity, age, financial literacy, savings, and gender are all characteristics that influence demand. High interest rates (affordable credit), innovation (agent banking and mobile banking), ICT, bank branches, urbanization, financial product sensitization, money management guidance, and debt counseling are all supply-related factors that influence financial inclusion. Urbanization and an enabling environment are two more causes.

Poonam and Chaudhry (2019) look at the elements that influence India's access to affordable finance. The research accomplished based on original data gathered through a survey. 411 family members were included in the study. it used Logit regression to calculate the model. Age, gender, and occupation discovered to have a negative negligible impact on savings.

Other variables found inconsequential and negative. According to Ayushi (2020), the most important factors of financial inclusion are income, infrastructure, and employment possibilities. In their study of Major Determinants of Financial Inclusion: State-Level Evidence from India, the computed indices can also be used to track and measure financial inclusion over time and at the micro-level in their study, Determinants of Successful Financial Inclusion in Low-Income Rural Population, (Yashwant et al., 2020).

Toukam et al. (2020). States, The World Bank created two global databases in 2011 and 2014 in which they studied the socioeconomic and geographical determinants of financial inclusion in

Cameron, and they discovered that income level, education, sex, age, area of residence, costs to opening, borrowing for education or health care, and saving for education are the determinants of financial inclusion through indicators of access and use of financial services in Cameroon, with people under 30 hurting access. Similarly, those above the age of 50 (age 2) has a negative and considerable impact.

The variables age, secondary, higher, and richer, on the other hand, have a positive sign in front of them, indicating that they are positively significant. The minus sign in front of age 2 indicates that individuals' access to financial services steadily reduces until it is revoked after they reach a specific age (threshold). The individual significance test confirms that the income quintiles (poor, average, and wealthy) are not statistically significant. The income inequality variable's poor and rich modalities have a beneficial influence. As a result, those who are poor on average do not have easy access to a composite index of financial services (ICA). This is especially evident among the wealthy, who prefer the services provided by traditional banks to those provided by microfinance. When we look at the ICA data from 2011 and 2014, we can see that the model is globally significant at 1%, which means that the ICA is explained by age, sex, and secondary, and higher education levels.

In Zimbabwe, Abel et al. (2018) observed factors that influence inclusion. To find the determinants of inclusive finance, a logit model was used to analyze the impact of Age, education, literacy, income, and internet access were discovered as major factors of financial inclusion. Financial inclusion in Zimbabwe was mostly determined by closeness to a financial institution and the documentation required to open an account.

Lema (2017) looked into the elements that influence the unbanked population's usage of mobile financial services. 250 respondents were gathered using a cross-sectional study design and standardized questionnaires. The study's main variables are utility, ease of use, trust, cost, danger, and social influence. Using the multiple regression techniques, a structural equation model was developed and estimated. The results show that the explanatory variables have a considerable impact on mobile financial services, according to the estimates.

Gashaw and Gebe's (2017) LSMS (Ethiopia Socioeconomic Survey) data and a probate model were used to investigate Financial Inclusion in Ethiopia. Only about a quarter of Ethiopian adults have a formal account, according to the researchers, better education, financial literacy, gender,

age, living in an urban, living in the capital city, and a preference for formal financial services are all linked to a higher level of financial inclusion in Ethiopia.

Furthermore, they discovered that Ethiopia has a greater rate of both involuntary and voluntary exclusion. Finally, they make policy recommendations for bridging the gender, religious, and urban-rural divides in Ethiopia, as well as promoting financial inclusion. Tekeste and Hossein (2020) studied financial Inclusion in Ethiopia. This study found that Ethiopia's financial inclusion is less successful than that of other East African countries, based on secondary data. Ethiopians prefer informal saving clubs to professional financial institutions, according to the survey. The financial inclusion approach becomes disadvantaged by this feeling, which is compounded by unemployment and low income.

The study by Desalegn (2021) explores the determinant factors that influence financial inclusion among Ethiopian small and medium businesses. The study used an explanatory research design and a mixed research approach, incorporating both primary and secondary data sources. The study uses a multivariate linear regression model in particular. The findings show that supply-side factors, demand-side factors, market potential, and collateral requirements all have a favorable impact on a company's ability to obtain financing. Institutional framework elements, on the other hand, have a detrimental impact on a firm's ability to obtain financing. In addition, the rate of interest charged by financial institutions should be evaluated to synchronize the provision and access to the funds for small and medium-sized businesses. Before granting lending access to small and medium-sized businesses and financial institutions should consider providing training. Andualem & Rao (2017). Examine Ethiopia's Financial Inclusion. Ethiopia, they discovered in place of developing countries in Africa and low-income economies in this regard. Factors influenced include a lack of funds, distance, expense, and documentation requirements. Poor people, teenagers, rural inhabitants, and women appear to have more difficulty accessing financial services in this jurisdiction. Despite having 57 percent of mobile or internet access at home, only 0.028 percent of adults have a mobile money account. This demonstrates that mobile-based financial inclusion has a bright future. According to the findings, 22.37 percent of individuals have formally saved at financial institutions and 47.3 percent of adults have borrowed money in the last 12 months. According to a study on business access to financial services, 92% of businesses have a savings or checking account with a financial institution, and 40% of businesses have a credit card. In East Gojjam, Ethiopia, Beza et al. (2020), did a study on

Determinants of Financial Inclusion. The results were analyzed using primary data and a binary logistic regression model.

Income, residency, financial literacy, paperwork, trust, knowledge, accessibility, and availability all have a substantial impact on financial inclusion, according to the findings. Documentation, trust, awareness, and accessibility are the most important. Sex, age, education, occupation, family size, infrastructure, and deposit rate, on the other hand, have no bearing on financial inclusion.

## **2.8. Summary and Knowledge Gap**

Based on the researcher's empirical examination of the literature, it is feasible to conclude that, various perspectives undertook many studies on the determinants of financial inclusion. However, a review of the literature shows that financial inclusion is influenced by several demand and supply factors. At a macro level, a country's level of development, gross domestic product, income inequalities, adult literacy, and urbanization can influence financial inclusion; at a micro level, demand, and supply factors.

On the demand side such as socioeconomic and demographic characteristics of individuals (age, gender, education level, income, and religion), and the supply-side factors such as outreach, technology, penetration, etc. can influence financial inclusion.

Based on the theoretical and empirical review the major gap among variables and scopes are critical but the study conducted by, (Esmael & Mohammed, 2021), is seen as an unusual result in which variable income has a negative and significant effect on financial inclusion, therefore is an inconsistency (contradiction) of results between the results of researchers.

In Ethiopia, the study on financial inclusion is very few and limited in scope for example (Desalegn, 2021) is limited to small and medium enterprises firms, but fails to individuals as well as households, the other researchers. Mekuanint et al (2019), are limited to the Jimma Zone Oromia, Esmael & Mohammed (2021), are limited to the Afar region and Beza et al., (2020), are limited to East Gojjam, Ethiopia. Other than the above very few research and scope limitations.

A look at the current situation in Ethiopia backs up the claim those financial inclusion constraints are consistent on the demand side. As a result, by using demand-side data, this study addressed the gaps.

Finally, many of the above researchers used only bank accounts as a representation for financial inclusion and failed to address other financial institutions such as CBEs that broadly serve the society. A look at the current situation in Ethiopia backs up the claim those financial inclusion constraints are consistent on the demand side. As a result, by using demand-side data, this study addressed the gap.

## **2.9. Factors Affecting Financial Inclusion and the Hypothesis Development**

Factors that determine financial inclusion are divided into two categories: demand and supply. The demand for finance is based on the consumers' need for it, and as a result, they attempt to obtain it. They may be looking for money to meet social commitments or to start and run a business. The supplier's related factors, on the other hand, are what financial institutions undertake to enable customers to access finance. Based on the above theoretical and empirical as well as knowledge gap the current study developed the following hypothesis that focuses on demand-side data and discussed below the factor that determines financial inclusion in the era of technology.

### **2.9.1. Education and financial inclusion**

Wentzel et al. (2016) Discovered that an educational degree was the most significant factor related to financial exclusion; additionally, a higher level of education improves the likelihood of an individual becoming banked. Sanderson et al (2018) Claim that educated people may easily grasp each financial product available on the market. As a result, they are more likely to participate in the formal financial market. Well-educated people have an easy of understanding various financial products, which boosts their chances of engaging in the financial market. Educated people are better equipped to comprehend the numerous financial products even using updated technology on the market and make informed judgments, hence increasing their access to these goods.

According to Adigun (2013), education is a method of assessing awareness, skill sets, and the ability to make judgments about informal financial markets, resulting in a favorable association between financial inclusion and formal education. Thus, it hypothesized that:

***H1: The educational level of an individual has a positive and significant effect on financial Inclusion.***

## **2.9.2. Financial Literacy and Financial Inclusion**

The degree to which families and people are informed or aware of the knowledge required to make financial decisions is referred to as financial literacy. Financial literacy is a deciding factor between inclusion and exclusion, according to (Kabakova & Plaksenkov, 2018), and (Fischer, 2011) determined that usage is more significant.

Individuals with higher levels of literacy are also more likely to be financially included. Because they can open bank accounts reasonably and include in financial services, this is the case why the level of financial literacy is determined by financial attitude, financial behavior, and financial knowledge, which helps define financial inclusion (Rastogi & Ragabiruntha, 2018; Rai et al., 2019; Shankar, 2013).

*H2: Financial literacy has a positive and significant effect on financial inclusion.*

## **2.9.3. Occupation and Financial Inclusion**

The type of job also determines the likelihood of an individual accessing an official financial facility or not. There is a greater chance of someone who is formally employed using official financial facilities (Clamara et al., 2014). There are low chances for a household with nobody with formal employment to be financially included. In some developed countries, it is more probable for those without a job or in informal jobs to be out of the official financial system than those formally employed (Carbo & Rodriguez, 2014). As a result, it is proposed that;

*H3: Occupation has a positive and significant effect on financial inclusion.*

## **2.9.4. Income and Financial Inclusion**

According to the World Bank (2014), income is the most important factor in determining whether a person has a bank account, and it is one of the main reasons for the poor's inability to keep a bank account. Income has long been a major determinant of financial inclusion or exclusion. Because they are unaware of policies and regulations, low-income people believe that they are not eligible for financial services because they lack capital. (Sarma & Pais, 2011), Assessed the impact of income, inequality, urbanization, and infrastructure on financial inclusion and related national development to financial inclusion.

