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Digital finance in Ethiopia: practice, challenges and prospects
Empirical evidence from Ethiopia banking industry

“A thesis submitted in partial fulfillment of the requirements for the masters of accounting and finance degree.”

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Declaration

I hereby acknowledge that my work, entitled "Digital Finance in Ethiopia: Practice, Challenges, and Prospect," is the product of my own research and effort. While I received advice and guidance from the advisor, Laxmikantham Padakanti (PhD), I developed this work independently. I have appropriately identified and cited all sources of information used for this study. Furthermore, I affirm that this work has not been submitted, in whole or in part, to any other institution of higher learning for the purpose of obtaining a degree.

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"This serves as official confirmation that Trusew Alene's thesis, titled 'Digital Finance in Ethiopia: Practice, Challenges, and Prospect,' was produced under the careful guidance of Laxmikantham Padakanti (Ph.D.) and has been submitted as part of the requirements for the degree of Master of Accounting and Finance. The thesis fully aligns with university regulations and upholds recognized benchmarks for ingenuity and excellence."

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List of Acronyms

ABC	Africa Business Communities
ABN	Africa Banking Network
ADBG	African Development Bank Group.
ATM	Automatic Teller Machine
CBE	Commercial Bank of Ethiopia
DFS	Digital Financing System
E- Banking	Electron Banking
EBA	Ethiopian Bankers Association
EFII	Ethiopia Financial Inclusion Insights
Fintech	Financial Technology
ICT	Information and Communication Technology
IFC	International Finance Corporation.
IMF	International Monetary Fund
MCB	Multi- Channel Banking
MFED	Ministry of Finance and Economic Development
MFIs	Microfinance institution
NBE	National Bank of Ethiopia
NDPS	National Digital Payment Strategy
POS	Point Of Sale
SMS	Short Message of Service
UNCDF	United Nations Capital Development Fund
WBG	World Bank Group
WWW	World Wide Web

Abstract

The main objective of this study is to examine how used digital finance in Ethiopia. The specific objectives are to examine different digital finance services available in Ethiopia and identify the challenges faced by commercial banks and customers in digital finance in Ethiopia. The study used descriptive method of study based on quantitative and qualitative approach. The population of interest in this study comprised 24 commercial banks operating in Ethiopia out of those eleven commercial banks are selected using a purposive sampling method. The study used primary data. The study highlights several challenges that impede the development of digital financial services in Ethiopia. These include a gap in awareness and knowledge among customers and government agencies such as the National Bank of Ethiopia (NBE), network fragility, frequent power interruptions, security concerns, and poverty. In light of these challenges, the study recommends that the Ethiopian government focus on improving network efficiency, raising customer awareness, and implementing adequate security measures to expand digital financial services.

Key word: Digital finance; banking industry; practice; challenge and prospe

CHAPTER ONE

1. Introduction

1.1 Background of the study

Digital finance has significantly transformed the way financial services are delivered, due to the impact of new technologies on the financial sector. This has resulted in improved accessibility, affordability, and ease-of-use for traditional financial services provided through digital channels such as computers, tablets, and mobile devices (Zaki, 2019). The advent of digital banking has extended financial services to underprivileged communities residing in areas without adequate physical infrastructure. Digital banking has opened up new possibilities for providing financial inclusion to unbanked populations, particularly in underdeveloped countries (Kaicker et al., 2022).

The evolution of digital banking dates back to 1985 when the Scottish Bank introduced an electronic home banking service for its customers. Subsequently, the introduction of the first banking website 1994 by Stanford Credit Union signaled a significant milestone in the development of digital banking. As highlighted by Kunytska-Iliash, M. V. (2022). These developments illustrate how digital finance has revolutionized banking and financial services, making them more efficient and accessible than ever before.

In recent years, banks and financial organizations worldwide have embraced digital finance with open arms. As technology continues to advance, the traditional relationship between customers and financial institutions has evolved significantly. Digital financial services encompass any financial transaction conducted through a digital device, and in many cases are now offered directly by banks and similar entities (Gomber et al, 2018).

With the advent of new technologies, day-to-day banking tasks have become increasingly streamlined. For example, Getahun, A. A. (2020), have shown that the use of ATMs has made it much simpler for customers to complete tasks that were once undertaken by bank cashiers, at a lower cost. Additionally, the development of online banking systems has empowered customers to conduct their financial affairs remotely in an unprecedented fashion.

