



Addis Ababa University
College of Business and Economics
Department of Business Administration

Effect of Financial Technology (Fin-Tech) on Financial Inclusion in Ethiopia
The case of (Selected Commercial Banks and Fin-Tech Companies)

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April, 2025

Addis Ababa, Ethiopia

Addis Ababa University
College of Business and Economics
Master's in Business Administration

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A Research Project Submitted to Addis Ababa University College of Business and Economics in Partial Fulfillment of the Requirements For Master of Arts Degree in Business Administration

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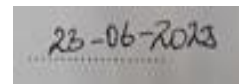
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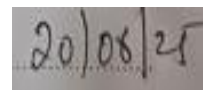
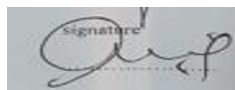
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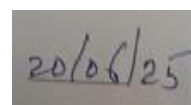
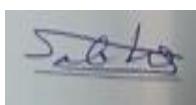
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List of Acronyms

Fin-Tech	Financial technology
ATM	Automated teller machine
POS	Point of Sale
NBE	National bank of Ethiopia
CBE	Commercial banks in Ethiopia
RTGS	Real time Growth settlement
ACH	Automated clearing House
EATS	Ethiopian Automated transfer system
NDPS	National Digital Payment strategies
NPS	National Payment System
P2P	Peer to Peer
SWIFT	Society for Worldwide Interbank Financial Telecommunication
PSO	Payment System Operator
G2P	Government to Person
TAM	Technology Acceptance Model
Reg-Tech	Regulatory Technology
KYC	Know Your Customer
MNO	Mobile Network Operator
MTO	Money Transfer Operator
NFIS	National Financial Inclusion Strategy
GSMA	Global System for Mobile Communications Association
PII	Payment Instrument Issuer
M-PESA	M for mobile, PESA is Swahili for money
MTO	Money Transfer Operator
TAM	Technology Acceptance Model
CBs	Commercial Banks
INSA	Information Network Security Agency
EFIS	Ethiopian Financial Intelligence Service

LIST OF TABLE

Table 1	Financial inclusion per 100 adults	8
Table 2	Variance inflation factor	23
Table 3	Age of Respondents	24
Table 4	Gender of Respondents	25
Table 5	Educational Qualification	25
Table 6	Location of respondents	25
Table 7	Usage of Fin-Tech Services	25
Table 8	Satisfaction with Fin-tech Products	26
Table 9	Ease of use digital products	28
Table 10	Understanding of Fin-tech Services	30
Table 11	Frequency of use digital product	31
Table 12	Inferential Statistics	33
Table 13	Interpretation of Coefficients	34
Table 14	digital platform	37
Table 15	digital savings platforms	37
Table 16	challenges & accessing digital credit	38
Table 17	Purchase digital insurance	38
Table 18	digital inward international remittance services	39
Table 19	available in mobile banking	39
Table 20	encountered while using ATMs?	40
Table 21	mobile money do you use	40
Table 22	use mobile money transaction	41
Table 23	using fin-tech services	41

LIST OF FIGURE

Figure 1	Financial access point	8
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Figure 2Conceptual framework	15
Figure 3Normality test	23
Figure 4Findings paradigm of the effects of financial technology on financial inclusion	Error! Bookmark not defined.

Abstract

Fin-Tech can improving financial inclusion not only a topic that draws attention in the global agenda, but also a great significance for the economic development of Ethiopia. Nevertheless, in Ethiopia few researches are conducted on effects of Fin-Tech on financial inclusion. The purpose of this study is to examine the effects of financial technology (Fin-Tech) on financial inclusion in Ethiopia. The researcher was employed both qualitative and quantitative approaches. The research was used both descriptive and explanatory research design method. The researcher use primary and secondary data for this study. The primary data was collected through questionnaires and interviews from management, employees and users of Fin-Tech companies and secondary data was collected from annually audited report in national banks of Ethiopia and other related journal articles. The targeted population is 14 top performed commercial banks and other fin-tech companies. The sample size is 370 respondents. The main findings of the study are: digital saving service, digital credit service, mobile banking service, ATM service, and mobile money service have positive and significant impact on financial inclusion in Ethiopia. Nevertheless digital insurance service and inward international remittance have negative impact on financial inclusion. The results of the study could create understanding of how financial technology can enhance financial inclusion, economic growth, Savings and investment, gender inclusion and input for future policies and initiatives in Ethiopia.

Key words: *Fin-Tech, financial inclusion, digital saving, digital credit, digital insurance, Payment Instrument Issuer, Payment System Operator and Inward International Remittance, financial literacy, Migrants*

TABLE OF CONTENT

Table of Contents

DECLARATION	ii
Acknowledgement	iii
List of Acronyms	iv
LIST OF TABLE	v
LIST OF FIGURE.....	v
Abstract.....	vi
TABLE OF CONTEN	vii
CHAPTER ONE	Error! Bookmark not defined.
1. Introduction.....	1
1.1 Background of the Study.....	1
1.2 Statement of the Problem	2
1.3 Research Questions	4
1.4 Objectives of the Study	4
1.4.1 General objective of the Study	4
1.4.2 Specific Objective of the Study	4
1.5 Significance of the Study	4
1.6 Limitations of the Study	5
1.7 Scopes of the Study	5
1.8 Organization of the Study	5
CHAPTER TWO	5
2 Review of Related literature	5
2.1 Definition of Fin-Tech	5
2.2 Financial inclusion	6
2.3 Financial Sector Regulations, Stability and Inclusive Growth	6
2.4 The Application of Fin-Tech to Improve Financial Inclusion	6
2.5 Digital Financial Inclusion through Fin-Tech in Ethiopia	7
2.6 Fin-Tech’s contribution to financial inclusion during the covid.....	9
2.7 The Effect of Financial Literacy on Financial Inclusion.....	9
2.8 Influence of Financial Technology on Financial Inclusion.....	10
2.9 Fin-Tech and financial inclusion current status of in Ethiopia	10

2.10 Regulatory Frameworks in Ethiopia.....	10
2.1.1 Digital Financial Service in Ethiopia.....	Error! Bookmark not defined.
2.11.1 Digital credit service vs. financial inclusion in Ethiopia.....	11
2.11.2 Digital saving service vs. financial inclusion in Ethiopia.....	11
2.11.3 Digital insurance vs. financial inclusion in Ethiopia	11
2.11.4 Mobile money transaction	11
2.11.5 Internet banking transaction	12
2.11.6 ATM Transaction	12
2.11.7 Inward remittance transaction	12
2.1.2 Digital Credit Service vs. Financial Inclusion in Ethiopia	12
2.1.3 Empirical Studies Research Evidence	13
2.14 Theoretical Literature Review	14
2.1.4.1 Disruptive innovation theory	14
2.1.4.2 Theory of Network Effects	15
2.14.3 Social Capital Theory	15
2.14.4 Access to Finance Theory	15
2.14.5 Behavioral Economics Theory.....	15
Figure 2.1: conceptual framework	Error! Bookmark not defined.
2.15 VARIABLE SPECIFICATION	17
2.15.1 Digital credit service.....	17
2.15.2 Digital saving service.....	17
2.15.3 Digital insurance service	17
2.15.4 Mobile money service	18
2.15.5 Inward Remittance Service via Mobile Money	18
2.15.6 Internet banking service	18
2.16 Model specification	18
CHAPTER TREE	19
3. Research Methodology	19
3.1 Research Design.....	19
3.2 Research Approach	19
3.3 Target population of the study	19
3.3 Sampling Methods.....	19
3.4 Data Source and Type	19

3.5	Sample Design.....	20
3.6	Data Analyses.....	20
3.6.1	Descriptive Analysis.....	Error! Bookmark not defined.
3.6.2	Reliability Test	21
CHAPTER FOUR.....		22
4. RESULTS AND DISCUSSION		22
4.1	Introduction	22
4.1.1	Reliability Test	22
4.1.2.	Multicollinearity test.....	22
4.1.3	Normality test	23
4.2	Demographic Information of the Respondents	24
4.1.4	Findings paradigm of the effects of financial technology on financial inclusion	Error! Bookmark not defined.
4.1.5	Analysis of Interview Questions on Selected Independent and Dependent Variables	42
CHAPTER FIVE		42
5. Findings Summary, Conclusions and Recommendations.....		44
5.1.	Summary Findings	44
5.2	Conclusion.....	45
5.3	RECOMMENDATIONS	45
5.3	Limitations of the Study	46
5.4	Recommendation for Future Research	46
Reference		Error! Bookmark not defined.

CHAPTER ONE

1. Introduction

1.1 Background of the Study

In recent years, the landscape of financial services has undergone a transformative shift, particularly in developing countries like Ethiopia. The beginning of Financial Technology (Fin- Tech) has emerged as a pivotal force in enhancing financial inclusion, which refers to the accessibility and availability of financial services to underserved populations. In Ethiopia, where a significant portion of the population remains unbanked or under banked, Fin-Tech presents both opportunities and challenges that can reshape the economic fabric of the nation (NFIS 2016). However the Technological advances, the country's strong economic and demographic foundation offer a chance for rapidly-increasing financial inclusion levels, with the potential to transform the Ethiopian economy. Many countries in Sub-Saharan Africa are among the international leaders in financial sector innovation, in particular for digital and mobile finance. Continued advances in infrastructure, especially in electricity and mobile connectivity serve as foundational enablers for financial inclusion.

On-going and future reforms of financial sector are further unlocking the country's innovative powers, and targeted interventions create and derive business cases for financial inclusion (NBE 2021). According to chiu, (2017) gabor & Brooks (2017) and Wamba et al (2020) Financial technology (Fin-Tech) is new innovations of financial products that deliver financial services to users in more convenient and affordable prices. Its' aim is to reach a broader range of customers, in a more efficient, cheaper and customer-friendly way than traditional bricks-and financial services. Financial technology offer more comprehensive financial products and services at lower costs and address every corner through different technologies. Digitalizing the financial sector can provide new technologies infrastructure that promote financial access and inclusive throughout the country (Bidge Yayınları, 2023). According to chiu, (2017) gabor & Brooks (2017) and Wamba et al (2020) Financial technology (Fin-Tech) is new innovations of financial products that deliver financial services to users in more convenient and affordable prices. Its' aim is to reach a broader range of customers, in a more efficient, cheaper and customer-friendly way than traditional financial services. Digitalizing the financial sector is provide new technology infrastructure that promote financial access and inclusive throughout the country (Bidge Yayınları, 2023).

Fin-tech sector has experienced significant growth on a global scale, including Ethiopia due to the development of digital infrastructure, widespread use of mobile phones, and changing consumer demands for easily available financial services. According to Muneera Quresh, Mohsin Asad Gill,

Madiha Khan, Muhammad Ismail, and Raabia Kishwer (2023), fin-tech, is radically changing the way financial services are delivered and made accessible. The Ethiopian economy is characterized by a large rural population, high levels of poverty, and limited access to traditional banking infrastructure. These factors have historically hindered financial inclusion efforts in Ethiopia. However, with the rise of mobile banking, digital payment systems, and other innovative financial solutions driven by technology, there is potential for substantial progress. Moreover; the Ethiopian government has recognized the importance of digital financial inclusion in its national agenda. These Initiatives aimed to fostering a conducive regulatory environment for Fin-Tech companies.

1.2 Statement of the Problem

Financial technology (Fin-Tech) is improving financial inclusion and it is not only topic that draws attention in the global agenda, but also a great significance for the economic development of Ethiopia. Fin-Tech industry uses new digital technologies like block chain and data analytics to automate the financial services delivery chain to the end user and has grown rapidly as a result of recent technological advancements. According to NFIS (2016-2020) financial inclusion means converting many financially excluded people especially women and the rural poor into financial services. In practice this mostly mean penetration of mobile money and other transaction enabling accounts the most attractive entry point for financial inclusion with corresponding financial access points.

Fin-Tech-driven companies now have a chance to rival more established financial markets, infrastructures, and intermediaries in terms of competitiveness. There are advantages and disadvantages to the widespread usage of modern technologies. Fin-Tech has the potential to improve the efficiency of the banking sector, offer better and more specialized products and services, and expand financial inclusion in developing countries. However, there might also be risks if its application weakens competitiveness, financial stability, trust, or the dissemination of monetary policy.

Both the effort to provide services to unbanked category and increase financial access among people can be attributed to the rise in financial innovation. Research on subject of financial inclusion and Fin-Tech is limited. Maintaining financial inclusion and the nation's progress depends critically on having access to money. Innovations and technological automation solidified a path for growth in the banking sector. The body of existing literature revealed a large number of studies on Fin-Tech, but few on the impact of Fin- Tech on financial inclusion (Marian.A and Norsyafiqah.S, 2022). Not much study has been done on the relationship between Fin-Tech and financial inclusion. The current body of literature reveals a large body of study on financial technology, but not financial technology affects financial

inclusion and how these two concepts relate to one another both empirically and theoretically (NBE Report, 2024).