According to a study by Devlin (2009), high-income earners were less likely to be excluded than low-income groups. However, as government efforts to promote inclusion have grown, various steps have been taken to integrate low-income people into the financial system as well. Lower

income inequalities lead to greater inclusion in developing countries, whereas a lack of equality leads to lower inclusion (Kempson et al., 2004). Perhaps income is no longer as important as it once was, as data suggests that low-income families can save as well (Hogarth & O'Donnell, 2000). In this study, income was measured as average monthly income. Thus, the hypothesis stands.

*H4: Income has a positive and significant effect on financial inclusion.*

### **2.9.5. Documentation and Financial Inclusion**

Any person wishing to access official financial organizations' facilities is required to submit several documents, which include identity documents and address validation (WBG, 2018). The proof of residence requirements have played varying roles in influencing FI, particularly in developing countries with no formal documentation for rented accommodation.

People from rural areas may also face similar harrowing experiences, as formal proof of residence is hard to come by. In the UK, a lack of proof of address is a huge obstacle to opening a current account that enables employers to pay salaries (European Commission, 2008). The vital documents have to be original and authentic. The commonly used documents are as follows: water bills, electricity bills, lease contracts, council rent cards, and mortgage reports. These documents are regarded as credible documents in many countries (World Bank, 2018). For the current study, proof of residence was incorporated as an indicator variable for people possessing the necessary official papers. Thus it is hypothesized that:

*H5: documentation has a negative and significant effect on financial inclusion.*

### **2.9.6. Network Connectivity and Financial Inclusion**

Mobile banking success largely depend on the reliability of its systems and network. One of the major measurements of reliability is system availability. Many agents complain about downtime POS frozen by the bank once the cash limit reached, pending deposit of cash at the branch, but often with a lag until POS is unfrozen.

Poor GPRS connection for some agents, occasional maintenance required. If un transacts acts for 2 days the monthly profit margin may be cut by more than half from 10.6% (\$124) to 2.6% (\$27) CGAP, (2010). By its very, nature the ICT phenomenon is relatively new in the developing world.

Research studies conducted suggest that the majority of developing countries such as Kenya in sub-Saharan Africa is lagging in the information revolution (Zhao & Frank, 2003). The system is the only connection between the customer and the bank and will determine whether a customer is satisfied or dissatisfied at the agent location. System safety problem or malfunction can aggravate the agent reconciliation or even facilitate fraud against the bank, customer, or agent.

In Kenya, Saropa (2013) informs that Equity bank agents across East Africa use the bank servers to serve customers. The challenge comes when the bank servers are down even agents cannot serve customers.

The bank should build agents their terms and services so that when there is an issue with the systems the agents can continue serving customers. Mobile phone network failures posed a major challenge to agency banking in the region. From the findings, 50% of clients have been affected by this problem (100%) of agents asked admitted that it was a major problem (Saropa, 2013).

A study by Kinyanjui (2011) finds that Agency outlets use the bank server to execute clients' transactions. In Kenya, banks partner with Mobile telephone service providers and use a secure network to access the server to complete any given transactions. Juma (2011) in a study on Turning Cell phones into 24-hour Tellers in Kenya found that Safaricom, the single most successful mobile money deployment, invested heavily in developing the M-PESA agent infrastructure with a focus on a consistent customer experience. The proposed hypothesis is that

***H6: Network Connectivity has a constructive and significant effect on financial inclusion.***

### **2.9.7. Trust and Financial Inclusion**

Trust is one of the biggest barriers to inclusion due to a lack of knowledge leading to people, lack of trust in a formal bank or financial institution channel (Garg & Agarwal, 2014). Related financial inclusion or exclusion to human aspects like religion and trust (Shankar, 2013), suggested that lack of trust leads to financial exclusion. Thus, we can say that trust is an important aspect when talking about finances and financial inclusion (Deb & Agrawal, 2017), related attitude and trust to India's potential for financial inclusion as a result of the adoption of mobile banking. Lack of trust in financial institutions is a barrier that is difficult to overcome. Lack of information triggers a lack of trust, which hinders people from using formal financial services (Kumar, 2011). Hence it is, hypothesized that:

*H7: Trust in financial institutions has a confident and significant relationship with financial inclusion.*

### **2.9.8. Electronic Mobile financial services**

Nowadays, the mobile telephone is recognized as an instrument that simplifies financial services and allows a large number of unbanked to access them after opening a bank account. Therefore, to understand the factors that motivate the use of mobile finance a growing number of authors studied the determinants of financial inclusion for the use of mobile money. In this dynamic, based on the important role played by mobile payments in mobile business, Lin et al. (2020) used the theoretical frameworks of the extended unified Theory of Acceptance (acceptance and use of technology) and Diffusion of Innovation to discuss which manner consumers' behavioral intention can be further influenced in Taiwan.

Using Partial Least Squares to implement the data analysis, they found that factors such as social influence, facilitating conditions, hedonic motivation, compatibility, innovation, relative advantage, and observability had a positive influence on the intention of consumers to use mobile payment. Franque et al. (2021) investigated the continuous intention to use mobile finance. In this, they used the theoretical model of the DeLone and McLean Information System and that of the Expectation-Confirmation evaluated and validated through partial least squares and structural equation modeling to estimate data collected from 338 questionnaire items through an online survey. Their findings revealed that the main factors affecting the continuous intention to use mobile payment were individual performance, use, and satisfaction. Thus, the proposed hypothesis is

*H8: electronic device has a positive and significant effect on financial inclusion*

### **2.10. Financial inclusion**

The assertion that financial inclusion is the mere opening of an account at a formal financial institution could be contradicted. Probably this contradicted mere belief may be because opening an account does not change the lives of households. Describe how having an account or simple commitment savings can smooth consumption and finance productive investment of entrepreneurs. Several studies have found that having formal accounts for individuals as well as firms has several benefits (Dupas and Robinson, 2009).

A related finding by Beck, Levine, and Levkov (2010) shows that greater financial inclusion accelerates economic growth, intensifies competition, and boosts the demand for labor. Those individuals at the lower end of the income distribution can get relatively bigger benefits and hence inclusive growth can be achieved. Some studies find that increased access to well-suited savings and payment products can enhance and reduce extreme poverty and boost shared prosperity.

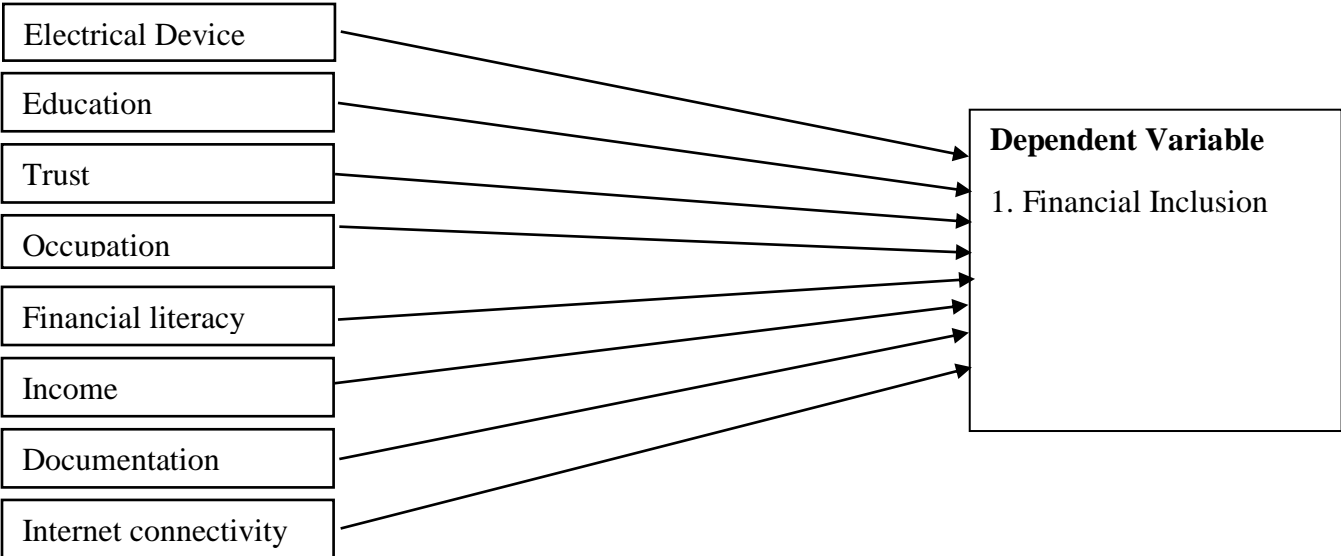
Financial inclusion refers to the process of promoting affordable, timely, and adequate access to a wide range of regulated financial products and services and broadening their use by all segments of society through the implementation of tailored existing and innovative approaches including financial awareness and education to promote financial well-being as well as economic and social inclusion (OECD, 2013).

Financial exclusion is a great part of social exclusion and needs government action. Ethiopia is a developing nation with the majority of the unbanked population. Therefore, studying financial inclusion is relevant to the Ethiopian development agenda.

**2.11. Conceptual Framework**

Based on the above theoretical and empirical Literature review the researcher developed the following conceptual framework. This framework briefly describes the factors that determine financial inclusion. Financial institution account ownership is used as a indirect means for financial inclusion.

Figure 1: Conceptual framework



*Source: Adapted from reviewed literature*

## **CHAPTER THREE**

### **3. RESEARCH METHODOLOGY**

#### **3.1. Research Design**

The techniques for data collecting, evaluating, interpreting, and reporting information in research projects referred to as a research design (Creswell & Plano, 2007). A universal schematic connects conceptual research challenges to relevant and feasible empirical research. To put it another way, the research design requires the data collection and analysis techniques used, as well as how all of these research questions will respond. There are three possible types of research design, according to Robson (2002): exploratory, descriptive, and explanatory. Because each plan serves as a particular give-up objective, this classification system is based on the research region's motivation.

The major objective of the current study was to examine the determinants of financial inclusion in the era of technology in the case of commercial banks in Ethiopia. Hence, to achieve the objectives this study applied an explanatory research design due to the fact Explanatory research gives the impression of causes, effects, and reasons and provides proof to help or disprove an explanation or prediction of variables.