The emergence of Digital Financial Systems has expedited progress towards achieving economic growth and development. By streamlining traditional financial services, such as reducing bank queues and paperwork, and minimizing the need for physical outlets, digital finance has the potential to significantly lower costs for banks (Jiang Xiuxiu et al., 2021). Numerous studies suggest that digital finance undoubtedly plays a pivotal role in driving economic growth both directly and indirectly.

Despite the notable progress made in digital finance services, there are still a number of challenges that have hindered its widespread adoption in Ethiopia. The foremost challenge is frequent network and internet disruptions, coupled with power outages. Additionally, users often lack knowledge about avenues through which digital finance services can be accessed, while the broken and unavailability of ATMs and POS machines further complicates matters.

Although digital financial services were initially introduced in Ethiopia in 2001 through the Commercial Bank of Ethiopia's deployment of ATMs, the growth of this sector has been slow. However, some private banks have taken steps to incorporate new technologies into their operations. For example, Dashen Bank became the first among private banks in Ethiopia to offer e-commerce and mobile merchant transactions. In a similar vein, Zemen Bank made a significant contribution to the banking industry in Ethiopia by introducing fully IT-supported multi-channel banking services that span internet banking, ATM usage, SMS banking, and banking via a call center. These services were launched as early as 2009, and represent a noteworthy milestone in Ethiopia's digital finance landscape (Alemayehu 2011).

In recent years, Banks in Ethiopia are increasingly on digital financial services such as mobile, internet, card, and agent banking. The incorporation of contemporary technologies such as Eth Switch and Telebirr into their operations has allowed many banks to expand their services to a wider audience. The Ethiopian government has also invested heavily in technology, enhancing infrastructure and introducing electronic information-based services. Notably, the National Bank of Ethiopia (NBE), EthioTelecom, and the Ethiopian Ministry of Innovation and Technology they are playing in spearheading these advancements.

1.2 Statement of the problem

The financial landscape of Ethiopia is experiencing a paradigm shift, driven by technological advancements and an increasing demand for financial inclusion. This transformative shift is evidenced by recent developments such as the collaboration between The National Bank of Ethiopia and Ethio Telecom, aimed at enhancing financial inclusion and network resiliency in the country's banking sector (Adugna, 2021). These changes are in accordance with the objectives of the Digital Ethiopia 2025 Strategy, which aims to reduce poverty while boosting access to and use of digital financial services.

Financial institutions in Ethiopia are investing in state-of-the-art technological systems to enhance their operational capabilities and market competitiveness. Such efforts are driven by increased efficiency, greater convenience, and enhanced security, with a focus on driving sustainable growth in a digital-first world characterized by fierce competition for market share and profitability (Ethiopian Bankers Association, 2022).

Despite positive progress, cash transactions remain the dominant mode of financial exchange in Ethiopia. Even big stores and hotels have seen cash used mostly for money transfers, customers visit the bank to pay various fees and wait in line to withdraw money. To tackle this trend, a comprehensive study has been conducted to identify key challenges and opportunities that can inform future efforts to promote digital finance and payment systems. For instance, by Birhanu B (2015) on e-banking services adoption, Teshome (2016) on mobile banking practices, the findings of his study: cash withdrawals, and fund transfers within the same bank, are some of the widely applicable services of mobile banking by most customers. Lack of skilled manpower, chances of risk, Lack of suitable legal and regulatory framework, absence of financial networks that link different banks, low level of internet penetration and poorly developed telecommunication infrastructure, high cost of internet, and security concerns are found to be among the major challenges for the improvement of mobile banking service. And studies by Bethelham (2018) on different aspects of digital banking performance and practices in Ethiopia, and the finding of her study, increasing the number of ATMs variable has a negative and significant impact on bank ROA, increasing the number of POS has negative and insignificant impact on bank ROA, increasing number of mobile banking users variable has positive and significant impact on bank ROA, & To fully realize the potential of digital finance for economic

growth and development, efforts toward its implementation must successfully overcome challenges (Adugna, 2021).

From the above discussions, it is evident that not much or not research on Ethiopian digital financial services, and that does not identify the problem of why we didn't enter into digitalization. Therefore, the purpose of this study is to look into how digital finance is currently used and practiced in Ethiopia, to identify the challenge that customers and service providers face when implementing digital finance, and to investigate potential growth and advancement avenues for the sector. By proactively investigating this issue, the study seeks to contribute to ongoing efforts to modernize and transform Ethiopia's financial ecosystem, with the ultimate goal of fostering greater financial inclusion and economic prosperity for all.