Even though the Ethiopian government has made financial inclusion a top priority, a large portion of the country's population is either not part of the formal financial system or lives in rural areas where they are neither fully nor partially banked. To address this, it needs more work to include these people. In addition to that Fin-Tech innovation in banking operations specially in developing economies like Ethiopia there are unique factors including infrastructure limitations, regulatory constraints, and varying levels of technological adoption among consumers and businesses (Zhang & Zhu, 2022; Adekanye & Olumuyiwa, 2021). Understanding how these factors influence the effectiveness of Fin-Tech solutions in improving payment landscape in Ethiopia has saved significant attention due to its potential to transform financial inclusion and enhance economic development. Ngugi (2015) conduct a study on the impact of mobile banking on financial inclusion and well-known that services contribution banking on mobile technology contributed to financial inclusion.

Girma Assefa. (2024) has conducted study on the influence of financial technology (Fin-Tech) on banking efficiency in developing economies in Ethiopia. The findings of his research work are Financial technology (Fin-Tech) has significantly improved banking effectiveness in Ethiopia by improving accessibility through mobile banking and digital payments, especially in rural areas. Hussam H. (2020) stated that under the title of the Impact of Financial Technology on Financial Inclusion the Case of Egypt and his finding indicated that found that with a 95% confidence level that all the independent variables “Have mobile money account, Mobile Subscribers and use of Internet” have significant effect on the financial inclusion as they all have p-value less than the significance level alpha 0.05. According to Diniz et al. (2012) mobile money transactions bridge the financial infrastructural gap by including previously marginalized from the financial substructure. This enhances credit and deposit access and improving financial inclusion.

According to Agyekum et al. (2016) in Ghana non-bank-based DFS developed as the most well-organized method of bringing cost effective financial services to the previously excluded from formal financial services. This indicates mobile money penetration drives and foster financial services. Nevertheless, in Ethiopia few researches are conducted on effects of Fin-Tech on financial inclusion and there is no study on the following variables such as inward international remittance, digital credit and saving service and digital insurance service through mobile wallet. So, to overcome the research gap the researcher was conduct research on effects of Fin-Tech on financial inclusion in Ethiopia.

1.3 Research Questions

Examining the effects of Fin-Tech on financial inclusion in Ethiopia and determining how Fin-Tech is driving financial inclusion are the goals of this study.

1. How do digital credit services affect Ethiopia's financial inclusion?
2. What is the impact of digital saving services on financial inclusion in Ethiopia?
3. How do ATM services affect financial inclusion in Ethiopia?
4. How do mobile banking services affect Ethiopia's financial inclusion?
5. What is the impact of digital insurance service on financial inclusion in Ethiopia?
6. How does inward international remittances service affect Ethiopia's financial inclusion?
7. How does mobile banking service affect Ethiopia financial inclusion?

1.4 Objectives of the Study

1.4.1 General objective of the Study

The general objective of this study is to assess the impact of financial technology (Fin-Tech) on financial inclusion in Ethiopia.

1.4.2 Specific Objective of the Study

1. To detect how digital credit services affect Ethiopia's financial inclusion.
2. To identify how digital saving services affect Ethiopia's financial inclusion.
3. To look into digital insurance service affect Ethiopia's financial inclusion.
4. To detect how mobile Money service affect Ethiopia's financial inclusion.
5. To look into how ATM service affect Ethiopia's financial inclusion.
6. To identify inward international remittance service affect Ethiopia's financial inclusion.
7. To look into mobile banking service affect Ethiopia financial inclusion?

1.5 Significance of the Study

The significance of this study is effects of Fin-tech on financial inclusion in Ethiopia and its potential to transform the financial landscapes, promote economic development, and foster inclusive growth. The main stakeholders of this research are government (regulators), National Bank of Ethiopia, Policy Studies Institute of Ethiopia, Ministry of Innovation and Technology of Ethiopia, financial institutions in Ethiopia like banks, both public and private, microfinance institutions, and Fin-Tech companies, both payment instrument issuers and payment system operators in Ethiopia. It is also significant for

telecommunication companies, researchers, and academicians in the financial and economics sections for their further study.

1.6 Limitations of the Study

This study has the following expected limitations: First, limited data availability; the researcher is use secondary data and primary data methods to attain both general and specific objectives. The study is limited to only commercial banks and Fin-Tech companies not addressing other all financial sectors. The study was conducted in Addis Ababa only, and the data is collected from banks and Fin-tech companies in Addis Ababa.

1.7 Scopes of the Study

The scopes of this focused on two major areas. The study is focus geographically on Addis Ababa. The study is based on the annual and quarter data of commercial banks on digital channel data for the last ten years. Furthermore, the researcher is use secondary data from the National Bank of Ethiopia, which is provided by banks and Fin-Tech companies, and primary data from Fin-Tech companies in Addis.

1.8 Organization of the Study

The study is organized in five chapters. Chapter one, is provides the background of the study, statement of the problem, research objectives, significance, scope of the study and limitation of the study. Chapter two reviews the literature about the theories and variables related of this research. Chapter 3 presents data sources, types, the research methodology as well as the model specification and econometric models. Chapter 4 presents the analysis of the data.

CHAPTER TWO

2 REVIEW OF RELATED LITERATURE

2.1 Definition of Fin-Tech

According to Simatupang & Siska, (2021) the term "financial technology" (Fin-Tech) comes from the two words "finance" and "technology" to describe new technology that can expand the scope of the financial segment. Fin-Tech's improvement has resulted in a new financial tools and applications, including payment apps, lending, borrowing, etc. Fin-tech is revolutionary breakthrough in the financial industry that is now widely employed in the world of trade, business, and to address community needs. Financial technology is an emerging technology in financial transaction which is changing the banking behavior for stakeholders and consumers (Norafni F etal 2024).

It is the company that develops financial services and products by relying much on penetrating information technology (Metages. T, 2023). Currently many scholars define that Fin-Tech refers to the

technological innovation in the design and delivery of financial services and products. It encompasses a wide range of applications that utilize technology to enhance, automate, and improve the efficiency of financial services for both consumers and businesses. Fin- Tech' is the technology in finance that is changing the banking behaviour of stakeholders in doing financial transactions (Abdul, 2019).

2.2 Financial inclusion

Financial inclusion means that individuals and businesses have access to useful and affordable financial products and services that meet their needs transactions, payments, savings, credit and insurance delivered in a responsible and sustainable way. Access to a transaction account is a first step toward broader financial inclusion since it allows people to store money, send and receive. National banks reports indicate that financial inclusion is an essential prerequisite for sustainable development, inclusive growth and will be a fundamental enabler for the stability of the financial system, job growth, digital transformation, and our country's continued economic development (NFIS-II 2021). These platforms include insurance, savings, cash management, credit, and cash transfer services (Eugene.A2022).

Fin-Tech innovations enable the provision of financial services to many unbanked across the world by increasing access(Solomon et al 2022).Financial inclusion is facilitating access to saving, transfer services, provision of credit and insurance at an affordable cost to unbanked poor people who have no access for formal financial system. In dealing with the financial inclusion we took two perspectives: the relationship between banking and inclusion on the one hand and how financial regulation impacts the size and composition of financial sector for financial inclusion on the other (Getinet A 2014).

2.3 Financial Sector Regulations, Stability and Inclusive Growth

Regulatory agencies that foster competition among private financial institutions, promote transparency throughout the financial system and work persistently to reform policies that perversely distort the incentives of private institutions encourage inclusive growth Political economy factors are paramount in shaping the design and implementation of financial regulatory policies since powerful segments of society may seek exclusive not inclusive growth (Ross Levine (2012) moreover in Ethiopian context financial sector regulation more advance important because Ethiopia is infant stages.

2.4The Application of Fin-Tech to Improve Financial Inclusion

Fin-Tech plays a crucial role in enhancing financial inclusion by improved technology to provide accessible, affordable, and efficient financial services to underserved populations. Low-Cost Transactions: Mobile wallets and payment platforms often have lower fees compared to traditional banking services, making it easier for low-income individuals to manage their finances (Pousttchi, K., & Wiedemann, D. 2010).Education and Financial Literacy Accessible Resources: Fin-Tech platforms

often include educational tools that teach users about budgeting, saving, and investing, empowering them to make informed financial decisions. Some apps use to engage users in learning about finance in a fun and interactive way (Lusardi, A., & Mitchell, O. S. 2014) Insurance Technology Micro insurance: Fin-Tech innovations allow for the creation of affordable insurance products tailored to low-income individuals, providing them with protection against unforeseen events. On-Demand Insurance: Users can purchase insurance coverage as needed, making it more accessible (Churchill, C., & Matul, M. 2012).Crowd funding Platforms Access to Capital: Crowd funding allows individuals and small businesses to raise funds from a large number of people via online platforms, bypassing traditional financing routes. Community Engagement: This fosters community support and investment in local projects (Mollick, E. 2014).

Regulatory Technology (Reg-Tech) Compliance Solutions: Fin-Tech can help smaller firms comply with regulations more easily, allowing them to operate in the financial sector without incurring prohibitive costs. Access to technology and the internet is still limited in many areas. Regulatory Issues: Navigating different regulatory environments can be complex for Fin-Tech companies. Data Privacy Concerns Ensuring the security of personal data is critical as Fin-Tech solutions often rely on sensitive information (Arner, D. W., Barberis, J., & Buckley, R. P. 2016). Overall, Fin-Tech offers innovative solutions that can bridge the gap between traditional financial systems and underserved populations. Furthermore financial inclusion is more appropriate advantage and opportunity to the modern digital world the majority of research (Ghosh, 2018; Gosavi, 2018; Tchamyu et al., 2019, as mentioned in Djoufouet, W.F., & Pondie, T.M., 2022) claims that Fin-Tech and ICTs are key drivers of financial inclusion. Anywhere in the world, financial services can now be made accessible to people from all socioeconomic backgrounds. Since they were previously unable to access traditional financial services but are now able to take advantage of low-cost micro services, Bhandari (2018) claims that middle-class people are the biggest beneficiaries of financial inclusion (Bhandari, 2018, as cited in Djoufouet, W.F., & Pondie, T.M., 2022).

2.5 Digital Financial Inclusion through Fin-Tech in Ethiopia

Ethiopia has issued first National Financial Inclusion Strategy I (2016-2020) for five years. The implementation period for the first National Financial Inclusion Strategy I ended in 2020. This Strategy had mapped a comprehensive and interrelated framework for defining interventions to advance financial inclusion in Ethiopia.

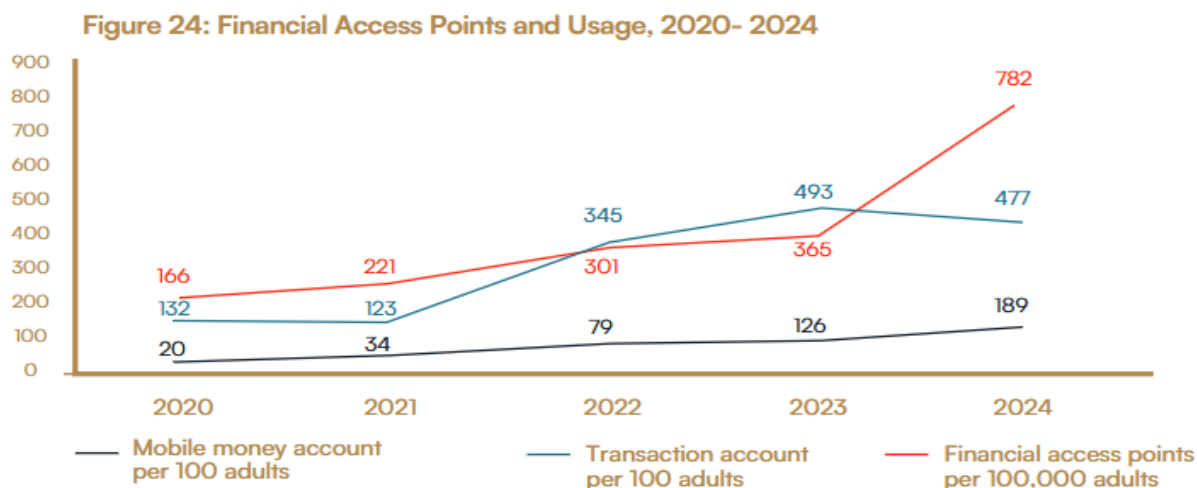
Financial inclusion per 100 adults

Table 1 Financial inclusion per 100 adults

Descriptions	End of June 30,2023	End of June 30,2024	Growth in (%)
Transaction Accounts per 100 Adults	365	477	+30.70%
Financial Access Points	271,203	445,856	+64.4%
Access Points per 100,000 Adults	493	782	+58.7%

Source: Financial Stability report of National Bank of Ethiopia, 2025

Figure 1 Financial access point



Source: Financial Stability report of National Bank of Ethiopia, 2025

Financial services in Ethiopia are undergoing an evolution as more and more people are using digital channels (ATM, mobile banking, mobile money, and internet banking) to conduct their financial transactions. According to Myriam (2024) & NBE reports over 4 trillion birr has been transacted via digital channels between October 2022 and March 2023, with digital transactions overtaking cash transactions in the Ethiopian economy. However, the increase in digital transactions in Ethiopia is bringing a new set of challenges, one of which revolves around the transparency of transaction fees. Many digital financial service providers in the country charge transaction fees, but when not communicated, such fees hide the cost of using their services.