#### **3.2 Research Approach**

Widely talking, there are 3 approaches or techniques to carrying out research: qualitative method, quantitative method, and mixed method (Creswell, 2009; Creswell & Plano, 2007).

Hence, to scan the factors of financial inclusion in Ethiopia. The researcher used a quantitative research approach. The quantitative research approach is a means to collect quantitative data and analyses to answer the research questions. In other words, it involves collecting quantitative data in a study.

Similarly, it is suitable to test and validate already built theories about how and why phenomena arise by trying out hypotheses that can be constructed earlier than facts collected to broaden knowledge of motive and effective thinking, discount specific variables and questions, use dimension and commentary, employee strategies of inquiry such as experiments and surveys (Creswell, 2009).

### **3.3. Population and Sample Size**

#### **3.3.1. Target Population**

According to Kombo and Tromp (2006), a population is a group of individuals, objects, or items from which samples are taken for measurement or it is an entire group of persons or elements that have at least one thing in common. The target population of the study included all individual respondents in the selected total registered Commercial Banks in Ethiopia.

#### **3.3.2. Sampling Techniques and Sample Size**

##### **3.3.2.1. Sampling techniques**

For a successful study, it is mandatory to select a sample that is representative of the population and that fits with the nature of the population, time, cost, and other constraints. To keep the data balanced and based on the nature of the target population this study adopted the Purposive or Judgmental sampling techniques because the researcher wanted to select eighteen commercial banks. Judgmental sampling used to collect the information from the financial institutions because judgment considers things like representation, adequacy, and homogeneity of the sample. Banks are selected based on the experience they have in the market, which means the capital they provided and the year of establishment.

The sample size is therefore directly proportional to the desired confidence level of the estimates ( $z$ ) and to the variability of the phenomenon being investigated, and it is inversely proportional to the error that the researcher is willing to accept (Corbetta, 2003).

According to Cochran (1997), a sample size of about 384 is a sufficient sample size at the 95% confidence level with a 5% margin of error when the size of the population is large or infinite. The following formula given by Cochran was adopted. Cochran developed a formula to calculate a representative sample as we want the most favorable sample size for an infinite population and we shall take the values of  $p = 0.5$  and  $q = 0.5$ . We can determine the sample size.

**Table:3.1 List of commercial banks**

No	Name of the Bank	No of the selected respondents From government and private-owned commercial banks.
1.	Awash International Bank	22
2.	Commercial Bank of Ethiopia	22
3.	Development Bank	22
4.	Dashen Bank	22
5.	Wegagen Bank	22
6.	Bank of Abyssinia	22
7.	United Bank	22
8.	Nib International Bank	22
9.	Cooperative Bank of Oromia	22
10.	Lion International Bank	22
11.	Zemen Bank	22
12.	Oromia International Bank	22
13.	Bunna International Bank	22
14.	Berhan International Bank	22
15.	Abay Bank S.C	22
16.	Addis International Bank S.C	22
17.	Dehub Global Bank S.C	22
18.	Enat Bank S.C	22

*Source: NBE Official Website*

The target population of the study included all individuals above the age of 18. The sample size used by the current study is 396 respondents which is greater than 384 to equalize number of respondents in each selected CBEs.

$$n_0 = \frac{z^2 * p * q}{e^2}$$

$$= \frac{(1.96)^2 * 0.5 * 0.5}{(0.05)^2} = 384$$

Where;  $n_0$  = is the sample size,

$z$  = is the selected critical value of the desired confidence level ( $z = 1.96$  as per the table of the area under the normal curve for the given confidence level of 95%).

$p$  = is the estimated proportion of an attribute that is present in the population,  $q = p - 1$  and  $e$  = marginal error  $\pm 5\%$ ; - is the desired level of precision Assuming the maximum variability, which is equal to 50% ( $p = 0.5$ ) and taking a 95% confidence level with  $\pm 5\%$  precision, the calculation for the required sample size becomes as follows:

$p = 0.5$  and hence  $q = 1 - 0.5 = 0.5$ ;  $e = 0.05$ ;  $z = 1.96$

Therefore; Sample,  $n_0 = ((1.96)^2 * (0.5) * (0.5)) / (0.05)^2 = 384$ . However, 396-sample size distributed equally to each commercial bank to meet the overall goals of the current investigations.

The sampling design for this population is simple random sampling. Since the aim of the study is to make theoretical inferences from the results of the study that are suitable for further empirical investigation in any other context, random sampling is the most appropriate method. Thus, the selection of the sample respondents will be using simple random sampling techniques

### **3.4 Data Type and Collection Technique**

In this study, the researcher carried out the self-administered the questionnaire as to its advantages.

A few advantages such as the lowest cost alternative; permitting members to suppose more about the questions, being perceived as more anonymous, and being a speedy information collection technique (Cooper and Schindler, 2006). Consequently, the survey was conducted to realize the elements of financial inclusion (dependent variables) and explanatory variables. There are 3 methods of administering self-administered questionnaires consisting of face-to-face, telephone, and mail (Marczyk et al., 2005).

For the reasons that go back rate and objectivity in filling a questionnaire are high in the face-to-face. Therefore, the current study used a face-to-face method to administer a questionnaire. Thus, the primary data collected through questionnaire interviews using a structured questionnaire. The questionnaire used for this study is closed-ended questions. Thus, the questionnaire was prepared in English language and then translated into the respondents' languages, those spoken by the majority of the population in the study area. The survey questionnaire used for this study was revised and adapted from global index questioners (2017), and Yashwant et al. (2020), however, the researcher modified and provided a few questions about their content to make the questions easy to understand the respondents. The questionnaire is directly related to the study's hypotheses and objectives.

### **3.5 Model specification**

Model specification is the first and most critical stage of regression analysis; followed by estimation of parameters and interpretation of those parameters. Financial inclusion determinants can be modeled using either the logistic model or the probit model (Potrich et al., 2015). These models follow the discrete choice models, which relate the choice made by each person to the attributes of the person and the attributes of the alternatives available to the person. The models estimate the probability that a person chooses a particular alternative. The models are often used to forecast how people's choices will change under changes in demographics and or attributes of the alternatives. Discrete choice models specify the probability that an individual chooses an option among a set of alternatives. The probabilistic description of discrete choice behavior is used not to reflect individual behavior that is viewed as intrinsically probabilistic. According to Gujarati (2006), logit and probit models are similar in most applications. Despite similarities among the models, the estimated coefficients are not directly comparable (Gujarati, 2006).

The current study worked by logit model to investigate the factors of financial enclosure following the work of Akudugu (2013) and Potrich et al. (2015). The underlying thinking behind the use of the logit model is premised on the fact that people are faced with decisions on whether to be formally financially included or not. Akudugu (2013) argues that individuals decide on whether to be included or not on the reaction threshold inherent in them based on several factors, beyond the threshold the person will not seek to be included in the formal financial market while at the critical threshold level, the desire to be included in the formal financial market is motivated.

To capture such phenomena in mathematical form:

$$Y_i = \beta X_i + U_i \quad (1)$$

Where Y

$i$  is the observed response for the  $i^{\text{th}}$  individual adult who is either formally financially included or not included.  $X_i$  is a set of independent socioeconomic and demographic variables such as Electronic device, education, trust, occupation, financial literacy, documentation, distance, and network connectivity. The logit model uses a logistic cumulative distributive function to estimate, P as follows:

According to Brooks, (2008), the general multivariate regression model with K-independent variables can be written as follows: -

$$P_i(F_i) = \ln \left( \frac{p_i}{1-p_i} \right) = \beta_0 + \beta_i \sum X_i + u_i$$

$$Y_i = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \dots + \beta_k X_{ki} + \epsilon_i \quad (i= 1, 2, 3, \dots, n)$$

Where  $Y_i$  is the  $i^{\text{th}}$  observation of the dependent variable,  $X_{1i} \dots X_{ki}$  is the  $i^{\text{th}}$  observation of the independent variables,  $\beta_0$  is the regression intercept,  $\beta_1 \dots \beta_k$  are the regression coefficients,  $\epsilon_i$  is the  $i^{\text{th}}$  observation of the stochastic error term, and  $n$  is the number of observations.

Hence, the dependent variable = Financial inclusion, and it is measured  $Y_i$  becomes equal to one when an individual is financially included and zero otherwise. Independent Variables such as:- Electronic device(ELCD), education(EDU), trust(TRU), occupation(OCUP), financial literacy(FIL), documentation(DOC), Income(INC), and network connectivity(NETC).

### **3.6. Operational Definition of Variables**

#### **3.6.1. Dependent variable**

In this study, Financial Inclusion (FIN) is the dependent variable and it refers to the usage of single or multiple financial products and services explained by account ownership from each financial institution (Banks) because the account owner is the first and major proxy of financial inclusion. For most people a formal account serves as an entry point into the formal financial sector, having a formal account facilitates the transfer of wages, remittances, and government payments, and to process of digital banking. it can also encourage formal saving and open access to credit. Accounts are also a simple and consistent metric that facilitates the measurement of financial inclusion across countries (Demirguc-Kunt & Klapper, 2013). And it is dichotomous,

that is either an individual has an account from a financial institution or is not represented by a 0 or 1 respectively.

### **3.6.2. Independent variables**

The variables investigated in this study are those that are consistent with previous scholarly work. A list of all the independent variables included in the models is provided below.

**Education level (EDU);** - It represents a respondent's highest level of education measured by using a categorical scale. The probability of being financially included increases with an increase in the education level of an individual (Gashaw and Gebe, 2017). Fungáčová et al. (2015), showed that better education is correlated with higher usage of formal accounts and formal credit. Thus, it is expected that it will have a positive impact on financial inclusion.

**Income (INC);** is also continuous and it refers to the average monthly income of the individual measured in birr. It is hypothesized that income has a statistically positive and significant effect on financial inclusion. As people's income increases financial inclusion also increases. (David & Varaidzo, 2020)

**Financial literacy (FIL);** -It refers to the respondent's level of literacy/knowledge about financial products and services (dummy variable with the dichotomous response of 1 and 0, 1= yes (literate) and 0= No (illiterate). According to Njanike (2021), a lack of financial knowledge keeps people out of the official financial structure, and at any level, people need both financial knowledge and skills to be financially included. Thus, this variable may expected to be a positive sign.