1.2.1 Research Questions

In response to the issues presented in this study, the researcher has developed several key research questions. These are aimed at providing comprehensive insight into the current state of digital finance in Ethiopia, with a particular focus on adoption and impediments to growth and use. The primary research question is as follows:

To what extent is digital finance being utilized within Ethiopia?

Additionally, the following supporting questions have been identified as crucial aspects of the investigation:

1. What is the current practice and availability of digital financial service in Ethiopia?
2. What are the basic challenges of digital finance?
3. What are the potential prospects for growth and advancement in the field of digital finance in Ethiopia, and what steps can be taken to realize them?

By addressing these questions, this study aims to comprehensively understand the current status of digital finance in Ethiopia. It aims to identify key challenge preventing its expansion and explore possible pathways to enhance growth and development in this significant sector.

1.3 Objective of the study

This study is designed to achieve both general and specific objectives, as outlined below:

1.3.1 General Objective:

Examine how used digital financial services in Ethiopia.

1.3.2 Specific Objectives:

To achieve this overarching goal, the study has identified the following specific objectives:

1. To describe and differentiate the various digital finance services available and in practice within Ethiopia.
2. To investigate and analyze the major challenges faced by service providers within the country when adopting and implementing digital financial technologies.
3. To assess the major challenges faced by Ethiopian bank customers when utilizing digital finance services.

By successfully addressing these specific objectives, this study aims to provide important insights into the current state of digital finance within the Ethiopian banking industry, offer potential solutions to key challenges impeding its success, and explore possible pathways for future development and growth with an emphasis on maximizing benefits to all stakeholders.

1.4 Significant of the study

Despite growing demand for digital finance services in Ethiopia, the sector remains in its early stages with challenges related to awareness, adoption, and government policy yet to be fully analyzed. To address this gap, the present study offers a comprehensive assessment of the practice, challenges, and prospects of digital finance services in Ethiopia. The research was conducted primarily for academic purposes in fulfillment of the requirements for a Master's degree in Accounting and Finance. Moreover, this study offers valuable data and insights that can be used as inputs for further studies on the challenges and prospects of digital finance in Ethiopia's banking system. Service providers can use its recommendations to develop strategies that increase customer awareness, establish trust in digital transactions, and maximize opportunities for economic growth. Through these efforts, this study serves as a valuable starting point for all those seeking to understand the realities, challenges, and potential of digital finance

in Ethiopia. The researcher also benefitted from the experience, gaining valuable insights and knowledge that could prove beneficial in future employment or research endeavors.

1.5 Scope of the study

This study aims to provide a comprehensive overview of the condition of digital finance in Ethiopia nowadays, with a specific focus on the digital finance department of each bank. Due to logistical challenges, the study was limited to eleven commercial banks that hold National Bank of Ethiopia licenses and operate within the country. The selected banks were categorized based on their level of technological advancement in implementing digital finance, with the aim of providing valuable insights for service providers to develop strategies that increase customer awareness, establish trust in digital transactions, and maximize opportunities for economic growth. The commercial banks included in this study were Commercial Bank of Ethiopia, Bank of Abyssinia, Awash International Bank, Dashen Bank, Zemen Bank, Addis International Bank, United Bank, Wegagen Bank, Nib Bank, Amahara Bank and Ahadu Bank.

The respondents in this study were randomly selected bank customers due to the nature of the research and the difficulty in finding customers that would meet the criteria for random selection. Key informant interviews were also conducted with digital finance department managers to gather in-depth perspectives and insights that may not have been accessible through customer surveys alone. Overall, the study offers practical recommendations for service providers looking to overcome adoption barriers and leverage digital financial services for economic development in Ethiopia.

1.6 Organization of the study

This research comprises five comprehensive chapters that aim to provide a detailed investigation of the effects of digital finance adoption in the Ethiopian banking industry. The study's first chapter offers an overview of the key components, including the study's background, issue statement, and objectives, as well as its importance, scope, and restrictions. Chapter two presents a comprehensive review of related literature surrounding digital finance adoption in Ethiopia's banking industry, exploring its historical evolution, current trends, and best practices. Chapter three provides a detailed analysis of the research design and methodology used for the study,

including data sources and methods of data collection, sampling techniques applied, and measurement and analysis components. The chapter also centers on the process of data analysis interpretation. The findings of this research are presented in chapter four, which includes a detailed analysis and interpretation of data collected through varied research methods. The final chapter, chapter five, offers conclusive remarks based on research results, culminating in recommendations for policymakers and practitioners alike. Overall, this research adds to the growing body of knowledge regarding digital finance adoption within Ethiopia's banking sector and provides valuable insights for stakeholders aimed at creating a more efficient and inclusive financial ecosystem.