2.6 Fin-Tech's contribution to financial inclusion during the Covid

The study conducted by Al-Nawayseh (2020) investigated the elements that impact Jordanians' utilization of Fin-Tech applications and the role in enhancing financial resilience during the COVID-19 epidemic. Her research indicates that users' intents to use Fin-Tech apps are significantly influenced by societal norms and the apps' competitive advantages (Al-Nawayseh, 2020, as referenced in Djoufouet, W.F., & Pondie, T.M., 2022). Additionally, they imply that a significant increase in interest in financial inclusion information was caused by curiosity about Fin-Tech. Fin-Tech not only saves time and money during the present COVID-19 health crisis, but it also makes it easier to access financial services (contactless payments, depositing and withdrawing money, sending and receiving money). Faster and more remote financial transactions are made possible by Fin-Tech applications. Furthermore as explained by Najaf, Subramaniamb, and Atayah (2021, as referenced by Djoufouet, W.F., and Pondie, T.M. (2022).

2.7 The Effect of Financial Literacy on Financial Inclusion

Financial literacy refers to the ability to understand and effectively use various financial skills, including personal finance management, budgeting, investing, and understanding financial products and services (<https://www.investopedia.com> 2024). It encompasses knowledge of financial concepts that enable individuals to make informed decisions regarding their financial resources. Financial Literacy Understanding Financial Concepts Financial literacy involves comprehending fundamental financial concepts such as interest rates, inflation, and risk management (Lusardi, A., & Mitchell, O. S. 2014). It also includes the practical application of this knowledge in everyday life, such as budgeting, saving, investing, and managing debt (Atkinson, A., & Messy, F.-A. 2012).

Financial literacy empowers individuals to make informed choices that affect their financial well-being and future (Mandell, L., & Klein, L. S. 2009). Lusardi, A., & Mitchell, O. S. (2007) financial literacy is crucial for individual empowerment in managing finances effectively and making informed decisions that contribute to overall financial stability and growth. However Ethiopia financial institutions has improves the financial systems of the modern financial revolutionary financial service providers, such as Amole, Michu and CBE Birr, have entered the market and have seen a quick uptake of their services, while more established players such as M-Birr, Tele birr, M-PESA and Hello Cash continue to experience solid growth, demonstrating how significant the opportunity for mobile banking in the market (world bank 2021). According to Gebre & Gashaw (2017) the significance of financial inclusion drives economic growth by helping countries in mobilizing savings and investment.

2.8 Influence of Financial Technology on Financial Inclusion

The influence of financial technology (Fin-Tech) on financial inclusion has been significant, as it provides innovative solutions that enhance access to financial services for underserved populations (Demirgüç-Kunt, A., & Klapper, L. 2012). The development of technology is seen as a new source of economic growth in the world today. Particularly in the financial sector, Fin-Tech has been effective in becoming a new tool that aims to increase financial inclusion and growth previous research indicates that Fin-Tech has effectively increased financial literacy and financial inclusion. The role of Fin-tech for enhancing financial inclusion is diverse and promising. Alternative lending and credit scoring mechanisms based on advanced data analytics can expand access to credit for individuals and small businesses that lack traditional credit histories (Alam et al., 2019).

2.9 Fin-Tech and financial inclusion current status of in Ethiopia

According to NFIS 21/25, the percentage of the adult population in Ethiopia who has an account at a financial institution has steadily increased, from 22% in 2014 to more than 46% in 2022. Based on the conclusions of many scholars and world bank suggested that Ethiopia has in the east African countries more challenged and opportunities however based on this studies Ethiopia is there is a large gap in financial inclusion between urban and rural areas. Poorer and less literate Ethiopians, who are more likely to live in rural areas, also tend to be unbanked (World Bank 2023). This transition holds the potential to drive financial inclusion and foster the adoption of digital finance alternatives (Tewodros.T 2023). According to Mengistu .B et al (2021) currently Ethiopian digital finance reforms has been and recently the states of fin-tech position has been indicated that account ownership at a financial institution, Often used as a proxy for financial inclusion, would allow individuals to use formal financial services to save, take out a loan, transfer money, receive wages, and acquire insurance.

2.10 Regulatory Frameworks in Ethiopia

The digital economy is reshaping the global financial system, driving the transformation and development of financial technology permanently. National Bank of Ethiopia is amending a decade-old Payment System Directives, allowing foreign investors to set up business in the country. Ethiopia has been undergoing a gradual policy liberalization of its digital financial sector in recent years, aimed at fostering innovation, increasing financial inclusion, and aligning the country's financial regulations with global best practices. Ethiopian government has amended both National Payment System Proclamation no.718/2011(1282/2023) and Banking Business Proclamation No.592/2008(1159/2019). These amendments open door for start-up Fin-tech companies in Ethiopia. Accordingly National Bank of Ethiopia has issued two directives Licensing and Authorization of Payment Instrument Issuers No ONPS/ 09/2023 and Payment System Operator Directive No. ONPS /02/2020.

2.11 Digital credit service vs. financial inclusion in Ethiopia

Ethiopia is experiencing significant economic growth, yet a large portion of its population faces challenges related to poverty and limited access to financial services. As of recent reports, only about 45% of Ethiopians have a bank account, highlighting the substantial gap in financial inclusion. In addition to those Digital lending platforms represent a transformative solution for improving financial inclusion in Ethiopia. These platforms leverage technology to provide loans without the need for physical collateral or extensive paperwork. Examples include Michu (Cooperative Bank of Oromia S.C), M-PESA (Safaricom Ethiopia plc.) and Tele-birr (Ethio-Telecom) microloan service.

2.12 Digital saving service vs. financial inclusion in Ethiopia

Digital saving services have emerged as a crucial tool in enhancing financial inclusion in Ethiopia. These services leverage technology to provide individuals with convenient access to savings accounts through mobile phones or digital platforms. This is particularly important in a country where traditional banking infrastructure is limited; especially in rural areas beyond this concepts digital financial technology has a significant positive influence on the level of savings in the Sub-Saharan African region. Digital saving is the most significance mitigating the welfare of individuals and households in adverse time and the growing emergence of digital payment platforms (Olalekan A et al 2023). According to <https://ecdpm.org/work/ethiopias-digital-economy-blooming> (2022) the essential to allow (SME) to benefit from the opportunities offered by recently launched interoperability between existing digital wallets, mobile and internet banking systems run by banks, micro finance institutions, e-money issuers and the growing fin-tech sector.

2.13 Digital insurance vs. financial inclusion in Ethiopia

Digital insurance are online tools and platforms that use technology to provide fast and personalized insurance services to customers while also improving internal and external operations. They enable customers to access policies, file and track claims, receive assistance, and make payments online or through mobile devices, resulting in improved efficiency, reduced costs, and increased customer satisfaction for insurers (<https://www.persistent.com>).

2.14 Mobile money transaction

According to nbe.gov.et (,2024) established new digital finance educations suggested that the new Digital Financial Service is widely regarded as an effective means to provide opportunities to promote financial inclusion through lowering the costs of providing these access effectively and efficient services provides to the clients. Mobile money based, Enables cross-border remittance through mobile money or wallet accounts. Mobile money accounts can be used both at the sending and receiving ends of the transfer. In the other hands come up in developing nations particularly in Ethiopian contexts

mobile money has new concepts relatively and its significance is to buy airtime, pay bill, fund transfer and receive money, and check balance with absence of the bank branches (National payment strategy 2021).

2.15 Internet banking transaction

It is an electronic home banking system using web technology in which bank customers are able to conduct their business transactions with the bank through personal computers (Maza.W 2013). Hence Online and internet based transactions has enables users to transfer money through an online remittance platform, from their online banking account, debit card, credit card, and more. Receivers can get funds through several platforms, such as mobile money, bank account deposit, airtime top-up Still Internet banking allows a user to conduct financial transactions via the Internet offers almost every service traditionally available through a local branch including balance inquiry, transfers, Mini Statement, detailed transactions, and online bill payments. It provides easy, convenient, flexible and secure payment services for the customers (<https://www.combanketh.et>).

2.16 ATM Transaction

The business of a shared ATM network is recognized in the national payment Proclamation (718/2011) of Ethiopia. The national payment proclamation permits financial institutions to adopt an electronic fund transfer in a shared system including shared ATM network. It gives the power to set the terms and conditions of the shared payment system to member banks of the shared network, i.e. it shall be decided through multilateral or bilateral agreements of members to the system.

2.17 Inward international remittance transaction

Hugaared (2008) define that Remittances are non-reciprocal transfers of money from an individual or household in one place to another individual or household in another place.in addition to that digitizing existing payment streams, in particular remittances and G2P transfers, allows attaching these streams for formal financial inclusion (NFSI2021). However Over the last decade, the government of Ethiopia has implemented several policy measures to improve the operations and flow of formal remittances, as well as to reduce the costs of transfers and increase access to international remittance services.

2.1.2 Digital Credit Service vs. Financial Inclusion in Ethiopia

Ethiopia is experiencing significant economic growth, yet a large portion of its population faces challenges related to poverty and limited access to financial services. As of recent reports, only about 45% of Ethiopians have a bank account, highlighting the substantial gap in financial inclusion. Financial inclusion is essential for economic development as it enables individuals and businesses to utilize services such as bank accounts, loans, and insurance (NBE,2024). In addition to those Digital lending platforms represent a transformative solution for improving financial inclusion in Ethiopia.

2.1.3 Empirical Studies Research Evidence

Hussam H (2020) stated that under the title of the Impact of Financial Technology on Financial Inclusion the Case of Egypt and his finding indicated that found that with a 95% confidence level that all the independent variables “Have mobile money account, Mobile Subscribers and use of Internet” have significant effect on the financial inclusion as they all have p-value less than the significance level alpha 0.05. Workineh Ayenew (2022) studies that on the topics of Understanding financial inclusion in Ethiopia. His findings gender gaps females have more technology adopted and more saver than old age groups.

Girma Assefa (2024) the Influence of Fin-Tech on Banking Efficiency in Developing Economies in Ethiopia and the research design is commonly known as secondary data collection his findings suggested that financial technology (Fin-Tech) has significantly enhanced banking efficiency in Ethiopia by improving accessibility through mobile banking and digital payments, especially in rural areas. This shift has reduced operational costs, streamlined transactions, and provided faster, more convenient services. However, challenges like cyber security and regulatory frameworks require on-going attention to sustain and expand Fin-tech's impact on banking efficiency and financial inclusion nationwide. The impact of financial technology on people's access to financial services is investigated by Chishti and Barberis (2016), Salampas is and Mention (2017), and Appiah-Otooand Song (2021).

They think financial technology can have a major social effect in third-world countries by penetrating the bottom of the economic pyramid. Several studies on the effect of financial technology on financial inclusion have been conducted, analyzed from different perspectives, and produced contradictory findings. Okiro and Ndungu (2013), as referenced in Lucy Wanjiku Kamau and Josiah Aduda (2024), examined the impact of the internet and mobile banking on financial inclusion in Kenya. The study discovered that financial institutions have experienced a significant transformation as a result of information technology innovation. Gibson (2015) conducted a study on the impact of financial technology on financial services in poor countries, which Lucy Wanjiku Kamau and Josiah Aduda mention. Gorham and Durance (2017) examined the possibilities for technological innovation in the financial services sector, with a particular emphasis on Fin-Tech. The study claims that Fin-Tech can increase the number of people who have access to safe and reasonably priced financial services. Peterson K. Ozili's (2018) study, Impact of Digital Finance on Financial Inclusivity and Stability, explores the relationship between digital finance and financial inclusion as well as stability.

As referenced in Peterson K. Ozili (2018). "Digital Finance's Impact on Financial Inclusion in Kenya's Banking Sector," by Agufa Midika Michelle (2016), claims that. Because banks use digital financial services to reduce the costs associated with opening and operating branches in order to increase their

profitability and financial performance rather than to promote financial inclusion, the study concluded that there is no relationship between digital finance and financial inclusion in Kenya's banking industry (Michelle Agufa Midika, 2016). According to a 2018 study by Huma Haider that examined how these technologies can support people's means of subsistence. Wondwossen Jerene and Dhiraj Sharma (2020) the adoption of financial technology in Ethiopia: a study of bank customer's perspective. Dessalegn (2024) conduct research on digital finance in Ethiopia: interbank competition, financial inclusion, and constraints. The findings of the study are digital payment services in Ethiopia are experiencing substantial growth.

2.1.4 Theoretical Literature Review

2.1.4.1 Disruptive innovation theory

This theory suggests that new technologies can disrupt existing markets by offering a better or cheaper alternative. Muhammed.A (2020) cited by Schueffel, (2017) financial innovation results a new business models associated on financial markets and the provision of financial services can improve the performance of financial services and spread the finance service combined with mobile environment leading to a sustainable economic development as Fin-Tech offers the efficiency of the financial activities. Fin-Tech companies have disrupted traditional financial institutions by offering new products and services that are more convenient, affordable, and accessible Disruptive Innovation Theory, introduced by Clayton M. Christensen in his (1997) book "The Innovator's Dilemma," refers to a process by which a smaller company with fewer resources is able to successfully challenge established businesses. Disruptive innovations typically start at the bottom of a market, targeting overlooked segments, and gradually move upmarket, eventually displacing established competitors (C. M. 1997). Technology Utilization Leveraging Technology Fin-tech firms utilize advanced technologies (e.g., AI, block chain, mobile applications, inward and outward remittance, digital saving and credit and digital insurance) to create products that are more efficient and user- friendly. This technological foundation allows them to deliver services that traditional banks cannot match in terms of speed or cost (Buckley, R. P. 2016).