**Occupation (OCUP);** - It refers to the respondents 'nature of the job as well as their employment status at the time of data collection measured by the categorical scale. There is a greater chance of someone who is formally employed using official financial facilities and inversely low chances for individuals with nobody with no formal employment to be financially included (Clamara et al, 2014). Therefore, we expected to hypothesize that this variable can positively affect financial inclusion.

**Trust (TRU):-** Refers to how customers trust or rely on different financial institutions. The dummy variable with a dichotomous response of 1 and 0, 1 if respondents trust or rely on the financial institution and 0 otherwise. Lack of trust in financial institutions is a barrier that is difficult to overcome. Lack of information triggers a lack of trust, which hinders people from using formal financial services (Kumar, 2011).

**Documentation (DOC);** - It refers to the simplicity of documentation requirements by financial institutions during service provision to open an account in the financial institutions. (Dummy variable with the dichotomous response of 1 and 0, 1= yes (simple) and 0= No (difficult not simple).

Anyone intending to use the services of formal financial institutions must provide several documents, including identification and residence verification (WBG, October 1, 2018). Thus, it hypothesized that documentation has a negative and significant effect on financial inclusion.

**Electronic or technological device (ELCD):** Since the turn of the millennium, mobile phone technology has almost replaced the fixed (wire phone) telephone technology in the communication World. This development has been found by various studies to have an impact on FINC drive globally. Mobile phone is found to have a significant positive impact on FINC, the study indicates that the significant positive effect of mobile phones on FINC is more pronounced among poor households than non-poor households. In an attempt to examine the effect of FINC through Technology Adoption on economic growth and poverty reduction in Asia, Ratnawati (2020) found that ATMs density has a significant positive influence on FINC, economic growth, and poverty reduction in Asia.

**Network connectivity (NETC)** Refers to system and communication link between a financial institution and the mobile banking outlet during the transaction of agent activities. Mobile banking is the use of cellular technology to provide financial services. Money can electronically transferred, moved, and used and accepted by a third person as payment, Prepaid Cards/Smart Cards. (Dummy variable with dichotomous response of (1= strong connectivity and 0=no connectivity).

### **3.7. Validity and Reliability of the Data**

Pallant et al (2007), state, that reliability is an assessment of the degree of consistency between multiple measurements of a variable. To assess the reliability (internal consistency) of the instrument, Cronbach's Alpha ( $\alpha$ ) analysis was performed for all variables. Validation is also done to ensure that the instruments used in collecting data are enabled to collect the information needed.

Validity means the validity of the results, i.e. how well the question measures the matters chosen studied. The study is valid if its measurements measure what they claim to and if there are no logical errors in concluding the data. To ensure validity and reliability, the questionnaire was composed of carefully constructed questions to avoid ambiguity and to answer all the research questions (Wülferth, 2013).

## CHAPTER FOUR

### DATA PRESENTATION, ANALYSIS AND DISCUSSION

#### 4. Introduction

In the preceding chapters, important literature that gives an understanding of the topic is reviewed and used to identify the knowledge gap in the area of the study. In line with reviewed literature; the research problem, research objectives, research hypotheses & the research design used for this study were also discussed. This chapter deals with the descriptive statistics of the data collected, correlation analysis, normality tests, and other important assumptions discussed to see if the model is viable.

#### 4.1. Descriptive analysis of the study

##### 4.1.1. Response Rate

The researcher distributed 396 (100%) questionnaires, 334 (84%) were filled and returned, nevertheless 62 of them were not properly filled and returned. Therefore, the analysis of the study was made based on 334 respondents that were successfully responded and done in line with the research questions and objectives.

##### 4.1.2. Demographic Characteristics of Respondents'

The table below presents the demographic characteristics of the sample respondents by using the frequency of the responses and the percentage of each response on every demographic element.

**Table 4.2: Demographic Characteristics**

		1.Gender			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Mal2	182	54.5	54.5	54.5
	Femal	152	45.5	45.5	100.0
	Total	334	100.0	100.0	

**2.Age**

	Frequency	Percent	Valid Percent	Cumulative Percent
18 - 30	72	21.6	21.6	21.6
31-43	94	28.1	28.1	49.7
Valid 44 -56	90	26.9	26.9	76.6
Greater than 56	78	23.4	23.4	100.0
Total	334	100.0	100.0	

**4.Level of education**

	Frequency	Percent	Valid Percent	Cumulative Percent
No normal education	28	8.4	8.4	8.4
Primary school	158	47.3	47.3	55.7
Valid High School	98	29.3	29.3	85.0
Diploma/Degree and above	50	15.0	15.0	100.0
Total	334	100.0	100.0	

**5.Job status**

	Frequency	Percent	Valid Percent	Cumulative Percent
Government employee	171	51.2	51.2	51.2
Valid Employed in private business	131	39.2	39.2	90.4
Unemployed	22	6.6	6.6	97.0
Retired	10	3.0	3.0	100.0
Total	334	100.0	100.0	

**6. Your average income per month in Ethiopian birr?**

	Frequency	Percent	Valid Percent	Cumulative Percent
Br.3000-5000	118	35.3	35.3	35.3
Br. 5001-7000	128	38.3	38.3	73.7
Valid Br. 7001-9000	59	17.7	17.7	91.3
Greater than 10000	29	8.7	8.7	100.0
Total	334	100.0	100.0	

As observed from the above table, out of the total 334 respondents (55%) of the respondents were male and the remaining (45%) of the respondents were female. The implication is that males dominate the sampled respondents in the study.

Concerning the age of the participants, the majority of the respondents were between (31-43) that consists (40%), followed by, 18-30 (31%); and 25% of the respondents were between 44-56, and greater than 56 above 4%. This implies that the majority of bank customers are relatively adult and productive that used financial services.

The majority 156(47%) of the respondents were in primary school, 97(29%) of respondents were completed secondary school, 55(16%) of respondents were diploma and above holders and 26 (8%) of the respondents were no formal education. This implies most of the users have good educational qualifications to understand the banking practice.

As stated in the above table, the Majority 166 (50%) of the respondents are government-employed, 132(39%) of the respondents were employed in private business, and 26(8%) of the respondents were unemployed and retired. According to the literature, there is a greater chance for someone who formally employed to use official financial facilities and there are low chances for an individual who is not formally employed to be financially included (Clamara et al., 2014).

The above table also revealed that among financially included respondents, (38%) of the respondents had having average monthly income between 5001- 7000. (38%) had an average monthly income is 5001-7000, (35.6%) had an average monthly income between Br 3000-5000 and (9%) were having average monthly income greater than 10,000. The implication is that from financially included customers, the majority monthly income fall between 5001-7000 while only 8.7% customers found greater than 10000.

Table 4.1 also revealed that the majority 180(54%) of the respondents were married and 117(35%) unmarried (Single), 26(8%) were divorced and 11(3%) were windowed. According to a previous study, A married person has a bigger chance of being financially included than someone single (Soumare et al., 2016) and (Cano et al., 2013) maintained marriage increased the possibility of an individual using official financial facilities.

The above table also revealed that among financially included respondents, (38%) of the respondents had having average monthly income between 5001- 7000 (36%) had an average monthly income is 3000-5000, (17%) had an average monthly income between Br 7001-9000 and (9%) were having average monthly income greater than 10,000. The implication is that a

lower income level reduces the likelihood of being financially included while a higher income level increases the chances of being financially included

## 4.2. Descriptive analysis of the study variables.

### 4.2.1. Reliability test

Reliability refers to the consistency of the measurements of variables (Hair, et al., 2010). Moreover, Rovai, et. al., (2014) recommended that Cronbach's alpha is a very important tool for measuring internal consistency and assessing the reliability of the variables. Hence, George and Mallery (2003) mentach's alpha coefficients have ranged from 0.5 to 0.90. Thus, the values for Cronbach's Alpha ( $\alpha$ ) of the variables are below. An acceptable reliability score is 0.7 or higher. The validity and reliability of the instruments found in this research can confirm that these survey questionnaires can be used in their intact form and be concluded that questionnaires were reliable because the mean value alpha was above 0.70.

**Table 4.2. Reliability test**

Variables	Cronbach's alpha
financial inclusion	.880
electronic device	.828
Trust	.942
Occupation	.862
Financial Literacy	.718
Income	.714
Documentation	.748
Network connectivity	.781
Education	.775
Reliability statistics of total scale	0.791

The distribution of the data set or dependent and independent variables used in the study are explained by descriptive statistics and, the Frequency Table. The following table summarizes the Frequency of the variables with 334 observations.

### **4.3 Financial Inclusion**

This is the dependent variable investigated in the study about the financial inclusion of commercial banks in Ethiopia. The scale used was frequently yes (1) and no (0). Financial inclusion plays a significant role in realizing an all-inclusive social, political, and economic development in any country. Sharma, Khan, and Thoudam (2019) lecture that most poor people in under developed and developing countries are unable to access financial services and they do not meet all their financial needs. The banking sector has a great responsibility to adopt the most appropriate strategies to enhance financial inclusion. This is because the strategies are inevitable to delineate all financial services to be delivered to a disadvantaged group of people at an affordable cost as per their needs and requirements. They are also inevitable to bring the unbanked and under-banked people into the financial system to provide them with the opportunity to access financial services to create economic growth and lead to empowerment opportunities (Lenka & Barik, 2018).

To know the financial inclusion status of the respondents, they were to indicate in the questionnaire that they have of account, either by an individual or together with someone else. The Global Findex 2017 database defines account ownership as having an individual or owned account with a financial institution or through a mobile money provider. Formal accounts provide a safe way to store money and build savings for the future. They also make it easier to pay bills, access credit, make purchases, and send or receive remittances. Having an account therefore used by the World Bank and others as an indicator of financial inclusion.

The results of the analysis presented in the table below indicated that out of the 334 respondents, 111(33%) had no account in financial institutions, (financially excluded) while the remaining 223(67%) had an account in financial institutions (financially included). This shows that currently around 33% of working-age adults are still financially excluded or they do not use financial services and products from banks.

The table also indicates that in the last twelve months, the majority of financially included respondents 174 (52%) and 187 (56%) used their accounts for saving and withdrawing money respectively, and 98 (29%) of respondents used their accounts to personally give or send money to a relative or friend living in a different city or area and sent money through a bank.

According to the table below, 41 (12%) of the respondents used their accounts to borrow money from the banks. Finally, only 174 (52%) of respondents used their accounts to make regular payments for electricity, water, or any other utility through a bank. The implication of this result indicates that in the study area, more account owner used their accounts to save money and take out that money for different consumption, and very few account owners have used their account out of this traditional usage which is to use their accounts to payments of different regular utilities .this is because of lack of knowledge about financial service and products.