1.7 limitation of the study

The researcher encountered some limitations when studying the state of digital finance in Ethiopia, as it is a relatively new issue in the country. These limitations included a lack of pertinent research on the topic, including journals, publications, manuals, and documentation about digital financing initiatives. Additionally, due to time and financial constraints, the study did not include input from service users. The researcher also faced challenges related to respondents' reluctance and lack of attention to detail

CHAPTER TWO

2. Literature Review

This chapter offers a thorough review of related literature and empirical data. It delves into the theoretical background of digital finance and outlines the processes involved in implementing it in accordance with financial institution standards. Additionally, it examines the actual challenges and prospects of this sector by drawing upon the experiences of different countries.

2.1 Theoretical literature

Theoretical literature plays a crucial role in selecting an appropriate research design, clarifying variables of investigation, and providing a broad framework for data interpretation.

2.1.1 Definition of digital finance

Digital finance refers to the use of digital technologies to facilitate financial transactions and services. It encompasses a wide range of activities, including mobile and online banking, e-wallets, peer-to-peer lending, crowd funding, and crypto currencies. The delivery of services over the Internet differs significantly from traditional channels such as branch networks, telephone banking, and ATMs. Consequently, it raises new types of challenges that require innovative solutions, as highlighted by Shah & Clarke (2009).

Digital finance is becoming increasingly relevant, particularly in emerging markets where traditional banking services may be inaccessible or unreliable. As noted by the World Bank's Global Findex Report 2017 the use of mobile money has led to significant advancements in financial inclusion, especially in Sub-Saharan Africa and South Asia. For banking organizations, digital finance presents new opportunities to expand their reach and services to customers while reducing operational costs and enhancing organizational efficiency. However, it also presents risks related to cyber security threats, data privacy concerns, and regulatory issues that must be managed effectively to ensure its success.

2.2 The available digital finance services

The global financial services sector has undergone a substantial change as a result of digital finance. Digital finance has revolutionized global traditional banking infrastructure by offering creative and practical ways to obtain financial services and is currently practiced in Ethiopia as well as all of Africa

2.2.1 The availability of digital finance in the world

Digital finance refers to the use of digital technologies, such as smartphones and the internet, to carry out financial transactions. This can include activities such as accessing financial services online, using mobile money services, or making payments through digital wallets. Digital finance has brought about significant changes in the world of finance, making financial services more accessible, reducing transaction costs, improving security, and enabling greater financial inclusion (Morabito, V 2017).

The availability of digital finance has grown rapidly in recent years. In 2021, there are more than 300 mobile money services available in over 100 countries globally. In addition, digital wallet services like PayPal, Venmo, and WeChat Pay have become increasingly popular, with an estimated 2.1 billion people worldwide using digital wallets in 2019 Statista Research Department. A study by McKinsey & Company found that digital banking adoption rates in the US increased from 13% to 27% between 2015 and 2019 (McKinsey & Company 2020). Moreover, cryptocurrencies like Bitcoin and Ethereum have gained significant attention and usage as digital assets for transactions (Sihombing, S., Nasution, M. R., & Sadalia, I. 2021).

The availability and accessibility of digital finance have enabled many people around the world to make a first-time use of financial services or in a more affordable way. This is a critical step towards promoting financial inclusion and reducing poverty since access to financial services can help people save money, invest for the future, and protect themselves against financial shocks. As such, there is a growing need to continue expanding digital finance services both globally and within developing economies to enhance economic development and financial stability (IMF 2018).

2.2.2 The availability of digital finance in African

Digital finance refers to the use of digital technology to enable financial transactions and services. This can include mobile money services, digital wallets, online banking, and other forms of electronic payment systems (Ozili, P. K. 2018).

In Africa, digital finance has been rapidly growing in popularity and availability in recent years. According to a report by the United Nations Capital Development Fund, the number of mobile money providers in Africa increased from 4 to 40 between 2010 and 2018, with over 50% of adults in many countries using mobile money services. Additionally, the report highlights the potential for digital finance to increase financial inclusion, provide access to credit and other financial services, and boost economic growth and development (UNCDF 2019).