The global acceptance of Fin-tech is largely due to the niche segments it serves. Despite the agility and convenience provided by the fin-tech products, they also bring along with challenges in the form of cybercrime, data breach and security concerns for the customers. Also, fin-tech products are largely devised and provided by technology organizations and other non-banking organizations. Such organizations don't come under the jurisdiction of financial regulatory bodies and norms which is critical as there is a direct implication on the financial safety of the customer (Rima.S&sweetline.S2022).

2.1.4.2 Theory of Network Effects

Zhao, Y. (2020) Stated that Network effects occur when the value of a product or service increases as more people use it. In fin-tech, this can manifest in various ways, such as platforms becoming more valuable as user bases grow. That the value of a product or service increases as more people use it. Fin-tech companies often rely on network effects to grow their businesses. Based on a payment app becomes more valuable as more people use it, because it becomes easier to send and receive payments with friends and family. For those interested in exploring this further, consider examining case studies of successful Fin-Tech platforms like PayPal, Square, or Robinhood, which illustrate these principles in action (Zhang, Y., & Zhao, Y. 2020) and (Hagiu, A., & Wright, J. 2015).

2.1.4.3 Social Capital Theory

This theory emphasizes the role of social networks and relationships in accessing resources and opportunities. Fin-tech platforms often leverage community networks to build trust and facilitate access to financial services, thus enhancing financial inclusion through social capital moreover Social Capital Theory posits that social networks, relationships, and norms facilitate cooperation and resource access among individuals and communities (Putnam, R. D. 1995). Community networks can help disseminate information about financial products (Woolcock, M., & Narayan, D. 2000).

2.1.4.4 Access to Finance Theory

This theory focuses on the barriers that prevent individuals from accessing financial services. Fin-tech addresses these barriers high transaction costs, absence of physical branches by offering digital solutions that are more accessible and affordable (Demirgüç-Kunt, A., & Levine, R. 2007). Furthermore the barriers that individuals face in accessing financial services, such as credit, savings accounts, and insurance. Fin-Tech solutions can help reduce these barriers by offering more accessible and affordable services (World Bank2014).

2.1.4.5 Behavioral Economics Theory

This field examines how psychological factors affect economic decision-making. Understanding behavioral biases can help Fin-tech companies design products that encourage saving, investment, and responsible borrowing among low-income individuals. (Thaler, R. H., & Sunstein, C. R. 2008). Behavioral Economics examines how psychological factors and cognitive biases influence economic decision-making. Fin-tech can design products that nudge users toward better financial behaviors for instance automatic savings, credit inward and outward remittance and digital insurance (Kahneman, D. 2011).

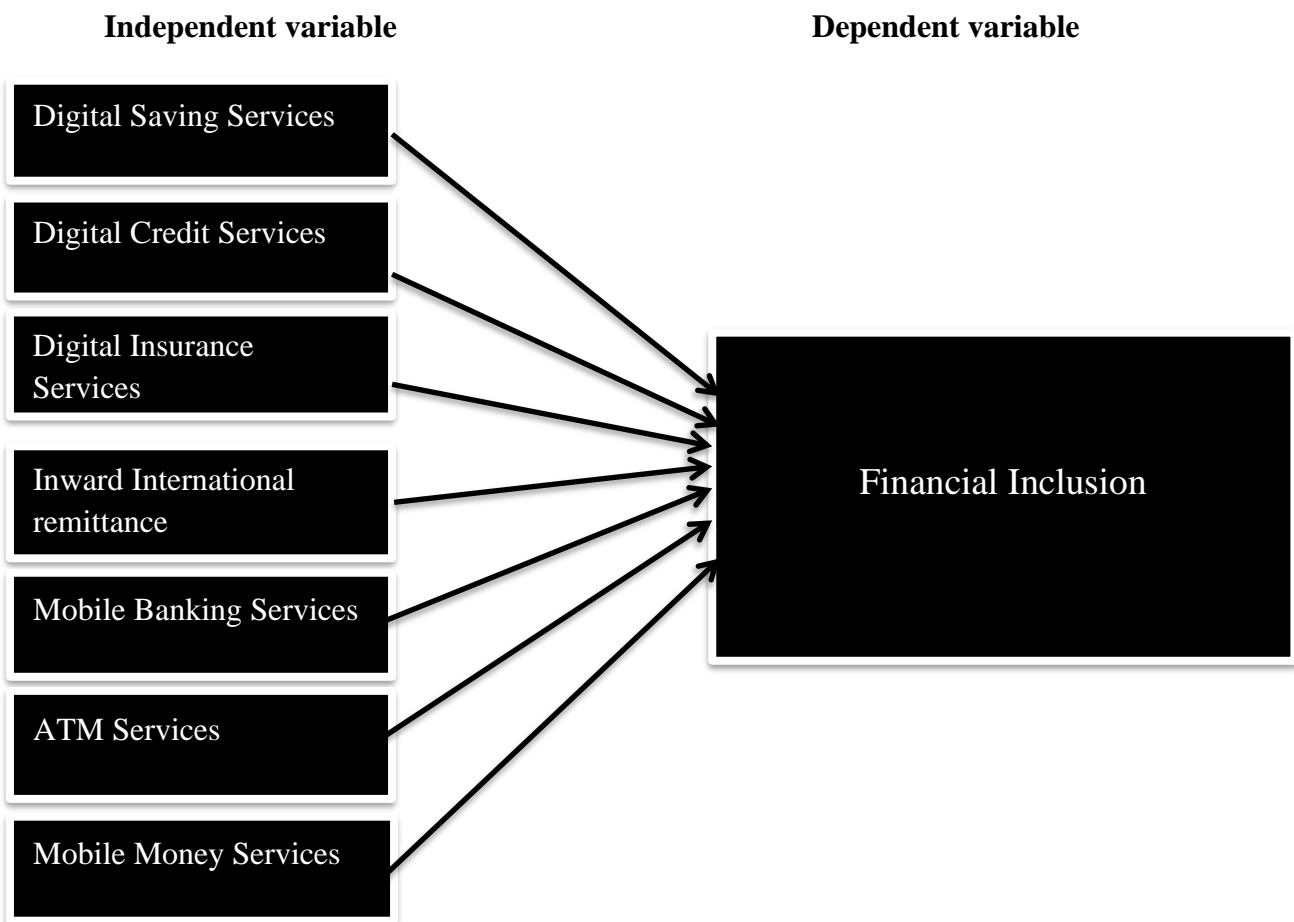


Figure 2 Conceptual framework

Source: Tigist.B (2022); GSMA report (2023); Maza.W (2013); Hussam H (2020) Workineh A. (2022).

2.1.5 VARIABLE SPECIFICATION

2.1.5.1 Digital credit service

Digital credit can significantly contribute to financial inclusion by providing previously unbanked populations with access to safe and secure ways to provide money. Digital credit services also refer to financial services that provide credit or loans through digital platforms, often utilizing technology to streamline the application and approval processes. Digital credit services enable accessible wider range of individuals, particularly those in underserved communities, to access credit. According to Demirgüç-Kunt et al. (2018), digital financial services can reduce barriers to entry for unbanked populations, allowing them to participate in the financial system (Demirgüç Kunt, A, Klapper, L., & Singer, D. (2018). Services offered efferent often provide quicker loan approvals compared to traditional banks. A study by Kauffman et al. (2020) highlights that digital platforms can significantly reduce the time required for processing applications and disbursing funds (Kauffman, R. J., & Wang, B 2020).

2.1.5.2 Digital saving service

Digital savings refer to the use of digital platforms and technologies to facilitate saving money, often through online banking services or mobile applications (mobile money). This modern approach to savings has emerged as a crucial tool for financial inclusion, particularly in developing countries where traditional banking services may be limited or inaccessible. According to Awosika &Zhu(2020) studies that the significance of digital savings in promoting financial inclusion while emphasizing the challenges faced by unbanked populations who lack access to these services. This is particularly important in a country where traditional banking infrastructure is limited; especially in rural areas beyond these concepts digital financial technology has a significant positive influence on the level of savings in the Sub-Saharan African country. Digital saving is the most significance mitigating the welfare of individuals and households in adverse time and the growing emergence of digital payment platforms (Olalekan A et al 2023).

2.1.5.3 Digital insurance service

Digital insurance refers to the integration of digital technologies into the insurance industry, transforming traditional business models and enhancing customer experiences. One of the primary benefits of digital insurance is increased operational efficiency. By leveraging big data analytics, insurers can process vast amounts of information quickly and accurately. This capability allows for improved risk assessment and underwriting processes based on the Eling & Lehmann (2018) mentioned that provides insights into how digitalization impacts the entire value chain within the insurance industry.

2.1.5.4 Mobile money service

Mobile money refers to financial services that allow users to conduct transactions via mobile devices, typically without the need for a traditional bank account. Its significance has grown rapidly, particularly in developing countries, due to its ability to enhance financial inclusion and facilitate economic activities. The linkages of mobile money and Financial Inclusion positively interrelated. According to the World Bank (2014), mobile money has significantly increased access to financial services in regions where traditional banking infrastructure is limited. A study by Jack and Suri (2014) found that mobile money services like M-PESA have transformed how people send and receive money, especially in rural areas (Jack, W., & Suri, T. (2014).

2.1.5.5 Inward International Remittance Service via Mobile Money

Digital inward remittance services are crucial for facilitating the transfer of money from abroad to individuals in their home countries, particularly in regions with large diaspora populations. Financial Inclusion angle said to digital remittance services enhance financial inclusion by providing unbanked and under banked populations with access to financial services. According to the World Bank (2020), digital remittances can help integrate recipients into the formal financial system, allowing them to save, invest, and access other financial services.

2.1.5.6 Internet banking service

Internet based transactions has enables users to transfer money through an online remittance platform, from their online banking account, debit card, credit card, and more. Receivers can get funds through several platforms, such as mobile money, bank account deposit, airtime top-up, or cash pick-up. These online platforms match senders in two countries without the need for money to cross borders Internet banking services play a significant role in promoting financial inclusion by providing access to banking services for underserved populations. Here's an overview of their impact, supported by citations (CGPA 2016).

2.1.5.7 Model specification

This research has been the effective model selection methods have to fit the best model is multiple linear regression models. Regression Method Data Panel will give the result of estimation which is Best Linear Unbiased Estimation and Panel data Regression is a combination of cross section data and time series, where the same unit cross section is measured at different times. Furthermore the scholars analyses it depends on the panel data regression and multiple linear regressions is identifies its best model select either random or fixed effects. $Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_k X_k + E$

CHAPTER TREE

3 Research Methodology

3.1 Research Design

The research design and methodology to be used in the research is defined. According to Kothari (2008) research design is conceptual framework that guides research activities and creates the framework for gathering, calculating, and analyzing data. It serves as a blueprint for the collection, measurement, and interpretation of information and data. According to Creswell (2014), "Research design is proposal to conduct research, which includes the blueprint for the collection, measurement, and analysis of data. This study is employed a mixed research design both explanatory and descriptive.

3.2 Research Approach

The choice of research approach depends on specific objectives of study, the nature of the research questions, and the type of data you need to collect (Kothari 2004). For the purpose of this research both descriptive and explanatory research design is used after examining objectives and research questions of the study.

3.3 Target population

Kothari (2004) highlighted that the "population" is made up of all the objects that are examined in any given field of study. The Target populations of the study were the users of financial services from selected commercial banks and Fin-Tech companies in Ethiopia. Out of the 32 commercial banks that are operating in Ethiopia the researcher will select 14 top performed and experienced banks and six mobile money issuer companies (Tele Birr, M-PESA, Amole, CBE Birr, Michu & Kacha financial service S.C). The population for this study is 13,497.

3.4 Sampling Technique

Sampling is defined as "the process by which particular members of a population are selected for observation or data collection" (Ashenafi 2019). In statistical context sampling method is the process of studying the population by gathering information and analyzing that data. To response research questions and to achieve the objectives of the research, this study adopted a non-probability sampling called purposive sampling technique.

3.5 Data Source and Type

The researcher is used both primary and secondary data for this study. Primary data refers to information that is collected first hand by the researcher for a specific research purpose. This type of data is original and has not been previously published or analyzed while secondary data refers to information that has already been collected, analyzed, and published by others. So the researcher used Fin-Tech industry and National Bank of Ethiopia's published yearly report, transaction report, various other published, unpublished documents, and all of which were appropriately cited for this study. And

the primary data was collected from through questioner and interview. The researcher was use secondary data from time periods of (2014-2024). Hsiao (2003) defines longitudinal data collection as a panel that tracks a specific sample of people across time and offers several observations on each sample member. The quantitative data was analyzed using descriptive and inferential statistics.