**Table 4.3. Descriptive Results of Financial Inclusion**

**1.Do you have accounts currently, either by yourself or together with someone else, at private banks or government banks?**

	Frequency	Percent	Valid Percent	Cumulative Percent
NO	111	33.2	33.2	33.2
Valid YES	223	66.8	66.8	100.0
Total	334	100.0	100.0	

**2.Do you, by yourself or together with someone else, currently have a loan you took out from individuals to purchase a home, or land, or to start, operate, or grow a business or farm or any other reason?**

	Frequency	Percent	Valid Percent	Cumulative Percent
NO	293	87.7	87.7	87.7
Valid YES	41	12.3	12.3	100.0
Total	334	100.0	100.0	

**3.In the past 12 months, have you ever withdraw money from your account(s) using ATM or POS machine?**

	Frequency	Percent	Valid Percent	Cumulative Percent
NO	174	52.1	52.1	52.1
Valid YES	160	47.9	47.9	100.0
Total	334	100.0	100.0	

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid NO	236	70.7	70.7	70.7
Valid YES	98	29.3	29.3	100.0
Total	334	100.0	100.0	

**5. In the past 12 months, have you made transfer from your accounts to account or payments to other utility using digital banking?**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid NO	160	47.9	47.9	47.9
Valid YES	174	52.1	52.1	100.0
Total	334	100.0	100.0	

**6. In the past 12 months, have you ever withdraw money from your account(s)? This includes cash withdrawals with voucher in person, or other checks.**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid NO	147	44.0	44.0	44.0
Valid YES	187	56.0	56.0	100.0
Total	334	100.0	100.0	

## **Electronic devices**

Commercial banks are critical financial entities in the development of inclusive finance, and they should play an essential leading role in the development of inclusive digital finance. Numerous banks have shown up with new financial innovations that occurred in the new situation of banking clients that are designated advanced money.

Consequently, accounts have given another shape to the financial business. Nowadays, financial services are carried out through mobile phones, Personal Computers, and cards connected to digital finance frameworks. Banking using technology can give moderate, advantageous, and secure financial assistance if we implement it appropriately. Digital finance gives important control of client accounts, speedy financial transactions, and the capacity to make and get payments. The innovation has spread electro banking (Selvakumar, 2021). The descriptive

information of the questionnaires was presented through frequency and valid percentage presentation as shown in the table below.

**Table 4.4 descriptive results of electronic device**

**1.Do ATMs work 24 hours without interruption of the service in your city?**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid NO	135	40.4	40.4	40.4
Valid YES	199	59.6	59.6	100.0
Total	334	100.0	100.0	

**1.Do ATMs work 24 hours without interruption of the service in your city?**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid NO	135	40.4	40.4	40.4
Valid YES	199	59.6	59.6	100.0
Total	334	100.0	100.0	

**3..Do you have a mobile phone with a line that enables you to operate digital banking?**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid NO	94	28.1	28.1	28.1
Valid YES	240	71.9	71.9	100.0
Total	334	100.0	100.0	

To know the digitization status of the respondents, they were to indicate in the questionnaire that out of the 334 respondents, 240 (72%) have a mobile phone with its line that enables to operate digital banking, 199(60%) say yes that ATMs functioned 24 hours without interruption the service in their living city, and 174(50%) don't have easy of access to use POS machine in shopping centers, service providers and other organization in the city they live to use as an option to transaction .thus growth the distribution of POS machine in market area should one of strategic them which can be convenient and inexpensive accessibility option to customers.

## Trust

It refers to how customers trust or rely on different financial services. Trust is one of the biggest barriers to inclusion due to a lack of knowledge leading to people, lack of trust in a formal bank or financial institution channel (Garg & Agarwal, 2014). The Table below revealed that the majority 216(65%) of the respondents thought that their accounts are not protected from robbery by electro-banking. And 202(61%) of the respondents say banks do not entertain customers as mentioned in the advertising .in addition 203(60%) of the respondents were say in the last 12 months, there was service inconsistency that delayed their transaction due to banks internal problem to use electro banking. Thus, the customers did not trust or have confidence in the financial institutions. Trust in financial institutions increases the ability to usage of financial services and products or financial inclusion status. When people increase trust in the financial services provider they also increase their uptake of the same service (Mekuanint et al., 2019).

**Table 4.5 Descriptive result of trust**

**1.In the past 12 months, Do you think that banks could protect your account from robbery using electro banking**

	Frequency	Percent	Valid Percent	Cumulative Percent
NO	216	64.7	64.7	64.7
Valid YES	118	35.3	35.3	100.0
Total	334	100.0	100.0	

**2.In the past 12 months, have banks entertained you as they mentioned in the advertising?**

	Frequency	Percent	Valid Percent	Cumulative Percent
NO	202	60.5	60.5	60.5
Valid YES	132	39.5	39.5	100.0
Total	334	100.0	100.0	

	Frequency	Percent	Valid Percent	Cumulative Percent
NO	203	60.8	60.8	60.8
Valid YES	131	39.2	39.2	100.0
Total	334	100.0	100.0	

## Financial Literacy

Financial literacy refers to the knowledge, education level, training level, and awareness about financial products and services. The table below also revealed that the majority 264(81%) of the respondents were knowledgeable about financial services and products while 70(21%) were not knowledgeable about financial services and products. Shankar (2013) asserted that financial capability comprises the capacity to decide (information, motivation, composure, and skills) and the expectation to act (having accessibility to banking services and other facilities). And also established that a lack of financial knowledge keeps people out of the official financial structure and at any level, people need both financial knowledge and skills to be financially included.

In India, many people are unaware of the banking terms and conditions laid down from time to time. Because of illiteracy, a substantial number of people are unable to take recourse to banking services. Lack of information about the role and function of banks, banking services, and products, interest rates among others stops people from including themselves in mainstream banking (Singh &Tandon, 2012).

**Table 4.6 Descriptive results of Financial Literacy**

**1.Can you accessed and load digital banking by yourself?**

	Frequency	Percent	Valid Percent	Cumulative Percent
NO	70	21.0	21.0	21.0
Valid YES	264	79.0	79.0	100.0
Total	334	100.0	100.0	

**2. When you require to save money, Do you check which bank pays a better interest?**

	Frequency	Percent	Valid Percent	Cumulative Percent
NO	174	52.1	52.1	52.1
Valid YES	160	47.9	47.9	100.0
Total	334	100.0	100.0	

**2. When you require to save money, Do you check which bank pays a better interest?**

	Frequency	Percent	Valid Percent	Cumulative Percent
NO	174	52.1	52.1	52.1
Valid YES	160	47.9	47.9	100.0
Total	334	100.0	100.0	

**4. Do you set long-term financial goals and strive to achieve those goals in collaboration with banks?**

	Frequency	Percent	Valid Percent	Cumulative Percent
NO	231	69.2	69.2	69.2
Valid YES	103	30.8	30.8	100.0
Total	334	100.0	100.0	

## **Income**

It refers to the average monthly income of the individual measured in birr. As people's income increases financial inclusion also increases. In the Zimbabwean context, this result makes sense because the majority of the people who earn an income get paid through a bank account. People go to financial institutions to get loans/ credit and then can open bank accounts to save the income generated from the loan (Sanderson, 2018).

The table below also indicates that 263 (79%) of the respondents have saved or set aside money in cash anywhere, other than banks, to operate, or grow a business or a farm in the past 12 months and 169(52%) of the respondents save a portion of their salary in monthly and finally, 175(52%) of the respondents do not have traditional saving other than banks.

**Table 4.7 Descriptive results of income**

**1.Do you save a portion of your monthly salary in the bank?**

	Frequency	Percent	Valid Percent	Cumulative Percent
NO	165	49.4	49.4	49.4
Valid YES	169	50.6	50.6	100.0
Total	334	100.0	100.0	

**2.Do you have traditional savings other than banks?**

	Frequency	Percent	Valid Percent	Cumulative Percent
NO	175	52.4	52.4	52.4
Valid YES	159	47.6	47.6	100.0
Total	334	100.0	100.0	

**3.In the past 12 months, have you saved or set aside money in cash anywhere, other than banks, to operate, or grow a business or a farm?**

	Frequency	Percent	Valid Percent	Cumulative Percent
NO	71	21.3	21.3	21.3
Valid YES	263	78.7	78.7	100.0
Total	334	100.0	100.0	

**Network connectivity**

Banking service success largely depend on the reliability of its systems and network. One of the major measurements of reliability is the system and internet connection. Internet connection has a constructive and substantial influence on financial inclusion. This means that as internet connectivity increases in the country, the majority of people become financially included.

Duncombe and Boateng (2009) argue that technological innovations such as connectivity improve access to financial products by the public. Internet connectivity cuts down on the distance one has to travel hence cutting the cost of transportation in accessing financial services. Table 4.8 below shows 252 (75%) and 229(69%) of respondents said there is a network connection in their living area and the network condition does work for all electro-banking services properly in the living area while 308(92%) of the respondents said there is always an

alternative method of mobile banking when the main bank system interrupted using a cell phone if internet connection is available.

**Table 4.8 Descriptive results of network connectivity.**

**1.Is there a network connection in your living area?**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid NO	82	24.6	24.6	24.6
Valid YES	252	75.4	75.4	100.0
Total	334	100.0	100.0	

**2.Does the network condition work for all electro-banking services properly in your living area? `**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid NO	105	31.4	31.4	31.4
Valid YES	229	68.6	68.6	100.0
Total	334	100.0	100.0	

**3.Is there always an alternative method of mobile banking, when the main bank system is interrupted?**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid NO	26	7.8	7.8	7.8
Valid YES	308	92.2	92.2	100.0
Total	334	100.0	100.0	

## Documentation

Access to banking products requires that one is supposed to complete several forms and also provide several documents to the satisfaction of the banks. In most cases, people who are engaged in the informal sector do not have these documents such as proof of residence. This then disqualifies those who don't have these documents to be involuntarily excluded from enjoying financial products. The Reserve Bank of Zimbabwe to lessen the burden on the requirement of documentation has since introduced the KYC light accounts for low-income earners as a way of making people bank users. This allows individuals to open bank accounts using the national

identity card only hence doing away with the need for proof of residence. Table 4.9 below revealed that the 67(20%) of the respondents did not easily access documents required to open bank accounts such as identification cards from their area of residence and 142(42%) of the respondents don't have access to get documents in their working area that enables them to open bank accounts. The previous study done by DAS (2015) found that it is not easy to provide documents required and structural procedural formalities are among the main obstacles to financial inclusion. Similarly, Beza et al. (2020) on their empirical evidence prove that the main factor that contributes to financial exclusion is too many documentation requirements.