Some notable examples of digital finance in Africa include M-Pesa, a mobile money service launched in Kenya in 2007, which now has over 30 million users across several African countries. Other mobile money services, such as Airtel Money and Orange Money, have also gained popularity in various African markets. There are also efforts underway to promote digital finance on a broader scale, such as the Digital Financial Services Africa initiative (World Bank Group 2020).

2.2.3 The availability of digital finance in Ethiopia

The National Bank of Ethiopia has taken steps to incorporate new technologies into its operations, private banks have partnered with fintech firms to expand mobile banking services, and projects to improve the nation's digital infrastructure have all been undertaken in an effort to improve the situation. In order to encourage increased adoption and use of digital banking services, there are also continuous efforts to raise public awareness and enhance financial literacy (Tadesse, S, 2019).

In Ethiopia, the digital finance industry is still in its early stages, but it has recently seen efforts to promote growth and adoption. The National Bank of Ethiopia (NBE) approved new regulations in 2019 allowing non-bank entities to offer mobile and electronic financial services, an action that is expected to bring about increased competition and innovation in the sector. Currently, there are several mobile money services available in Ethiopia, including M-Birr, Hello Cash, and Amole (Bhattacharjee & Raja, 2021).

However, compared to other countries in the region, the adoption of digital finance in Ethiopia remains relatively low. A survey conducted by the Ethiopia Financial Inclusion Insights (FII) program in 2020 revealed that only 10% of Ethiopian adults reported using mobile money services, compared to an average of 35% in Sub-Saharan Africa as a whole (EFII, 2020).

However, the potential advantages of digital banking for enhancing financial inclusion and encouraging economic development in Ethiopia are becoming more widely recognized. The "Ethiopian Digital Transformation Strategy," a project to use digital technology to increase access to financial services and other crucial areas like healthcare and education, was introduced by the Ethiopian government in 2020.

2.2.3.1 Mobile money service

Mobile money has been identified as a promising instrument in Ethiopia for enhancing financial inclusion and enabling broader access to financial services, especially in rural areas where traditional banking services may be harder to obtain (Gebremedhin, B.; Berhe, D. M. 2019).

Ethiopia has several mobile money service providers that are transforming the financial sector. The Commercial Bank of Ethiopia launched CBE Birr in 2017, which has become one of the largest mobile money services in Africa with over 6 million registered users (Live, M. W. 2017). Users can perform various transactions such as sending money, paying bills, and making purchases at participating merchants. Amole, provided by Dashen Bank, also enables users to carry out multiple transactions such as money transfer, bill payment, airtime recharge, and online shopping. As of 2020, Amole has more than 4 million active users, according to a report by McKinsey & Company. Another widely used Mobile Money service in Ethiopia is HelloCash, provided by Cooperative Bank of Oromia. Users can send and receive money, top up airtime, and pay bills through this platform. As of 2021, HelloCash has over 4 million registered users.

In addition to these Mobile Money services, there are other platforms available for customers to access financial services. M-Birr, launched in 2013 by MOSS ICT, reportedly has more than one million active customers and enables various mobile transactions such as buying goods and services, transferring funds, and paying bills. TeleBirr is a mobile payment and digital wallet service by Ethio Telecom exclusively available in Ethiopia. The service offers savings, loan services and can be linked to bank accounts. However, the industry is still evolving, and it remains to be seen how quickly it can develop without significant international engagement and

investment. Finally, Awash International Bank S.C provides Awash Mobile, a secure banking application that enables users to access their accounts and perform financial transactions from anywhere at any time.

According to a report by the Ethiopian Ministry of Finance and Economic Development, the uptake of mobile financial services in Ethiopia has been increasing rapidly in recent years, with mobile money accounts growing from around 900,000 in 2016 to over 20 million in 2021. The report also notes that while the use of mobile money was initially concentrated in urban areas, it is now spreading to rural areas as well (MFED 2021).

Overall, mobile money is seen as a promising tool for advancing financial inclusion and promoting economic growth in Ethiopia. However, challenges remain, including limited infrastructure and low levels of digital literacy among the population. Additionally, the telecommunications sector is currently dominated by a single state-owned company, which may limit competition and innovation in the sector.