3.6 Sample Size

According to Saunders et al, (2009), for all non-probability sampling techniques, other than for quota samples the issue of sample size is ambiguous and, unlike probability sampling, there are no rules. The sample size is reliant on research questions and objectives. So, meanwhile the objective of this study is to detect the effects of fin-tech on financial inclusion in Ethiopia. The researcher decided to take 370 respondents from users from banks and fin-tech companies for questioner and 5 for interview from CEO of Tele-birr, director of financial inclusion secretariat office in NBE, director of insurance supervision in NBE, CEO in Safaricom Ethiopia plc. (M-PESA) and CEO of Kacha digital financial services S.C.

$$n = E \cdot \frac{N \cdot Z^2 \cdot P \cdot (1-P)}{(N-1) + Z^2 \cdot P \cdot (1-P)}$$

Kothari (2004)

n =required sample size, N = total population size

Z = z-value corresponding to the desired confidence level

p = estimated proportion of an attribute present in the population (if unknown, use

p = 0.5 for maximum variability)

E = margin of error

✓ N = 13497

✓ Z = 1.96

✓ P = 0.5

✓ E = 0.05

✓

$$n = \frac{13497 + (1.96)^2 * 0.25}{0.0025(13497 - 1) + 3.8416 * 0.25} = 370.$$

3.7 Data Analyses

The data is organized and analyzed, after it is collected. The collected data is evaluated based on the nature of the data in order to achieve the study objectives. As a result, the data collected via the data collection sheet was edited, coded, and tabulated. The study used correlation and regression statistics for analyses with the help of the version 21 SPSS software for the secondary types of data. The primary data were collected through the interviews and questioner, analyzed using both quantitative and

qualitative methods. The quantitative data was analyzed using descriptive and inferential statistics. The qualitative data was analyzed using thematic analysis.

3.8 Reliability Test

Reliability analysis was used to check the instrument's internal accuracy. Cronbach's coefficient alpha is an internal accuracy estimator with a lower limit of acceptability of 0.60 (Hair, 1995).

CHAPTER FOUR

4. RESULTS AND DISCUSSION

4.1 Introduction

This section contains the analysis of the results and data that are relevant to this study. In addition, the study findings are thoroughly reviewed, discussed, and interpreted. SPSS (Statistical Package for social science) version 21 software was used to analyze the raw data. Data collected using different techniques were analyzed in this section by using triangulation approach. The researcher interviewed 5 interviewers who are CEO of Tele-birr, director of financial inclusion secretariat office in NBE, director of insurance supervision in NBE ,CEO in Safaricom Ethiopia plc(M-PESA) and CEO of Kacha digital financial services S.C. 370 questionnaires were distributed for digital products users(Mobile banking service users, mobile money service users, ATM service users, digital saving service users, and digital saving services users), National Bank of Ethiopia higher officials, and Fin-Tech companies higher officials (Tele-birr, Safaricom plc. (M-PESA). The researcher managed to fully collected data from all targeted 370 samples.

4.1.1 Reliability Test

The survey was conducted during three months. Total distributed questionnaires are 370 and all the questionnaires are fully collected. So, 370 were completely used for analysis that shows 100% response which is acceptable to undertake a study. As a result, if the coefficient is similar to 1, Cronbach's Alpha has greater consistency within items on the scale.

4.1.2. Multicollinearity test

To determine if the independent variables are multicollinearity, the researcher uses the Variance Inflation Factor (VIF). Multicollinearity is seen when VIF exceeds 10. (Littell and Freund, 2000). To determine whether there is regression correlation between independent variables, multicollinearity is crucial. Table 2 indicates that there is no multicollinearity in the regression results, with tolerance values greater than 0.2 and Variance Inflation Factor (VIF) values falling between 0 and 10. This implied that there needed to be a strong correlation between the predictors in this investigation. Multicollinearity is reduced and the variables can be employed in regression analysis, according to the VIF result (Chatterjee et al., 2000; Kleinbaum et al., 1988). Additionally, Table 2 demonstrates that there is no multicollinearity issue because each independent variable's VIF value is less than 10. Furthermore, if the multicollinearity number is less than 10, it indicates that there is no correlation between any of the independent variables.

Table 2 Variance inflation factor

	VIF	1/VIF
Digital insurance services	1.887	.53
Digital credit services	1.878	.532
Mobile banking services	1.315	.761
Digital remittance	1.298	.77
ATM services	1.268	.789
Digital saving services	1.227	.815
Mobile Money services	1.094	.914
Mean VIF	1.424	

Source: Study Survey, 2025

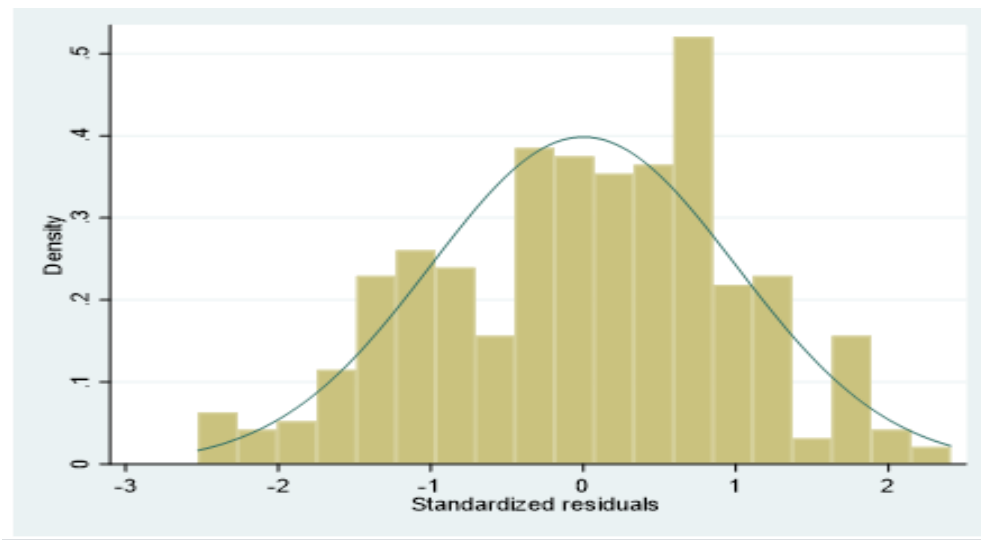
According to the above table, the highest VIF value is 1.887 for digital Insurance services and 1.878 for digital Credit services, both of which are well below the threshold. The mean VIF of 1.424 further implies that multicollinearity is not an issue among my independent variables. In this model, there are no signs of heteroskedasticity, which is a good sign that the assumptions of linear regression are met and the VIF values show that multicollinearity is not an issue in the model.

4.1.3 Normality test

The normality test refers to the shape of data that is regularly distributed for a particular metric variable. Both frequency distributions and normal regression plots demonstrate that the data in the image below are normally distributed.

Figure 3 Normality test

Histogram graph dependent variable financial inclusion



Source: Study Survey, 2025

Normality Checking

The above histogram graph shows a bell-shaped curve, indicates that the residuals' distribution strength generally normal. The overlap of the density curve supports the notion of normality by indicating a strong fit. The central tendency the bulk of residuals seem to be collected nearby the mean, as designated by the histogram's highest being nearby to the center. Normality is positively indicated by this symmetry. The histogram appears to have no visible left or right skewness. On both sides of the mean, the values are reasonably evenly distributed.

4.2 Demographic Information of the Respondents

Demographic profiles of the respondents who participated in the study were analyzed using descriptive analysis with the help of SPSS (Statistical Package for the Social Sciences). The result of the survey is shown in following table.

Table 3 Ages of Respondents

Age	Frequency	Percent	Cumulative
18-24	66	17.84%	17.84
25-34	82	22.16%	40
35-44	144	38.92%	78.92
45-54	78	21.08%	100
Total	370	100	100

Source: Study Survey, 2025

According to table 3 from total 370 respondents large portion (38.92%) are aged 35-44, followed by those aged 25-34 (22.16%). The rest of the respondents are aged 45-54(21.08%) and 18-24(17.84%) This indicates that younger respondents who are typically vital for improve financial inclusion.

Table 4 Gender of Respondents

Gender	Frequency	Percentage	Cumulative
Male	251	67.84%	67.84
Female	119	32.16%	100
Total	370	100	

Source: Study Survey, 2025

Men lead the sample; representing approximately 68 %(251) and 32.16 %(119) male and female respectively. This suggests that the male respondents are designed the large portion of the target and gender inequality between male and female respondents.

Table 5 Educational Qualification

Educational Qualification	Frequency	Percentage	Cumulative
Degree	108	29.19%	29.19
MSc.	234	63.24%	92.43
PhD	28	7.57%	100
Total	370	100	

Source: Study Survey, 2025

Table 5 shows that educational qualification ranges from Degree to PhD. A large portion of respondents are holding a Master's degree 234(63.24%). The rest respondents are degree 108(29.19%) and PhD 28(7.57%). It indicates that approximately all respondents are educated and understanding the questions in the questionnaires.

Table 6 Location of respondents

Location	Frequency	Percentage	Cumulative
Urban	370	100%	100
Total	370	100	

Source: Study Survey, 2025

Table 6 indicates the total respondents are urban residents 370(100%).This shows that the study only focuses on urban residents, which are more accessible to financial technology.

Table 7 Usage of Fin-Tech Services

Digital saving services	Frequency	Percentage	Cumulative
No	124	33.51%	33.51
Yes	246	66.49%	100

Digital Credit service			
No	183	49.46%	49.46
Yes	187	50.54%	100
Digital insurance services			
No	272	73.51%	73.51
Yes	98	26.49%	100
Inward Int'l remittance			
No	243	65.68%	65.68
Yes	127	34.32%	100
Mobile banking services			
Yes	370	100%	100
ATM services			
Yes	370	100%	100
Mobile money services			
No	77	20.81%	20.81
Yes	293	79.19%	100

Source: Study Survey, 2025

According to above table digital saving services are used by a large portion of respondents 246(66.49%), this suggesting that digital saving services are largely relied upon financial technology. There may be problems for the remaining 124 (33.51%) who do not use these digital saving. Half of respondents that 187(50.54%) of respondents use digital credit services, nevertheless 183(49.46%) do not use the service. This indicates that though there is request in digital credit, further adoption may be constrained awareness, and credit access. Table 7 the fact that a majority of 272 (73.51%) do not use digital insurance services this indicates that these products are not commonly well-known and used. The rest 98 (26.49%) use digital insurance services.

Table 7 shows that a large segment of respondents 243 (65.68%) do not use inward international remittance services this specifies that these products are not broadly known and used. The rest of respondents 127 (34.32%) are use international remittance services. Most of the respondents are not use or know international remittance services. Table 7 the fact that all respondents 370 (100%) use mobile banking services. Table 7 shows that all respondents 370 (100%) use ATM services. This suggests that an ATM service is a regularly used and fully accepted service. The large portion of respondents 293 (79.19%) use mobile money services, which suggests a usage of mobile money services highly associated with financial inclusion. The remaining 77(20.81%) who do not use mobile money services may face barriers to financial inclusion. All analysis indicates association between the use of mobile money services and financial inclusion.

Table 8 Satisfaction with Fin-tech Products

Digital saving services	Frequency	Percentage	Cumulative
Neutral	103	27.84%	27.84
Satisfied	151	40.81%	68.65
Very satisfied	116	31.35%	100
Digital Credit service			
Dissatisfied	48	12.97%	12.97
Neutral	157	42.43%	55.41
Satisfied	62	16.76%	72.16
Very satisfied	103	27.84%	100
Digital insurance services			
Neutral	370	100%	100
Inward Int'l remittance			
Neutral	234	63.89%	63.24
Satisfied	44	11.89%	75.14
Very satisfied	68	18.38%	93.51
Dissatisfied	24	6.49%	100
Mobile banking services			
Very dissatisfied	82	22.16%	22.16
Dissatisfied	9	2.43%	24.59
Satisfied	191	51.62%	76.59
Very satisfied	88	23.78%	100
ATM services			
Dissatisfied	19	5.14%	5.14
Neutral	81	21.89%	27.03
Satisfied	222	60%	87.03
Very satisfied	48	12.97%	100
Mobile money services			
Very dissatisfied	60	16.22%	16.22
Neutral	70	18.92%	35.14
Satisfied	124	33.51 %	68.65
Very satisfied	116	31.35%	100

Source: Study Survey, 2025

The combined total of 267(72.16%) of respondents answer satisfied and very satisfied and followed by 103(27.84%) of respondents being neutral designates important segment of respondents who not have satisfaction of digital saving services about the services. Table 8 A large portion of respondents 165(68.65%) responds satisfaction or very satisfaction, suggesting that digital savings services are

enhance financial inclusion. This indicates that since satisfied respondents are more expected to use digital credit service, there may be a positive association between financial inclusion and digital savings services. Neutral 157(42.43%) respondents are not use digital credit services. Table 8 shows that all the respondents 370 (100%) neutral. This suggests that all respondents not use a digital insurance service that is adversely affecting financial inclusion.

Table 8 A high neutrality rate 234(63.89%) suggests that users don't have strong understand regarding remittance services. Followed by very satisfied 68(18%), satisfied 44(11.89%), and dissatisfied 24(6.49%) respectively. A large percentage of respondents (75.4%) say they are either very satisfied (23.78%) or satisfied (51.62%) with the services provided via mobile banking. This suggests that most users have very good understanding of mobile banking services and a prevalent device for move forward financial inclusion.