**Table 4.9. Descriptive results of documentation**

**1. Do you have access to documents in your living area administration to open a bank account?**

	Frequency	Percent	Valid Percent	Cumulative Percent
NO	67	20.1	20.1	20.1
Valid YES	267	79.9	79.9	100.0
Total	334	100.0	100.0	

**2. Do you have access to documents in your working area that enable you to open a bank account?`**

	Frequency	Percent	Valid Percent	Cumulative Percent
NO	142	42.5	42.5	42.5
Valid YES	192	57.5	57.5	100.0
Total	334	100.0	100.0	

**3. Do you have documents such as an ID card that is required by banks to open an account?**

	Frequency	Percent	Valid Percent	Cumulative Percent
NO	232	69.5	69.5	69.5
Valid YES	102	30.5	30.5	100.0
Total	334	100.0	100.0	

## Occupation

Nature of job as well as his / her employment status or it refers to the respondents' nature of job as well as his / her employment status. As stated in the below table, the Majority 179(54%) of the respondents received payment with banks,191(57%) respondents always received payment in association with their job or pension through banks . Moreover, 174(52%) of the respondent's occupation forced to use bank system. According to the literature, there is a greater chance of someone who is formally employed using official financial facilities and there are low chances for an individual with nobody with formal employment to be financially included (Clamara et al., 2014).

**Table 4.10 Descriptive results of occupation**

**1.Does your work activities depend on banking system other than manual transaction?**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid NO	155	46.4	46.4	46.4
Valid YES	179	53.6	53.6	100.0
Total	334	100.0	100.0	

**2.Do you always receive payment in association with your job or pension through a bank**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid NO	143	42.8	42.8	42.8
Valid YES	191	57.2	57.2	100.0
Total	334	100.0	100.0	

**3.Do your work activities depend on banks?**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid NO	160	47.9	47.9	47.9
Valid YES	174	52.1	52.1	100.0
Total	334	100.0	100.0	

## Education

According to the level of Education, table 4.11 below indicates that financially included with, 266(79%) primary and secondary school, and 244(73%) with Diploma and above. Similarly, among the financially excluded respondents, 202(60.5%) have not ever participated in the banking service training formally or informally, and 65(19.5%) Cannot manage the formats of banks whenever they need to transact their account. This could indicate that those who are well-educated have an easier time understanding various financial products, increasing their chances of being financially involved. According to the financial literacy theory of financial inclusion, literacy increases people's willingness to use financial services, which increases their financial inclusion level. Moreover, governments with limited ability to increase financial inclusion use literacy as a major policy tool (Atkinson & Messy, 2013).

**Table 4.11. Descriptive Results of Education**

**1. Have you ever participated in the banking service training formally or informally?**

	Frequency	Percent	Valid Percent	Cumulative Percent
NO	202	60.5	60.5	60.5
Valid YES	132	39.5	39.5	100.0
Total	334	100.0	100.0	

**2. Can you manage formats of banks whenever you need transact your account(s)?**

	Frequency	Percent	Valid Percent	Cumulative Percent
NO	58	17.4	17.4	17.4
Valid YES	276	82.6	82.6	100.0
Total	334	100.0	100.0	

**3. Do you completed primary and secondary school?**

	Frequency	Percent	Valid Percent	Cumulative Percent
NO	62	18.6	18.6	18.6
Valid YES	272	81.4	81.4	100.0
Total	334	100.0	100.0	

**4.Do you have a diploma or degree?**

		Frequency	Percent	Valid Percent	Cumulative Percent
	NO	84	25.1	25.1	25.1
Valid	YES	250	74.9	74.9	100.0
	Total	334	100.0	100.0	

**4.4. Important Tests of the Model**

Before applying the binary logistic regression model, a measure of model fit for a binary logistic regression model, which is the Hosmer-Lemeshow test of goodness of fit was used to see how well the model fits the data). Also to detect the data problem for multicollinearity, specification bias and normality tests (i.e., hettest, VIF test, and OV test), respectively, were conducted.

**Goodness of Fit Test Model**

Hosmer- and Lemeshow's goodness of fit test shows how much-predicted value matches closely the observed values. This test states that the more closely the observed frequencies and predicted frequencies matched, the better the fitness of the model. This test is a more appropriate test for the binary logistic model (Hosmer & Lemeshow, 1980). There are no fixed points to judge the model as the best or worst predictor yet it is generally agreed that a model with an overall predictive power of three percent or more is good (Anders, Ari, & Magnus, 2006). To test/check the goodness fit of the model" fit" or "estate of god" has been conducted.

The Hosmer and Lemeshow test is also a test of Model fit. The Hosmer-lemeshow statistic indicates a poor fit if the significant value is less than 0.05. therefore the model adequately fits the data there is almost the same no difference between the observed and predicted model

**Table 4.12: Logistic model for FINC, goodness-of-fit test**

<b>Omnibus Tests of Model Coefficients</b>				
		Chi-square	Df	Sig.
	Step	88.724	8	.000
Step 1	Block	88.724	8	.000
	Model	88.724	8	.000

Source: (SPSS output, 2023)

Omnibus Test of Model Coefficients is used to test the model fit .if the Model is significant, this shows that there is a significant improvement in fit as compared to the null model, hence, the model is showing a good fit.

**Table 4.13 Test of Model Specification Error**

**Classification Table<sup>a</sup>**

	Observed	Predicted		
		AVEFININC		Percentage
		NO	YES	Correct
Step 1	NO	100	59	62.9
	YES	38	137	78.3
	Overall Percentage			71.0

a. The cut value is .500

Source: (SPSS output, 2023)

The specification refers to percentage of cases observed to fall into the non-target category. The specificity error for this model develops 29% .

**Test of Multicollinearity**

A Multicollinearity problem is the existence of a "perfect," or exact, linear relationship among some or all independent variables of a regression model (Gujarati, 2004). The Multicollinearity diagnostics test was done to check the presence of high collinearity among and between the dependent and each independent variable. An important assumption in regression models is that independent variables should not be perfectly collinear (one regressor should not be a linear function of another). Variance Inflating Factor (VIF) was used to check for multicollinearity problems among and between explanatory variables.

Cohen (2003) set the general rule for multicollinearity to be a severe problem if the mean value of VIF exceeds 10 and falls below one (i.e.,  $1 < \text{mean VIF} < 10$ ). To test the degree of multicollinearity among explanatory variables test of VIF can be employed after running a regression. A major problem with multicollinearity is that standard errors may be inflated. Thus, if  $\text{VIF} > 10$  or  $1/\text{VIF} < 0.10$  indicates trouble.

**Table 4.14: Test of Multicollinearity**

Model		Coefficients <sup>a</sup>						
		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-.108	.104		-1.039	.299		
	AVEREDUCA	.304	.066	.236	4.575	.000	.876	1.142
	AVERELCD	.107	.050	.106	2.150	.032	.967	1.034
	AVERTRUST	.026	.051	.026	.522	.602	.956	1.046
	AVEROCCUP	.027	.049	.027	.549	.583	.967	1.034
	AVERFINLIT	.152	.057	.144	2.657	.008	.793	1.261
	AVERINCOME	.025	.050	.025	.504	.615	.981	1.020
	AVERDOC	.257	.053	.255	4.834	.000	.843	1.186
	AVERNETCON	.038	.069	.027	.553	.581	.961	1.041

a. Dependent Variable: AVEFININC

From the above table, there is no problem of Multicollinearity between study variables since the VIF of all variables is less than 10 or 1/VIF is greater than 0.10

### **Test of Omitted Variable Bias**

Testing for omitted variable bias is important for our model since it is related to the assumption that the error term and independent variables in the model are not correlated ( $E(e|X) = 0$ ). The null hypothesis is that the model does not have omitted variables bias. According to Ramsey RESET test  $F(3, 322) = 17.11$ ,  $Prob > F = 0.0529$ , the p-value is higher than the usual threshold of 0.05, so the researcher failed to reject the null hypothesis and conclude that the researcher does not need more variables. ( $H_0$ : model has no omitted variables).

### **4.5. Binary Logistic Regression Analysis and Hypothesis Testing of the Variables**

In this section, in examining the determinant factors of financial inclusion the researcher used a regression analysis to test the effect of eight independent variables and their influence on the dependent variable i.e. financial inclusion. Thus, the binary logistic regression is used to detect and appraise their potential effect on each explanatory variable on the dependent variables. The

*explanatory variables are Education, Electronic Devices, Trust, Occupation, Financial Literacy, Income, Documentation and Network Connectivity,*

Therefore, the study placed great emphasis on the binary logit regression models with statistically significant variables and interpreted them by taking their simple logit coefficient initially and its marginal effects on the outcome categorical variables. The table below presents the binary logistic regression results, i.e., the p-value and marginal effect of explanatory variables included in the model at a 5% and 1% level of significance.

Particularly, the regression results show the existence of the positive expected signs and statistically significant effect of financial inclusion and electronic devices, occupation, education, and income at a 5% level of significance but, documentation has negative signs and a significant effect on the dependent variables.

However, financial literacy, trust, and network connectivity have no significant impact on financial inclusion. As the electronic devices, occupation, education, and income, the value of the Logit (financial inclusion) positive sign increased by the regression coefficient however as the documentation requirement increased the dependent variable negative sign decreased by the regression coefficient.

#### **4.6. Marginal Impacts of Explanatory Variables**

With models of separate response data, the evaluation of marginal effects is an important tool for the interpretation of results. Marginal effects indicate the effect that a one-unit change in an explanatory variable has on the probability of different discrete outcomes (Kockelman & Wang, 2009). To assess the quantitative effects of the independent variables, marginal effects were calculated. The table below presents the marginal effect of binary logistic regression to show the individual effects of explanatory variables (electronic devices, financial literacy, occupation, network connectivity, education, documentation, trust, and income) on the dependent variable.