2.2.3.2 Internet /online/ Banking

Customers of banks and other financial organizations can undertake a number of financial activities through the institution's website using online banking, commonly referred to as Internet banking or home banking. Online banking's goal is to give users access to financial services that they can utilize in addition to or in substitute of traditional branch banking. Online banking platforms typically connect to or are a part of the basic banking platform used by banks (Investopedia 2021).

In recent years, online banking has become increasingly popular in Ethiopia, with various banks offering this service to their clients. This allows customers to easily access their accounts, transfer funds, pay bills, and manage other transactions directly from their homes or offices. Several banks in Ethiopia offer online banking services (EBA 2020)

Ethiopian banks have increasingly turned to online and digital banking services, with several banks offering internet banking options. Commercial Bank of Ethiopia (CBE) launched its internet banking service in 2012, offering both personal and business online banking options. Customers can view their account balances, transaction history, transfer money, and set up standing orders at any time. United Bank and Awash Bank followed suit, launching their internet

banking services in 2013 and 2016 respectively. Wegagen Bank and Dashen Bank later joined the trend, offering online banking services in 2017 and 2018 respectively. Abyssinia Bank's internet banking service allows customers to perform various banking transactions online, such as account transfers, bill payments, and account inquiries.

These digital services have made banking more convenient for customers, allowing them to conduct transactions from the comfort of their homes or offices. With the ongoing COVID-19 pandemic, these services have become even more essential as customers avoid public spaces (Dibaba, A.W. & Guangul, F.B 2021). However, ensuring the security of online transactions and customer data is essential for maintaining trust in digital banking services. As more banks offer these services, competition to improve the quality and features of internet banking will likely increase in Ethiopia.

In addition, some international banks such as Standard Chartered and Citibank offer their customers online banking services in Ethiopia (Financial Times 2021),

2.2.3.3. Card banking

In the Ethiopian context, card banking is still a relatively new concept and is not as widely used as in some other countries except ATM card. However, it is gaining in popularity as more financial institutions begin to offer card-based payment systems and more merchants adopt card payment technologies. Card banking can be viewed as a type of digital finance in Ethiopia even though it is not yet as developed as mobile money services like M-Birr or HelloCash because it allows for electronic transactions and lessens the need for cash payments. Card banking and other digital forms of finance should also continue to develop and grow in Ethiopia in the future due to the introduction of new technology and the rise in digital literacy throughout the nation (Business Communities in Africa 2020),

A bank card, also known as an ATM card, is provided by banks to their account holders for withdrawing money from a depository account through a cash machine. The credit card is a facility that banks offer to their customers allowing them to borrow money up to a pre-approved credit limit. And ET switches to facilitate electronic transactions, including mobile, card, and online payments, between different banks and other financial institutions in the country.

1 Automated teller machine (ATM) card

An increasingly popular financial technology is the automatic teller machine (ATM), which allows customers to perform basic banking functions without the assistance of tellers. With an ATM, a financial institution's customers can conduct a range of financial transactions, including cash withdrawals, deposits, funds transfers, balance inquiries, and account information requests, around the clock without requiring direct interaction with bank personnel. Julia (2020) notes that this technology has revolutionized the banking industry by improving customer convenience and accessibility while reducing transaction costs for both banks and their clients.

The Commercial Bank of Ethiopia (CBE) was the first bank to introduce ATM services in the country in 2001. An ATM is an electronic device that enables financial institution customers to perform various transactions, including withdrawals, deposits, transfers, and balance inquiries, without having to speak directly with bank personnel. NBE (2020), notes that this service has revolutionized banking by offering greater convenience and accessibility to people all over Ethiopia.

2. Debit and Credit Card

Debit and credit cards are commonly used in Ethiopia for conducting financial transactions and accessing various services. A debit card is linked to an individual's bank account, enabling them to withdraw cash, make payments, and transfer funds. Meanwhile, a credit card is a form of borrowing that allows individuals to draw funds up to a predetermined limit and repay the balance over time with interest. According to Yohannes Tilahun (2016), these cards have become essential tools for accessing financial services in Ethiopia and have enabled greater financial inclusion for many people.