A large portion of respondents 270(72.97%) responds either very satisfied 48(12.97%) or satisfied 222 (60%) with the services providing via ATM services. This implies that most people use ATM services. Followed by 81(21.89%) and 19(5.14%) 81 respondents are neutral and 19 responds dissatisfied. Table 8 A large portion of respondents are combination of satisfaction and very satisfied 124(33.51) and 116(31.35%) 270(72.97%) responds they are use and satisfied with the mobile money service. This indicates that most users satisfied with service of mobile money. Followed by very dissatisfied 60(16.22%) and neutral 70(18.92%). This implies that both very dissatisfied and neutral not satisfied the service of mobile money.

Table 9 Ease of use digital products

Digital saving services	Frequency	Percentage	Cumulative
Very easy	113	30.54%	30.54
Easy	134	36.22%	66.76
Neutral	123	33.24%	100
Digital Credit service			
Very easy	101	27.30%	27.30
Easy	96	25.95%	53.24
Neutral	173	46.76%	100
Digital insurance services			
Easy	66	17.84%	17.84
Neutral	304	82.16%	100
Total	370	100	
Inward Int'l remittance			
Very easy	58	15.68%	15.68
Easy	75	20.27%	35.95
Neutral	237	64.05%	100

Mobile banking services			
Very easy	179	48.38%	48.38
Easy	191	51.62%	100
ATM services			
Very easy	112	30.27%	30.27
Easy	172	46.49%	76.76
Neutral	86	23.24%	100
Mobile money services			
Very easy	140	37.84%	37.84
Easy	140	37.84%	75.68
Neutral	90	24.32%	100

Source: Study Survey, 2025

According to Table 9 the aggregate percentage shows that 66.76% of respondents say that the digital saving service is either very easy or easy to use, which suggests that they have a positive opinion of its usability. Large portion of respondents said very easy or easy increases the likelihood that financial inclusion. Followed by 123(33.24%) respondents is neutral regarding the easy use of digital services. Table 9 53.24% of respondents found the service to be either very easy or easy to use, according to the cumulative percentage. But over half (46.76%) said they had a neutral position. According to table 9 more than half percent of respondents 237(64.05%) they keeps silent this suggests that there is strong negative implications for financial inclusion. Combination of very easy and easy 35.95% respondents responds inward international remittance is easy to use and positive implication for the financial inclusion.

Total of 100% reporting ease of use, mobile banking attitudes is highly accessible service. This high level of perceived ease of use is a robust display of positive associations for financial inclusion. According to table 9 284 (76.76%) of respondents found that ATM service is either very easy or easy to use. This suggests that most of respondents are respond use of ATM services enhance financial inclusion. But 86 (46.76%) said they had a neutral position. The large portion of respondents 280 (75.68%) answered mobile money services either "Very Easy" or "Easy" to use. A large portion of respondents (37.84%) gave it the rating of "Very Easy," indicates that many people may be more expected to use these services, which enhance greater financial inclusion. a small portion of respondents (24.32%) fall into the "Neutral" group. Indicates ease of use of mobile money services is positively affected financial inclusion in Ethiopia.

Table 10 Understanding of Fin-tech Services

Digital saving services	Frequency	Percentage	Cumulative
Neutral	50	13.51%	13.51
Good	67	18.11%	31.62
Very good	223	60.27%	91.89
Excellent	30	8.11%	100
Digital Credit service			
Neutral	106	28.65%	28.65
Good	120	32.43%	61.08
Very good	144	38.92%	100
Digital insurance services			
Poor	72	19.46%	19.46
Neutral	91	24.59%	44.05
Good	113	30.54%	74.59
Very good	94	25.41%	
Mobile banking services			
Good	60	16.22	16.22
Very good	226	61.08	77.30
Excellent	84	22.70	100
ATM services			
Neutral	85	22.97%	22.97
Good	187	50.54%	73.51
Very good	98	26.49%	100
Mobile money services			
Good	104	28.11%	28.11
Very good	194	52.43%	80.54
Excellent	72	19.46%	100

Source: Study Survey, 2025

According to table 10 a majority 320 (86.49%) responds they understood digital saving services "Good, Very Good" or "Excellent." This implies that users have a very positive understanding of these digital saving services and enhancing greater financial inclusion. A small percentage of respondents 50 (13.51%) fall into the "Neutral" group, demonstrating that they have no strong understanding about digital saving services. All indicates positive association between the understanding of digital saving services and financial inclusion. Accordingly to table 10 264(71.35%) of those surveyed responds they understood digital credit services "Good" or "Very Good." This indicates that users have a generally good understanding of these digital credit services which is enhance financial inclusion. However, a

small percentage (28.65%) expresses indifference, which can be a reflection of a lack of understanding regarding digital credit services. A large portion of above of half percentage respondents 207 (55.95%) assessed their understanding as good or very good, this suggests that half and above respondents have awareness of digital insurance service that improve financial inclusion. However 44.05% rating it as neutral.

Eighty-three percent (83.78%) of respondents said they understood mobile banking services Very Good or Excellent. The comparatively small number of respondents (16.22%) who gave their understanding a Good rating indicates that very few believe their understanding is inadequate. According to above table most respondents 285 (77.03%) gave their understanding of ATM services a Good rating (50.54%) or a Very Good rating (26.49%). However, a small percentage (22.97%) measured their understanding as Neutral, indicating that some users not understanding about of ATM services. A higher understanding of ATM services is likely to associate positively with financial inclusion. Eighty-five percent (71.89%) combined of those respondents said they understood mobile money services Very Good (52.43%) or Excellent (19.46%). Overall the analysis suggests that a positive relationship between the understanding of mobile money and financial inclusion.

Table 11 Frequency of use digital product

Digital saving services	Frequency	Percentage	Cumulative
Daily	60	16.22%	16.22
Weekly	43	11.62%	27.84
Monthly	116	31.35%	59.19
Rarely	72	19.46%	78.65
Never	79	21.35%	100
Digital Credit service			
Weekly	55	14.86%	14.86
Monthly	116	31.35%	46.86
Rarely	45	12.16%	58.38
Never	154	41.62%	100
Digital insurance services			
Never	370	100%	100
Inward Int'l remittance			
Weekly	29	7.84%	7.84
Monthly	66	17.84%	25.68
Rarely	66	17.84%	43.51
Never	209	56.49%	100
Mobile banking services			
Daily	131	35.41%	35.41

Weekly	85	22.97%	58.38
Monthly	83	22.43%	80.81
Rarely	71	19.19%	100
ATM services			
Daily	78	21.08%	21.08
Weekly	126	34.05%	55.14
Monthly	57	15.41%	70.54
Rarely	109	29.46%	100
Mobile money services			
Good	104	28.11%	28.11
Daily	161	43.51	43.51
Weekly	51	13.78	57.30
Monthly	35	9.46	66.76
Rarely	52	14.05	80.81
Never	71	19.19	100

Source: Study Survey, 2025

The largest proportion of respondents 116 (31.35%) said they used digital saving services on a monthly basis; some users use these services frequently. Digital saving is aggressively used by 47.08% of respondents (daily, weekly, and monthly), advising that those who use them are involved. On other hand 151 (40.81%) of respondents said they used digital saving services either infrequently (19.46%) or never (21.35%). Consistent use of digital saving services is likely to associate positively with financial inclusion. According to table 11 with 31.35% of respondents saying they use digital credit services on a monthly basis, this is the most often stated frequency of use. At 14.86%, weekly usage is rather low, suggesting that regular usage is not common among respondents. 41.62% of respondents, a large portion, said they had never used digital credit services. Overall the usage is likely to associate positively with financial inclusion.

According to the above table 10, all respondents 370(100%) have never used digital insurance services. This is a surprising detection, indicating that the population examined does not use these services. This suggests that the complete not usage of digital insurance services is important obstacle to financial inclusion. According to only 29(7.84%) of respondents said they use inward international remittance services on a weekly basis, demonstrating a low overall usage frequency. This suggests that there is little consistent use of these services. Although usage is marginally better for Monthly (17.84%) and rarely (17.84%), it still indicates low overall engagement. A large majority 209 (56.49%) said they have never used inward international remittance services. The high percentages of respondents who have never use international remittance services and adversely affect financial inclusion.

A large portion percentage of respondents (35.41%) said they used mobile banking services every day. 22.43% of people use mobile banking monthly, while another 22.97% use it weekly. These three groups collectively account for a sizable 80.81% of respondents who use mobile banking services at least once per month and overall that implies a positive association with financial inclusion. Out of all respondents 34.05% stated their ATM usage occurs during weekly periods while this pattern shows the highest frequency. The banking requirements of numerous people in society are supported through frequent ATM usage. A substantial number of respondents (21.08%) chose daily ATM usage to indicate their need for these facilities for ordinary banking activities. The utilization of ATM facilities demonstrates a positive impact regarding financial access for all. The study data shows that mobile money services undergo daily use by 43.51% of the respondents who perform regular financial operations through these platforms.

Table 12 Inferential Statistics

Fin-Tech	Coef.	St.Error	t-value	p-value	95% Conf.	Interval	Sig
Digital saving	.836	.402	2.08		.047	1.624	**
Digital credit	.807	.371	2.18	.038	.08	1.533	**
Digital insurance	-1.604	.445	-3.60	.03	-2.477	-.732	***
Inward Int'l remittance	-.658	.417	-1.58	0	-1.476	.16	
Mobile banking	3.962	.439	9.03	.115	3.102	4.822	***
ATM	2.503	.501	4.99	0	3.486	1.52	***
Mobile money	.871	.404	2.16	0	1.662	.08	**

Mean dependent var	2.778	SD dependent var	1.138
Pseudo r-squared	0.187	Number of obs	370
Chi-square	185.637	Prob > chi2	0.000
Akaike crit. (AIC)	827.508	Bayesian crit. (BIC)	866.643

*** $p < .01$, ** $p < .05$, * $p < .1$

Regression analysis uses data from 370 respondents to assess how different fin-tech services affect a dependent variable. With a Chi-square of 185.637 ($p < 0.000$) and a pseudo R-squared of 0.187, the model is statistically significant and shows moderate explanatory power, indicating that at least one of

the independent factors significantly affects the dependent variable. The statistical results are as follows, based on the regression equation:

$$Y = .836 + (DSS) + .807 (DCS) - 1.604 (DIS) - .658 (IIRS) + 3.962 (MBS) + 2.503 (ATMS) + .871 (MMS)$$

Where: Y = Financial inclusion

DSS = Digital Saving Service

DCS = Digital Credit Service

DIS = Digital Insurance Services

IIRS = Inward International Remittance Service

MBS = Mobile Banking Service

ATMS = ATM Services

MMS = Mobile Money Service

According to the findings, there should be a decrease of 1.604 (DIS) and .658 (IIRS) and an increase of .836+ (DSS) +.807 (DCS) +3.962 (MBS) and 2.503 (ATMS) + .871 (MMS). Furthermore, the key indicator that has the greatest effect of financial technology on financial inclusion is ATM services and Mobile banking and next to that Mobile money, digital saving services and digital credit services.

Table 13 Interpretation of Coefficients

Independent variable	Coefficient	Interpretation
Digital Saving	0.836 (p = 0.047)	Positive coefficient indicates that digital saving has a statistically substantial positive effect on financial inclusion.
Digital Credit	0.807 (p = 0.038)	Positive coefficient shows that having access to digital credit also significantly enhances financial inclusion. The study indicates that digital credit services can enable access to finance, hereafter supporting individuals in well managing their finances.
Digital Insurance	-1.604 (p = 0.03)	Digital insurance has a negative effect and statistically significant. This shows that respondents lack understanding in digital insurance services.
Inward International Remittance	-0.658(not significant)	Inward international remittance has negative coefficient this indicates that inbound remittance has note a large effect on the financial inclusion.

Mobile Banking	3.962 is the coefficient (p < 0.0001)	Mobile banking service has a high positive effect, it a vital for enhancing financial inclusion. Usage of mobile banking possible allows more financial inclusion.
ATM Service	2.503 is the coefficient (p < 0.0001)	ATM service has positive and statistically significant effect. This shows that use of ATM service improves financial inclusion.
Mobile Money	0.871 is the coefficient (p = 0.038).	A mobile money service has positive and statistically significant effect. This suggests that t enhance financial inclusion.

Source: Study Survey, 2025

Table 14 which digital saving platform do you use

. tabulate whichdigitalsavingplatformdo			
which digital saving platform do you use?	Freq.	Percent	Cum.
Amole and CBE Birr	10	2.71	2.71
Amole,Tele Birr and Michu	1	0.27	2.98
Apolo	9	2.44	5.42
Awash Birr	5	1.36	6.78
CBE Birr	16	4.34	11.11
CBE Birr and Tele Birr	10	2.71	13.82
Neutral	97	26.29	40.11
Tele Birr	23	6.23	46.34
Tele Birr	176	47.70	94.04
Tele Birr and CBE Birr	11	2.98	97.02
Tele Birr, CBE Birr ,M-PESA and Michu	2	0.54	97.56
Tele Birr, CBE Birr and Kacha	6	1.63	99.19
Tele birr	3	0.81	100.00
Total	369	100.00	

Source: Source: Study Survey, 2025

According to table 14 more than half of respondents' 202 (54.74%) responds they use the Tele Birr platform for digital saving service. This suggests that it is probably a major driver of improve financial inclusion in Ethiopia. Second biggest percentage of responders, 26.29% (97), remains silent or neutral. This indicates that approximately 27% of users do not use any digital platform for accesses digital saving.