**Table 4.15: Binary logistic regression marginal effect result of explanatory variable.**

		Variables in the Equation							
		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for EXP(B)	
								Lower	Upper
Step 1 <sup>a</sup>	AVEEDUC	1.668	.394	17.957	1	.000	5.301	2.451	11.465
	AVEELCD	.548	.257	4.545	1	.033	1.730	1.045	2.865
	AVERTRUST	.151	.266	.323	1	.570	1.163	.691	1.959
	AVEOCCUP	.131	.258	.256	1	.613	1.140	.687	1.891
	AVEFINLIT	.739	.287	6.657	1	.010	2.094	1.194	3.672
	AVEINCOME	.139	.261	.285	1	.594	1.149	.689	1.917
	AVERDOC	1.208	.265	20.736	1	.000	3.346	1.990	5.627
	AVENETCO	.190	.354	.287	1	.592	1.209	.604	2.419
	Constant	-3.190	.614	27.005	1	.000	.041		

a. Variable(s) entered on step 1: AVEEDUC, AVEELCD, AVERTRUST, AVEOCCUP, AVEFINLIT, AVEINCOME, AVERDOC, AVENETCO.

Source: (SPSS output, 2023)

## Education

The study also established that education is a significant factor in explaining financial inclusion in Zimbabwe. Educated people can understand the various financial products on the market and make knowledgeable decisions. Peña et al. (2014) argue that education is a way of computing knowledge, skill sets, and capacity to make decisions in formal financial markets hence the positive relationship between financial inclusion and education, The results are supported by prior studies (Kempson et al., 2013; Cole et al., 2019; Ellis et al., 2010). The results of this study show a positive and significant relationship between Educational level and financial inclusion. The coefficient educational level was significant at all levels with a significant value of less than 5% or 1% a p-value of 0.000 and an odds ratio of 1.668 which implies that those who have awareness about the services provided by different financial institutions had 1.668 times more likely to become financially included. The odds of demand for financial products for primary school, Diploma/degree and above, secondary and for a financial product that is the probability of demand for financial products and services is higher than no formal education respondents. Because educated respondents are better able to understand the numerous financial services and products available on the market and make informed judgments, hence boosting their access to financial institutions. Therefore, according to the above result the hypothesis was accepted.

## **Electronic devices**

The study results also show that electronic device in financial services providers or customers has a positive and significant association with financial inclusion with a p-value of 0.033 and an odds ratio of 0.548. The interpretation implies that respondents who have digital devices have a chance to become financially included by 0.548 times higher than when they don't have them.

This result is in line with the findings of Bongomin, Ntayi, Munene, and Malinga; Demirgüç-Kunt et al. (2018), it increases the likelihood of being financially included by enabling mobile money services at a reduced cost. Therefore, the hypothesis was accepted.

## **Trust**

The other variable included in the model is Trust and the output about this variable shows that it had an insignificant impact on financial inclusion status with a p-value of 0.570 and an odds ratio of 0.151. Previous studies on the variable such as Shankar (2013) identified that negative experiences and perceptions of financial institutions make people gain mistrust of financial institutions leading to self-exclusion. The Global Findex (2012) also reported that a lack of trust in the banking system has caused disparities in financial inclusion. Lack of customer trust in the financial system could be a result of improper supervisory mechanisms. As a result, trust was not statistically significant. And the hypothesis was rejected.

Therefore, the hypothesis was rejected.

## **Occupation**

Those who are employed have a higher level of financial inclusion than the unemployed do. Employment entails receipt of income and most likely they receive via financial institutions as we understand in the Ethiopian context. Thus, employed people are 33.5% in Ethiopia and 47.2% in Kenya more financially included than unemployed.

This is consistent with the findings of Llanto and Rosellon (2017). Receiving government transfers does not affect financial inclusion in Ethiopia, whereas it has a significant and positive effect in Kenya. When the government uses the financial sector to make payments, people are forced to open accounts to receive them. Most Kenyans receive government transfers via accounts, which increases their financial inclusion level by 29.9%.

As presented above, the result related to occupation indicated that it had no positive significant impact on financial inclusion with p - value of 0.613 and odds ratio of 0.131 which implies that those who had to get employed had 0.131 times more likely to become financially included as compared to unemployed respondents. This result is consistent with Yangdol and Sarma (2019). Employment increases the likelihood of being financially included (Llanto & Rosellon, 2017).in this research the result was not statistically significant. So the hypothesis rejected.

### **Financial literacy**

The direct binary logistic regression result related to the impact of financial literacy on financial inclusion revealed that it had a negative insignificant impact on financial inclusion with a p-value of 0.010 and an odds ratio of .739. The implication is that the odds of being financially included are .739 times more when respondents are financially literate than when they are illiterate or it can be interpreted that those who are financially literate can .739 times less likely to be financially included as compared to those who are financially illiterate. In other words, the result implies that the alternate hypothesis was accepted. In line with this finding, a study conducted by Joshif (2011) revealed that lack of financial literacy is the factor responsible for low levels of financial inclusion.

Similarly, Evans and Adeove (2016) in their study to investigate the determinants of financial inclusion in Africa also conclude that literacy rate especially financial literacy has a significant positive effect on financial inclusion. Therefore, the hypothesis is accepted.

### **Income**

Respondents' income has a statistically positive impact on financial inclusion, according to the results, with a p-value of 0.594 and an odds ratio of 0.139. It is interpreted as those respondents who have a higher income are 0.139 times more likely to be financially included. The meaning of these results was that a one-unit change in the income of a respondent is associated with an approximately 0.139 times increase in the probability of demand for financial inclusion. As a result, those with a high income have enough money to create bank accounts and face fewer hurdles to financial inclusion. According to the study, the primary reason for not having accounts is a lack of funds. As a result, the wealthiest people face fewer financial constraints, as many business operations necessitate the opening of accounts. Vulnerable Group Theory of Financial Inclusion supports this result. The theory revealed that poor people, young people, women, and

the elderly were less likely to use financial services and products (Ozili, 2020). This indicates that the respondent's good income is more likely to be financially included than low earners. A study by Ong'eta (2019) indicates that one of the factors that determine financial inclusion is the income of the individuals or households and also states that when the respondents have a regular income they will be able to operate bank accounts. The income becomes a way of accessing and using formal bank accounts for respondents. Respondents with more income may have more formal bank accounts and be able to use them regularly than those who have less and irregular income. The result is also supported by previous studies such as Beza et al. (2020); Gashaw and Gebe (2017), and Mekuanint et al. (2019) who found that having a low-level income reduces the likelihood of being included in the formal financial system.

. However, the result is inconsistent with the previous researchers (Esmael & Mohammed, 2021) who found a negative relationship between the income of households and financial inclusion.

Therefore, the result was not statistically significant. So the hypothesis rejected.

### **.Documentations**

The other variable included in the model is documentation and the output about this variable shows that it had a positive significant impact on financial inclusion status with a p-value of 0.000 and an odds ratio of 1.208. This result implies that when the documentation requirement is simple respondents are 1.208 times more likely to become financially included or it is interpreted as the odds of being financially included are 1.208 times greater when the documentation requirement is simple than when the documentation requirement is difficult. On the other hand, it also implies that when the documentation requirement is so difficult or bulky respondents are 1.208 times less likely to be financially included which implies that the alternate hypothesis is accepted. In line with the current finding Das (2015) in his study on factors affecting financial inclusion found that many and not easy-to-provide documentation requirements and structural procedural formalities are among the main obstacles to financial inclusion. Similarly, Baza & Rao (2017) on their empirical evidence prove that the main factor that contributes to financial exclusion is too many documentation requirements.

Lack of documentation hinders account ownership. Documentation, particularly local documentation, can be difficult to obtain, thus restricting people from opening an account

(Demirgüç-Kunt et al., 2018). So, documentation that has a negative and significant effect on financial inclusion is accepted.

### Network Connectivity

Internet connection has a p-value .592 and odd ratio .190 has no positive and significant impact on financial inclusion. This means that as internet connectivity can .190 times in the country, the majority of people become financially included. Duncombe and Boateng (2009) argue that technological innovations such as connectivity improve access to financial products by the populace. Internet connectivity cuts down on the distance one has to travel hence cutting on the cost of transportation in accessing financial services. of late in Zimbabwe, internet connection has increased the uptake of banking products as people prefer to do their banking online. This mostly been necessitated by the scarcity of cash in the economy. The impact of NTC is also included in the model and the result revealed that network connectivity has no significant impact on respondents' financial inclusion status at all levels. So the result was not statistically significant. And the hypothesis rejected .

**Table.4.16 Regression coefficients**

Coefficients <sup>a</sup>								
Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.	Collinearity Statistics		
	B	Std. Error	Beta			Tolerance	VIF	
1	(Constant)	-.108	.104		-1.039	.299		
	EDUCA	.304	.066	.236	4.575	.000	.876	1.142
	ELCD	.107	.050	.106	2.150	.032	.967	1.034
	TRUST	.026	.051	.026	.522	.602	.956	1.046
	OCCUP	.027	.049	.027	.549	.583	.967	1.034
	FINLIT	.152	.057	.144	2.657	.008	.793	1.261
	INCOME	.025	.050	.025	.504	.615	.981	1.020
	DOC	.257	.053	.255	4.834	.000	.843	1.186
	ETCON	.038	.069	.027	.553	.581	.961	1.041

a. Dependent Variable: AVEFININC

Source: computed by researcher on SPSS

**Table.4.17.Summary of Variables, Hypothesis Test and Decisions**

<b>Explanatory variables</b>	<b>Expected sign</b>	<b>Actual sign</b>	<b>Decision</b>
Education	Positive and significant	Positive and significant	Accept
Electronic Device	Positive and significant	Positive and significant	Accept
Trust	Positive and significant	No statistically significant difference	Reject
Occupation	Positive and significant	No statistically significant difference	Reject
Financial literacy	Positive and significant	Positive and significant	Accept
Income	Positive and significant	No statistically significant difference	Reject
Documentation	Negative significant	Positive and significant	Accept
Network Connectivity	Positive and significant	No statistically significant difference	Reject

## **CHAPTER FIVE**

### **5. CONCLUSION AND RECOMMENDATION**

#### **5.1. Conclusion**

Nowadays, People who are financially included are better able to know their money daily and exchange easily, such as making payments, investing, saving, and obtaining loans and other financial services. Due to low levels of financial inclusion across the country, recognizing the determinants can help policymakers and financial players understand how to promote it. The current investigation offers a novel and significant strategy for addressing financial inclusion in the studied area. The study's primary purpose was to investigate the determinants of financial inclusion in Ethiopian commercial banks in this technology era. The responses were evaluated with descriptive statistics and binary logistic regression analysis using SPSS version 25 software. Based on the discussion of the study findings came to the following classic conclusion.