However, despite their growing popularity, there are still some challenges facing the use of debit and credit cards in Ethiopia. One of these is the limited penetration of point-of-sale machines (POS), which are the devices that allow individuals to swipe their cards at merchants' terminals. Another challenge is that many people in Ethiopia still have low levels of financial literacy, which can lead to misunderstandings about the proper use of credit and accrual of debt (Biruk, S.A. 2020)

Despite these challenges, both credit and debit cards are becoming more widely used in Ethiopia as the country continues its push towards digitization and modernization of its financial sector. In fact, various financial institutions in Ethiopia, such as Dashen Bank, Awash Bank and United Bank offer different types of debit or credit cards with various features such as international payment, cashback, loyalty points among others.

3. ET switch

On April 20, 2016, Ethiopia's long-awaited national switch system, ET switch S.C., officially launched its operations. Depositors from any Ethiopian bank can now withdraw cash from ATMs operated by any other bank, regardless of where they hold their accounts. Ethswitch is jointly owned by all Ethiopian banks and was primarily established to provide affordable, user-friendly, safe, and effective digital payment infrastructure services to retail payment service providers and end-users in Ethiopia. Ethswitch has deployed state-of-the-art technology alongside highly skilled and motivated professionals to achieve this goal. Interoperability is a key feature of Eth switch, allowing transfers from bank accounts to wallets, from wallets to wallets, and from wallets to bank accounts (Dinku, A.A., & Pickens, M. 2016)

The digital banking interoperability has significantly modernized and integrated Ethiopia's payment systems. This system allows financial institutions to utilize Eth switch as a means of better serving their customers and leveraging their existing technologies. As stated by Yilebes Addis (2021), this development prompts collaboration and fosters an environment that allows digital finance services to expand effectively in the country. Despite notable successes in expanding digital finance services, such as mobile money and online banking, limited infrastructure and low digital literacy remain significant obstacles to widespread adoption. Additionally, low levels of financial literacy and limited point-of-sale (POS) penetration represent further challenges to the implementation of e-banking. Investment in digital infrastructure and expanded training programs are necessary to address these issues and improve access to digital financial services.

2.2.3.4 Agent banking

Agent banking is a digital financial service that can improve access to formal financial products for communities in underserved areas of Ethiopia. This service utilizes mobile phones, point-of-sale terminals, and Internet banking through retail agents who act as liaisons between customers and financial institutions. Banking agents are situated in diverse retail establishments such as lottery outlets, pharmacies, post offices, supermarkets, and convenience stores, offering convenient access to financial services for customers who lack easy access to traditional banks. Girma Tlahun (2017) argues that agent banking has transformative potential for Ethiopian banking, as it can offer affordable and accessible financial services to all population segments, fostering economic development.

Agent banking has potential to enhance financial inclusion by expanding access to previously underserved groups in addition to providing convenience for customers. It also offers a cost-effective way of reducing operating expenses through existing retail channels. However, low digital literacy levels and infrastructure gaps in some areas pose challenges to widespread implementation of agent banking in Ethiopia (Dedewo, T. A. 2018).

It also highlights how this form of digital banking enhances financial inclusion by extending banking services to previously unbanked areas. However, it notes that while agent banking is a crucial enabler in the advancement of digital finance services in Ethiopia, it's not the only form of digital banking available, as there are other digital banking options such as online and mobile banking (ADB 2020).

Agent banking is a relatively new banking method that has gained popularity in recent years, particularly in developing countries. It involves the use of third-party agents who act as intermediaries between customers and financial institutions, providing basic financial services on behalf of the bank. In Ethiopia, customers can dial *211# to access their bank accounts and use a range of services, including bill payment, account balances checking, cash deposit and withdrawal, mini statements, e-wallet operations, government benefits receipt, and direct deposits from employers (World Bank. 2020)

2.3 Practice of digital Finance in National Bank of Ethiopia

Ethiopia began its transition to digital finance in 2001 with the installation of ATMs by the Commercial Bank of Ethiopia. However, progress was slow until recent years. In 2018, a new national payment system framework was introduced to create a more efficient payment system and increase financial inclusion. The government also launched a new currency with enhanced security features and introduced electronic payment systems for salaries and government transactions. Mobile network operators such as Ethio Telecom and MTN Group began offering mobile money services in 2019. In 2020, draft regulations for digital financial services were released, focusing on customer protection and risk management. Ethiopia's National Digital Payment Strategy was released in March 2021, aiming to develop a dependable and inclusive infrastructure for digital finance. In April 2021, Safaricom M-Pesa Mobile Financial Service Plc became the first foreign company to receive a mobile money service license in Ethiopia. Despite low adoption rates, there are promising signs of progress, including new regulations and infrastructure, collaboration between public and private sectors, and foreign entrants into the market (FDRE 2021).