Table 15 Features digital savings platforms

features of digital saving platform	Freq.	Percent	Cum.
complex and not ease of use	10	2.71	2.71
cost saving	28	7.59	10.30
daily interest calculation	26	7.05	17.34
easy	5	1.36	18.70
easy for deposit and withdrawal	5	1.36	20.05
easy send and receive money and pay ..	5	1.36	21.41
easy to access and simple	6	1.63	23.04
easy to receive	6	1.63	24.66
easy to send money	3	0.81	25.47
easy to use	11	2.98	28.46
easy to use	2	0.54	29.00
easy to use	3	0.81	29.81
neutral	117	31.71	61.52
safe and simple	2	0.54	62.06
save time	26	7.05	69.11
save time and money	17	4.61	73.71
save transportation cost	11	2.98	76.69
saving time and cost	3	0.81	77.51
saving time and money	2	0.54	78.05
simple and easy	5	1.36	79.40
simple and time saving	20	5.42	84.82
time saving	56	15.18	100.00
Total	369	100.00	

Source: Source: Study Survey, 2025

From total respondents 242 (65.5 %) combination of others except neutral, complex and ease of use. This suggests that more than half of respondents answers digital saving has positive impacts that improve financial inclusion in Ethiopia. 31.71 %(117) of respondents remain silent. This implies that of those respondents do not understanding the features of digital saving devices.

Table 16 challenges with accessing digital credit

challenges with accessing digital credit	Freq.	Percent	Cum.
lack of infrastructure	6	1.63	1.63
Absence of Islamic credit service	5	1.36	2.98
No challenge	63	17.07	20.05
amount of loan	36	9.76	29.81
connection problem	5	1.36	31.17
high interest rate	1	0.27	31.44
high service rate	8	2.17	33.60
high service charge	23	6.23	39.84
high service charge	1	0.27	40.11
high service charge rate	8	2.17	42.28
lack of credit scoring	10	2.71	44.99
lack of infrastructure	15	4.07	49.05
limited term and tarif	6	1.63	50.68
network	72	19.51	70.19
neutral	69	18.70	88.89
not updated credit history	4	1.08	89.97
poor network connectivity	37	10.03	100.00
Total	369	100.00	

Source: Source: Study Survey, 2025

According to above table the majority of respondents 135(37%) responds that challenges with accessing digital credit are lack of infrastructure, network, connection problem and poor network connectivity. This suggests that these challenges are hinder access of digital credit and negatively affect financial inclusion. The reaming 69(18.70%) respondents are keeps silent or neutral this suggests that not understand the challenges related with accessing digital credit services.

Table 17 Factors to purchase digital insurance

factors to purchase digital insurance	Freq.	Percent	Cum.
ease to access	55	14.95	14.95
ease to use	13	3.53	18.48
neutral	300	81.52	100.00
Total	368	100.00	

Source: Source: Study Survey, 2025

Majority of respondent 300(81.52%) are neutral. This indicates that 81.52% of respondents not have awareness about the influences to purchase digital insurance. The neutral shows that large portion respondents not fully understand digital insurance services.

Table 18 Improvement in digital remittance

improvement in digital remittance	Freq.	Percent	Cum.
awareness	24	6.50	6.50
don't know	84	22.76	29.27
exchange rate	6	1.63	30.89
neutral	255	69.11	100.00
Total	369	100.00	

Source: Source: Study Survey, 2025

The majority of respondents 255 (69.11%) are keeps silent or neutral. This suggested that they are unaware or lack understanding about digital remittance services. This large portion of respondents has a serious lack of improvement and user involvement or comprehension on how digital remittances affect financial inclusion.

Table 19 Features of mobile banking

features of mobile banking	Freq.	Percent	Cum.
quality service	5	1.36	1.36
ease to use	36	9.76	11.11
fast and minimize service charge	28	7.59	18.70
neutral	105	28.46	47.15
quality service	7	1.90	49.05
render quality service	1	0.27	49.32
save cost	15	4.07	53.39
send and receive money	2	0.54	53.93
simple and accessibility	10	2.71	56.64
time saving	122	33.06	89.70
time saving , cost minimizing and fas..	2	0.54	90.24
unfair service charge	36	9.76	100.00
Total	369	100.00	

Source: Source: Study Survey, 2025

The large portion of respondents 264(71%) are response positive features of mobile banking. This indicates that improve financial inclusion. On other way 105(28.46%) respondents are neutral. A

substantial number of users (28, 7.59%) answered neutral, which suggests that a lack of understanding about mobile banking services. So, suggests that enlightening users and to enhance financial inclusion.

Table 20 Challenges with ATM services

challenges with with ATM service	Freq.	Percent	Cum.
Not accept deposit	24	6.50	6.50
Not function	10	2.71	9.21
Not working at all	26	7.05	16.26
Some times out of service	28	7.59	23.85
busy	12	3.25	27.10
connection problem	18	4.88	31.98
huge service charge	2	0.54	32.52
insufficient fund	20	5.42	37.94
insufficient during weekends	4	1.08	39.02
insufficient fund	57	15.45	54.47
lack of currency dinomination	24	6.50	60.98
network problem	75	20.33	81.30
neutral	57	15.45	96.75
not give services at all	6	1.63	98.37
not paying all times	6	1.63	100.00
Total	369	100.00	

Source: Study Survey, 2025

The above table indicates that connection and network problems are the most commonly problem issues are significant concern for users 93 (25.21%).This suggesting that connectivity and network problem issues are a significant concern for users. The second most frequent problem is a lack of funds, on weekends and normal days 81 (21.95%). This suggests that user’s second biggest problem is a lack of funds.

Table 21 which mobile money do you use?

which mobile money do you use	Freq.	Percent	Cum.
Amole	6	1.63	1.63
Amole,Tele Birr and Michu	1	0.27	1.90
Apolo	9	2.44	4.34
Awash Birr and Tele Birr	2	0.54	4.88
CBE Birr	5	1.36	6.23
CBE Birr and Tele Birr	8	2.17	8.40
E-birr	5	1.36	9.76
Hello cash	5	1.36	11.11
Tele Birr	23	6.23	17.34
Tele Birr	143	38.75	56.10
Tele Birr and CBE Birr	73	19.78	75.88
Tele Birr and M-PESA	10	2.71	78.59
Tele Birr and Michu	13	3.52	82.11
Tele Birr, CBE Birr and Amole	4	1.08	83.20
Tele Birr, CBE Birr and Awash Birr	10	2.71	85.91
Tele birr, CBE Birr and Kacha	6	1.63	87.53
neutral	36	9.76	97.29
tele Birr	5	1.36	98.64
tele Birr	5	1.36	100.00
Total	369	100.00	

Source: Source: Study Survey, 2025

The preceding table shows that the majority of respondents who said they use Tele Birr are 176 (47.7). This suggests that Tele Birr is used by almost 50% of responders or users. Tele Birr service's extensive use indicates that it is vital to improve financial inclusion. Second, 36 (9.76%) of the responders or users remain silent about using mobile money. This implies that they are not familiar with how to use mobile money. According to the analysis, Tele Birr improves financial inclusion because its utilization is higher than others. But, the existence of neutral and less collective service advises that there is room for enhancement of financial inclusion.

Table 22 what issues use in mobile money transactions

what issues use in mobile money transaction	Freq.	Percent	Cum.
Airtime	5	1.36	1.36
Airtime topup	8	2.17	3.52
Airtime topup	23	6.23	9.76
Airtime topup,bill payment and mercha..	6	1.63	11.38
Airtimetopup and trasfers	8	2.17	13.55
Pay bills	14	3.79	17.34
Transfer of money	5	1.36	18.70
buy airtime,send money and pay bill	7	1.90	20.60
cost of service charge	8	2.17	22.76
for financial services	2	0.54	23.31
merchant payment	62	16.80	40.11
neutral	44	11.92	52.03
pay bill	23	6.23	58.27
pay bill and airtime topup	61	16.53	74.80
pay bills	1	0.27	75.07
pay bills and airtime topup	2	0.54	75.61
payment bills	5	1.36	76.96
school fees	64	17.34	94.31
send and receive money	17	4.61	98.92
service charge is not fair	4	1.08	100.00
Total	369	100.00	

Source: Source: Study Survey, 2025

Table 22 shows that the majority of respondents who said the issue they use in mobile money transaction are combination of school fee, merchant payment and airtime top-up 149(40.37). This suggests that the combination of three use for their purpose. Service Fees: The main issue that discourages users from using mobile money services is the perception of unfair service fees (15.43%) and the total cost of these fees (10.56%).Problems with bill payment (10.03%) and top-ups (6.24%) draw attention to obstacles to necessary financial operations.

Table 23 Benefits of Fin-Tech using fin-tech services

benefits of fin-tech services	Freq.	Percent	Cum.
easy to access	1	0.27	0.27
easy to access	1	0.27	0.54
time saving	2	0.54	1.08
Minimizing carrying physical money	18	4.88	5.96
cost saving,time saving and resource ..	43	11.65	17.62
easy and cost effective	5	1.36	18.97
easy to access	3	0.81	19.78
easy to access	3	0.81	20.60
easy to access	1	0.27	20.87
easy to use	75	20.33	41.19
neutral	71	19.24	60.43
save time	80	21.68	82.11
simple	4	1.08	83.20
simple and accessible	31	8.40	91.60
simple and easy	23	6.23	97.83
time saving	6	1.63	99.46
time saving and energy	2	0.54	100.00
Total	369	100.00	

Source: Source: Study Survey, 2025

The preceding table shows that the majority combination save time, easy to use, simple and easy, simple and accessible, cost saving, time saving and resource 243(65.85%). This suggested that 65% of users highly enhance financial inclusion. The remaining 34.15% respondents are mentioning their usage as their perspective that is also enhancing financial inclusion.

4.1.5 Analysis of Interview Questions on Independent and Dependent Variables?

According to the qualitative comprehensive interview with higher official of Tele-Birr, higher official of financial inclusion secretariat office in National Bank of Ethiopia, higher official of insurance supervision directorate in National Bank of Ethiopia, higher official of safaricom Ethiopia PLC (M-PESA) and higher official of Kacha digital financial services S.C., for the first time financial inclusion secretariat office was launched by National Bank of Ethiopia in 2016 and National Bank of Ethiopia has issued two financial inclusion strategies: National Financial Inclusion Strategy I (2016-2020) and National Financial Inclusion Strategy II (2021-2025) respectively.

The responses from the interviewees cooperatively emphasize the leverage potential of Fin-Tech in improving financial inclusion and point of access and interviewees defined fin-tech(financial technology) as the application of technology that improve and automate financial services, serve as a connection between marginalized societies and traditional financial services, is technology to democratize financial services and the innovative application of technology that fills the gaps in financial services. And also interviewees give stress to the use and benefit of Fin-Tech over traditional financial services to the communities or users such as ease of access to credit (enlightening loan availability via mobile phone without physical visit of financial institution), no physically contact banks to send and receive money at any time, inspires economic growth in

financially relegated societies, it permit customers to send money to their savings accounts automatically.

Nevertheless, the interviewees collectively emphasis challenges regarding fin-tech services such as lack of digital literacy specially rural areas, poor network connectivity (inconsistent internet access), and limited availability of services means most financial services centered in urban areas means large portion of rural communities are out of formal financial services, lack of trust on digital saving services(trust issue) and security concerns especially with regard to the possibility of fraud and hacking. The respondents in depth interview clarified that large portion rural communities have not formal financial services furthermore, digital insurance service is not yet started in Ethiopia, there is limited use case of inbound international remittance through mobile money and there is also lack of awareness and understanding about the digital financial services.

Triangulation of qualitative data with quantitative data as in the following ways the quantitative sessions specified that there is lack of awareness on fin-tech services especially inbound international remittance and digital insurance services or collectively both inbound international remittance and digital insurance services are not sufficient, lack of digital literacy especially rural areas, poor network connectivity (inconsistent internet access), and limited availability of services means most financial services centered in urban areas means large portion of rural communities are out of formal financial services and also qualitative data specified that satisfaction with fin-tech services most of the respondents answered satisfied and very satisfied, ease of use with digital products almost all respondents answered ease of use and very easy to use, in terms of efficiency fin-tech is time and cost saving, easy and simple.

In the qualitative section the interviewees mentioned that lack of awareness on fin-tech services, digital insurance service is not yet started in Ethiopia, there is limited inbound international remittance service in Ethiopia and it also specifies benefits fin-tech services such as time and cost saving, easy and simple. Challenges such as security concern, trust issues, poor network connectivity and digital literacy of fin-tech services so findings of qualitative data are align with findings of quantitative data.