Although financial inclusion plays an important role in an economy, it is affected by different economic and individual characteristics. The findings of this study demonstrate that financial inclusion is a relatively good condition in the studied areas when we compare the past overall country's financial inclusion status.

Based on the findings the researcher concludes that females are less likely to be financially included in the study area. The major findings on age show that people's chances of being financially included rise, as they get older. However, each group has its own set of specifications and characteristics. The study also decided that unmarried people reduce financial inclusion levels. Because a single person is not more motivated to open a bank account than married people. People with more income earners are more likely to have formal bank accounts. In addition, they can use them more regularly than those with less and irregular income. They also concluded more educated a person is, the more likely he or she is to be financially involved, implying that someone with higher education may appreciate the importance of having a formal account better than someone with a lower education.

Furthermore, Employment increases the likelihood of being financially included. In line with the objective, the study has established that financial inclusion is driven by electronic devices,

financial literacy, occupations, network connectivity, education, documentation, trust, and income. The independent variables included in the model electronic devices, education, occupation, income, and documentation are significantly related to financial inclusion. This implies that an increase in any of these variables significantly increases the level of financial inclusion.

On the other hand, documentation had a negative relationship with financial inclusion. This implies that an increase in documents required to open or transact accounts or open and access financial products discourages people from being financially included hence people may become involuntarily excluded.

## **5.2. Recommendation of the study**

Finance is the lifeblood of the modern economy; so to make it a term that refers to the inclusion of people from all lifestyles in financial activity, the study's overall goal is to determine the factors that influence financial inclusion in Ethiopia. Therefore, for each explanatory variable, the researcher makes the following recommendations,

In this technology era, electro devices has been involving as a means of communication between financial institution and customers. Therefore, financial institutions should work on installation of all alternative devices like POS,ATM and machines identifying their customer using physical identification through scanning fingerprint technology to lessen the cost of accessibility to banked and to included unbanked people due to lack of mobile phone and computer to process transaction.

Financial sector Stakeholders (Government and private banks) have a role to play in promoting the country's financial inclusion by using modernized technology available in the market that enables banks and customers as medium of transaction never cost the society. To enhance the financial literacy of the society, banks should proposed the government and work together to create awareness about basic financial knowledge to all in public media.

Other factors remain constant; financial institution must assure and work together with Internet provider to keep up the connection as a bridge that enables their system to tie and provide accurate data about all request from the customer.

Trust continue as a factor to be unbanked people or to use financial industries across the study area. There is a need to design policies that focus on technology based law to reduce fraud in financial sector using electro banking to increase trust of the people on banks and financial included. Governments, in partnership with some pressure groups, can create environments to communicate their concerns, such as national identification and strong measure on potential obstacles.

The researcher recommend that financial education programs should begin in primary school that enable kids to access structured and integrated programs that include personal finance management training. Financial training should become a component of the curriculum after teachers are trained in money management. Financial education should given by stakeholders through formal and informal training to elders. This can assist and enhance confidence and increase financial product understanding.

Education should enhanced to increase financial inclusion. The more a person higher education level, the more he/she understands financial matters, As a result, governments and other interested parties should involve to improve education standards for the entire population in countries, particularly those with low literacy rates.

Financial services and products can be directly associated with the individual income capacity. Banks should be in place and maintain customer relation by providing loans to all, particularly for entrepreneurs, by creating jobs for those vulnerable groups of society.

Employees are more financially involved than unemployed people are. As a result, bank's policies and initiatives encouraging financial inclusion should focus more on unemployed groups, such as young people, by creating loan to entrepreneurs as well as an understanding of financial products and services when they are employee.

Another factor to financial inclusion, according to this study, is the difficulty in getting the documentation required by financial institutions when opening a financial institution account or another service. As a result, adequate procedures must established to attract people who lack the papers to open an account and are not included. Possessing the government's support, a national ID should be adequate for opening a lawful financial institution account, and the government can adopt a regulation that forbids banks from refusing to offer accounts to anyone with a national ID. Moreover, the government can solve the bureaucracy behind getting documentation such as national ID and other required by the financial institutions.

Financial sectors together with network providers should support the expansion of delivery channels by banks that reach out to marginalized and unbanked areas, without increasing bank costs. This would encourage innovations such as agency banking and mobile banking to be adopted as a way of increasing access to financial products by the populace.

The expansion of mobile money services reduces the transaction costs of using financial services. For instance, distance is one of the major causes of financial exclusion in Ethiopia. The financial and telecom sectors in Ethiopia should further expand the availability of mobile money services, and increase people's awareness of their use through different promotional activities.

The government's most constructive role is to foster an environment that allows a diverse set of financial service providers to flourish and compete. The government should offer fiscal incentives or request financial institutions to serve poor or low-income people

The problem of accessing credit has adversely affected inclusive growth and employment creation by limiting aggregate productivity growth and capacity utilization.

To enhance the financial inclusion initiative, all stockholders should work together to create better business ideas not only to serve the needs of the current economy but also should build a foundation for future financial inclusion plans.

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## Appendix

### Appendix I: Part I questionnaire

#### ADDIS ABABA UNIVERSITY

#### COLLEGE OF BUSINESS AND ECONOMICS

#### MASTERS OF BUSINESS ADMINISTRATION PROGRAM

Dear respondent.

I am a graduate student in the Masters of Business Administration Program, at Addis Ababa University. The purpose of this questionnaire is to collect information on determinants of financial inclusion in an era of technology in commercial banks in Ethiopia. The information that you share with me will be kept confidential and only used for academic purposes and cannot affect you in any case. So, your genuine, honest, and timely response is vital for the accomplishment of this study on time. Therefore, I kindly request you to give your response to each item/question carefully.

Instruction

*no need to write your name*

**For multiple-choice questions indicate (√) sign or circle in the appropriate block.**

**Tel: +251911145828**

**Email:-gugssa98@gmail.com\_\_\_\_\_**

#### **Section I: Demographic characteristics of respondents**

1. Your gender.      1. Male     2. Female
2. Age (in a year): 1. 18 - 30     2. 31-43     3. 44 -56  4.> 56
3. Marital status    1. Married    2. Unmarried    3. Divorce    4. Widowed
4. Your level of Educational qualification: 1.Noformaleducation   
2. Primary school  3.High School  4. Diploma/Degree and above
5. Your job: 1. Government employee  2. Employed in private business   
3, Unemployed     4, Retired
6. Your average income per month in Ethiopian birr: 1. Br.3000-5000   
2. Br. 5001-7000     3. Br. 7001-9000     4. Br.>10000

**PART II; - Financial inclusion (dependent variable-related questions)**

7. Do you have accounts currently, either by yourself or together with someone else, at private banks or government banks?  
1. Yes  2.No
8. Do you, by yourself or together with someone else, currently have a loan you took out from individuals to purchase a home, or land, or to start, operate, or grow a business or farm or any other reason?  
1. Yes  2.No
9. In the past 12 months, have you ever withdraw money from your account(s) using ATM or POS machine? 1. Yes  2.No
10. In the last 12 months, have you received money from a relative or friend living in a different city or area through a bank and saved it to operate, or grow a business or farm? 1. Yes  2.No
11. In the past 12 months, have you made transfer from your accounts to account or payments to other utility using digital banking? 1. Yes  2.No
12. In the past 12 months, have you ever withdraw money from your account(s)? This includes cash withdrawals with voucher in person, or other checks.  
1 Yes  2.No

**EDUCATION**

- 7 .Have you ever participated in the banking service training formally or informally?  
1. Yes  2.No
- 8 .Can you manage the formats of banks whenever you need to transact your account(s)?  
1. Yes  2.No
- 9 . Have you completed primary and secondary school?  
1. Yes  2.No
- 10 .Do you have a diploma or degree?  
1. Yes  2.No

### **PART III: Independent Variable-Related Questions**

#### **Electronic devices**

11 Do ATMs work 24 hours without interruption of the service in your city?

1. Yes                       2. No

12 Do you have easy access to POS machines in shopping centers, service providers, and other organizations in the city where you live as an option to ATMs or shopping in the commercial centers?                      1. Yes                       2. No

13 Do you have a mobile phone with a line that enables you to operate digital banking?

#### **Trust**

14 In the past 12 months, Do you think that banks could protect your account from robbery using electro banking

1. Yes                       2. No

15 Do you think banks deliver 7 by 24 available digital banking services locally?

1. Yes                       2. No

16 In the past 12 months, have you ever got service postponement due to the bank internal problem?                      1. Yes                       2.No

#### **Occupation**

17 In the past 12 months, have you been collecting your sales through a bank?

1. Yes                       2. No

18 Does your employer need you to open an account for payment purposes?

1. Yes                       2. No

19 In the last 12 months, have you ever made payments to your employees or others using electro banking?

1. Yes                       2. No

#### **Financial Literacy**

20 Can you access and load digital banking by yourself ?

1. Yes                       2. No

21 When you require saving money, do you check which bank pays better interest?

1. Yes                       2. NO

22 .Do you think that digital banking is secure and reduces frauds made by employees and customers?

1. Yes

2. NO

23 Do you set long-term financial goals and strive to achieve those goals in collaboration with banks?

1. Yes

2. NO

### **INCOME**

24 Do you think that you would save if banks were available in your living area?

1. Yes

2. No

25 Do you have traditional savings other than banks?

1. Yes

2. No

26 In the past 12 months, have you saved or set aside money in cash anywhere, other than banks, to operate, or grow a business or a farm?

### **Documentation**

27 Do you have access to documents in your living area administration that enable you to open bank accounts?

1. Yes

2 .no

28 Do you have other documents other than kebele Identification card that enables you to open an account or bank transaction?

1. Yes

2 .no

29 Do you have an easily authentic identification card?

1. Yes

2 .no

### **Network connectivity**

30 Is there a network connection in your living area?

1. Yes

2. No

31 Does the network condition work for all electro-banking services properly in your living area?

1. Yes

2. No

32 In the past 12 months, have you ever conducted POS transactions, and the message was instantly sent to your phone?

1. Yes

2. No