CHAPTER FIVE

5. Findings Summary, Conclusions and Recommendations

In sections 5.1 and 5.2, this chapter deals with a summary of the findings and a conclusion. Following the above, in sections 5.3, 5.4, and 5.5 the potential significant recommendations, limitation of the study, and recommendation for additional study is offered.

5.1. Summary Findings

The study highlights that the effects of financial technology (Fin-Tech) services on financial inclusion in Ethiopia. ATM and mobile banking services are the furthestmost prevalent and accepted by users, making important influences to financial inclusion. Many consumers have expressed happiness and ease of use, time saving, cost saving, easy and accessible, simple with digital credit and saving services, which further demonstrate their potential to enhance and improve financial inclusion in Ethiopia. Mobile wallet service lower cash associated transactions, improve financial services access similar digital saving and digital credit, and empower unbanked societies to contribute to financial inclusion. Fin-Tech services is vital to improving financial inclusion in conventionally had limited access to financial services. For example, Tele Birr, CBE Birr, Michu, M-PESA, Kacha and other mobile money systems have made it simpler for particularly urban residents to conduct transactions without a bank account.

Fin-Tech is a tool to converting the financial services by technology to make financial services ease to use and additional available. Platforms like Tele Birr, M-PESA, Michu, Amole, Apollo and other mobile money systems have completely changed the way that transactions are carried out in Ethiopia, where a large number of people lack access to banking services. And interviewee 4 also mentioned Fin-Tech is basically about using technology to democratize financial services. A large portion of the population in Ethiopia has never visited a bank or bank branch for financial services.

Fin-Tech resolutions similar digital mobile wallets and mobile banking service suggestion these users a means to contribute in financial services. Nevertheless, there are difficulties with digital insurance and inward international remittance services, and respondents presented a marked lack of knowledge, understanding or awareness and involvement and financial awareness gaps is one major problem is that borrowers often lack financial literacy, which can make it difficult to understand loan terms and properly manage debt. Furthermore users' serious security concerns about fraud, hacking, and the

dependability of mobile network providers may discourage them from utilizing these services. According to the survey, there is a demographic unfairness, with younger, more educated, and urban people using Fin-Tech services at higher rates.

5.2 Conclusion

Financial technology (Fin-Tech) is a strategic weapon to democratize and revolutionizing the financial industry by using technology to make financial services easier to use and more accessible and enhance and improve financial inclusion in Ethiopia. Accessibility to financial services in Ethiopia is shifting as a result of digital Fin-Tech, specifically mobile wallet services and digital credit services. To understand its full potential, nevertheless, matters including high interest rates, breaches in financial service knowledge, and security distresses need be resolute. And the qualitative interviews highlight Fin-Tech's revolutionary potential in closing financial access gaps, especially for marginalized groups.

However, greater adoption is hindered by problems with network connectivity, security, and a lack of digital literacy. Building trust and promoting wider adoption require a dual focus on improving user experience while maintaining safety and education. Focused educational efforts are necessary to raise financial literacy and optimize the advantages of fin-tech, especially with regard to digital insurance and inbound international remittance services. To foster trust; Fin-Tech businesses should also give top priority to user security and transparency.

5.3 RECOMMENDATIONS

In bright of the findings and conclusions above, the subsequent potential recommendations as being valued to those which are adaptation digital services to enhance financial inclusion in Ethiopia, Fin-Tech for the improve and enhance of the financial inclusion. Moreover to recommendations given phase by phase with the conclusion for every concept here the researcher would like to pressure on those findings which have an adverse impact on financial inclusion. The results of the study indicated that inward international remittance and digital insurance have an adverse and significant effect on financial inclusion. This means by nature inward international remittance and digital insurance have positive effects on financial inclusion but in this study the respondents answered that both inward international remittance and digital insurance are not penetrated in Ethiopia. Inward international remittance via mobile money started in Ethiopia but, regarding financial inclusion perspective it is so limited and digital insurance is not started yet in Ethiopia. These findings pointed out that a strong emphasis must be given on these adversely affected variables. Commercial Banks who use digital products and financial technology (Fin-Tech) companies may adopt following strategies in order to adopt and enhance financial inclusion in Ethiopia.

1. Commercial banks in Ethiopia and Fin-Tech companies individually and collectively launch campaigns for awareness to inform people about the features and advantages of digital insurance and inward international remittance services.
2. NBE in coordination with Ethio-telecom improve network infrastructure to guarantee that everyone has access to Fin-Tech services. NBE, CBs and Fin-Tech company either collectively or alone launch user education campaigns to improve digital literacy, emphasizing the safe and efficient use of Fin-Tech services, especially for rural marginalized groups. NBE, INSA and EFIS collectively should take security measures to increase consumer trust and confidence in digital platforms.
3. Both CBs and fin-tech companies' habit made financial products to promote greater financial inclusion, support the creation of customized financial products that provide to the unique requirements of underserved groups and NBE should take initiatives to enhancement financial literacy in rural areas.
4. Regarding cost issues NBE should check price and fees affordability because users' uncertainties about costs with digital services.

5.3 Limitations of the Study

There are slight limitations uncovered in this research. First, samples were only collected from Addis Ababa (limitation is on the geographical bias). Hence, the results of this study not be generalized and study from other geographical areas of the country. Because large portion of marginalized communities lives in rural areas so, this study cannot reach those areas.

1. Collection of the Sample because the study mainly focuses on urban residents, it not fully replicate practices of rural communities. The outcomes applicability to the entire Ethiopian is limited by this longitudinal inequity.
2. Self-inserted Data: Trusting too considerable on self-inserted data from surveys and interviews questions can lead to partialities similar social desirability partiality, in which respondents give answers they think are more satisfactory rather than ones that actually replicate their practices.
3. Limited Fin-Tech Service Scope: The study fixated on specific on Fin-Tech services, similar digital credit service, digital savings services, mobile banking service, and mobile wallet services.
4. Subjectivity in Qualitative data: Notwithstanding their penetration, the qualitative interviews questions are subjective and could be compressed by personal practices and perspectives.

5.4 Recommendation for Future Research

The researcher has some suggestions that can overwhelm the limitation that the researcher has mentioned. First, researchers should include the wider range of educational qualifications from primary to preparatory school; it also should include illiterate communities in rural areas in short both urban and rural communities out of Addis Ababa.

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	Excellent
10. Do you use how frequently digital saving platform?	1. Daily 2. Weekly 3. Monthly 4. Rarely 5. Never
11. Rate satisfaction through digital savings services (1-5 scale):	1. Very Dissatisfied 2. Dissatisfied 3. Neutral 4. Satisfied 5. Very Satisfied
12. What features you discovery best beneficial in digital savings?	_____
Section 3: Digital Credit	
13. Have you ever taken a digital credit services?	1. Yes 2. No
14. If yes, in what way easy it to access?	1. Very Easy 2. Easy 3. Neutral 4. Difficult 5. Very Difficult
15. Rate awareness of digital credit platform (1-5 scale):	1. Very Poor 2. Poor 3. Average 4. Good 5. Very good 6. Excellent
16. How frequently you use digital credit platform?	1. Daily 2. Weekly 3. Monthly 4. Rarely 5. Never
17. Frequency satisfaction by digital credit platform (1-5 scale)	1. Very Dissatisfied 2. Dissatisfied 3. Neutral 4. Satisfied 5. Very Satisfied
18. What challenges you face whereas accessing digital credit services?	_____
Section 4: Digital Insurance	
19. Do you aware digital insurance platform?	1. Yes 2. No
20. Do you purchase any digital insurance product?	1. Yes 2. No
21. If yes, in what way easy digital product to access?	1. Very Easy 2. Easy 3. Neutral 4. Difficult 5. Very Difficult
22. Rates current awareness level of digital insurance	1. Very Poor 2. Poor 3. Average 4. Good 5. Very good 6. Excellent

platform?	
23. How often do you use digital insurance product?	1. Daily 2. Weekly 3. Monthly 4. Rarely 5. Never
24. Please rate your satisfaction through digital insurance services?	1. Very Dissatisfied 2. Dissatisfied 3. Neutral 4. Satisfied 5. Very Satisfied
25. What several factors affect your decision to buy digital insurance product	_____
Section 5: Inward International Remittance	
26. Are you collected money via digital international remittance services?	1. Yes 2. No
27. If answer yes, in what way easy it to access?	1. Very Easy 2. Easy 3. Neutral 4. Difficult 5. Very Difficult
28. Rating your understanding regarding inward international remittance:	1. Very Poor 2. Poor 3. Average 4. Good 5. Very good 6. Excellent
29. In what frequency do you obtain international payment by digital means?	1. Daily 2. Weekly 3. Monthly 4. Rarely 5. Never
30. Please rate your satisfaction toward digital inward international remittance services:	1. Very Dissatisfied 2. Dissatisfied 3. Neutral 4. Satisfied 5. Very Satisfied
31. What enhancements you would like to observe in digital inward international remittance service	_____
Section 6: Mobile Banking Transactions	
32. Do you use mobile banking service?	1. Yes 2. No
33. If answers yes, what was the level of ease when you wanted to access the service?	1. Very Easy 2. Easy 3. Neutral 4. Difficult 5. Very Difficult
34. Please rating awareness of mobile banking product:	1. Very Poor 2. Poor 3. Average 4. Good 5. Very good 6. Excellent
35. How often do you conduct transactions mobile	1. Daily 2. Weekly 3. Monthly 4. Rarely 5. Never

banking?	
36. Can you rate satisfaction level with mobile banking product?	1. Very Dissatisfied 2. Dissatisfied 3. Neutral 4. Satisfied 5. Very Satisfied
37. Please identify which features you hope to see implemented in mobile banking service?	
Section 7: ATM Services	
38. Do you use ATM services?	1. Yes 2. No
39. If answer yes above question, how easy it to access?	1. Easy 2. Neutral 3. Difficult 4. Very Difficult
40. Please rate your awareness of ATM services	1. Very Poor 2. Poor 3. Average 4. Good 5. Very good 6. Excellent
41. You in what way frequently ATM service?	1. Daily 2. Weekly 3. Monthly 4. Rarely 5. Never
42. Please rate your satisfaction level via ATM services:	1. Very Dissatisfied 2. Dissatisfied 3. Neutral 4. Satisfied 5. Very Satisfied
43. What problems did you experience while making transactions at ATMs?	_____
Section 8: mobile money	
44. What issues have you use mobile money transaction?	
45. Do you use mobile money service?	1. Yes 2. No
46. If you answer the above question yes, in what way easy it to accessing?	1. Very Easy 2. Easy 3. Neutral 4. Difficult 5. Very Difficult

47. Rating your level of awareness on mobile wallet platform:	1. Very Poor 2. Poor 3. Average 4. Good 5. Very good 6. Excellent
48. If you yes witch mobile money service do you use.....	
49. How frequently you accessing mobile money service?	1. Daily 2. Weekly 3. Monthly 4. Rarely 5. Never
50. Please rate your entire experience with mobile money service.	1. Very Dissatisfied 2. Dissatisfied 3. Neutral 4. Satisfied 5. Very Satisfied
Section 9: General Perception of Fin-tech and Financial Inclusion	
51. Does financial technology improve your practice of financial inclusion?	1. Strongly Agree 2. Agree 3. Neutral 4. Disagree 5. Strongly Disagree
52. Describe which actual advantages you obtained from your using of fin-tech services.	
53. Describe the problems that occur when you use financial technology services.	
54. Any additional comment on the effects of fin-tech on financial inclusion	

Appendix II (Interview Questions)

Title: Effects of financial technology on Financial Inclusion in Ethiopia in case selected commercial banks and fin-tech companies

Purpose of the Study:

Objectives of the Study: to access the effects of Fin-Tech services on financial inclusion in Ethiopia.

Responsibilities and roles	
Indicate your level in your organization	1. Executive 2. Management 3. Staff
Experience both Fin-Tech and Financial inclusion practices	1. Less than 1 year 2. 1-3 years 3. 4-5 years 4. 6-10 years 5. Above 10 years
A. Understanding Fin-Tech	
1. Please explain your definition of Fin-Tech on financial services together with financial inclusion for all users.	
2. Please share the level your personal experiences on financial technology?	
B. Digital Insurance Services	
1. How digital insurance delivers better coverage access to underserved groups of people?	
2. The crucial features of digital insurance that improve your practice associated to conventional insurance?	

C. Inward International Remittance via Mobile Money	
1. In what way mobile wallet simplified inward international remittances for families and societies?	
2. What influence does remittance via mobile wallet services on the costs linked with conventional remittance services?	
3. What type of response you obtain from customers concerning the convenience and reliability of mobile wallet remittance services?	
D. Digital Credit Services	
1. in what technique financial technology leveraged accessibility to digital credit services for individual and business customers?	
2. Approaches financial technology usage to assess and differ from old-style approaches	
3. What are the understandings of borrowers consuming digital platforms?	
E. Digital Savings Services	
1. Unique features of digital saving tools drive customers toward digital saving when compared to more conventional methods?	
2. The most useful features according to users exist within digital savings platforms.	
3. What are barriers preventing customers from using digital savings services?	
F. Mobile Money Services	
1. How well do different demographic populations in your area accept mobile wallet usage?	
2. Mobile wallets provide benefits which foster financial inclusion what are those benefits?	
3. Mobile wallet technology users list their main security concerns to the system?	