The National Digital Payment Strategy 2021-2024 represents a crucial milestone towards the development of a successful digital finance landscape in Ethiopia. As previously mentioned the strategy is recognition of the potential of international fintech firms and increased collaboration between public and private sector actors. To ensure a strong digital finance ecosystem, the four strategic pillars - dependable and interoperable infrastructure, championing adoption, strong regulatory framework, and fostering an environment for innovation are key. The National Digital Payment Strategy 2021-2024 represents a key step in the country's transition to digital finance, which will continue to shape Ethiopia's economy and society in the years to come (Kebede, Kenesa, Fisseha Dejene Yadete, and Shashi Kant, 2023).

The Digital Ethiopia 2025 Strategy is a bold and ambitious plan that seeks to ensure the participation of all Ethiopians in the digital economy. The success of the Ethiopian Digital Transformation Strategy requires collaboration between government agencies, the private sector, and the people. Recent developments, such as the granting of a mobile money service license to Safaricom M-Pesa, signify progress towards expanding digital finance services in Ethiopia. With

more telecom providers expected to follow suit, increased competition will benefit both banks and customers with better services and more choice

To ensure the success of the Digital Ethiopia 2025 Strategy, it is necessary to prioritize the development of critical infrastructure that will support digital services. This infrastructure includes reliable connectivity, secure payment systems, and effective data protection measures. Additionally, increased investment in digital skills training and education will be necessary to ensure that all Ethiopians have the knowledge and skills required to participate in the digital economy.

In conclusion, achieving the goals of the Digital Ethiopia 2025 Strategy will require a collaborative effort from all stakeholders. As more digital finance services become available, Ethiopian citizens will have greater access to financial services and improved economic opportunities.

2.4 Customer challenges while implementing digital finance

In Ethiopia, there are several challenges that customers may face when it comes to adopting digital finance. For instance, a study by Cenfri revealed that a significant majority of Ethiopian customers have low digital literacy skills which can affect their ability to use and navigate digital finance services. Cenfri. (2020). additionally, there may be limited infrastructure and access to electricity and internet connectivity in certain areas of the country which can pose a challenge for customers. Moreover, financial illiteracy is another issue as many Ethiopians have limited knowledge about financial services, including how to effectively use digital finance platforms. Finally, some people express skepticism about the security of digital finance, which may lead to a lack of trust and reluctance to adopt these services. These challenges suggest that there are several factors needing to be addressed before the full potential of digital finance can be realized in Ethiopia (Berhanu Lakew, T., & Azadi, H. 2020).

A number of parties have taken action to broaden access to digital banking services in order to address these challenges. For instance, to promote interoperability and access to financial services, the nationwide Bank of Ethiopia has introduced ET Switch S.C., a nationwide switch system. To encourage more people to use digital banking services, numerous organizations are now offering financial education and training in digital skills (L. Grzybowski 2022).

2.5 Challenges of service provider when implementing digital finance

When implementing digital finance services in Ethiopia, service providers face a number of challenges that may impact their ability to reach customers and scale their operations. These challenges include:

The development of digital finance services in Ethiopia faces several challenges. Firstly, limited physical infrastructure such as electricity and internet connectivity hinders the adoption of digital finance services in many parts of the country. Agent networks are limited due to factors such as limited customer demand and high operational costs, despite the importance of agent banking in reaching unbanked populations. Service providers also struggle with balancing affordability and profitability in the low-income Ethiopian context, as digital finance services can be expensive to develop and maintain. These challenges must be addressed to ensure the successful implementation of digital finance services in Ethiopia (Hussien, A., & Abebe, A. 2019).

To address these challenges, service providers in Ethiopia are collaborating with government institutions, donors, and other stakeholders to improve digital infrastructure and expand access to financial services. Additionally, initiatives like agent banking are being rolled out to bring financial services closer to underserved communities (FSDE 2019).

Additionally, the bank should run a variety of incentive programs to encourage the community to use the technology. Customers' interest in the development of telecommunications infrastructure would be piqued in this way Fetu, A. (2019), In addition, to the direct involvement of bankers in informing customers about the technology and its services. In countries like Ethiopia, where there is strong social collaboration, the perception of friends, coworkers, or family members is a crucial factor that affects the motivation of others. Customer awareness has a significant impact on technology users' intentions to adopt a technology (Jerene, W., & Sharma, D. 2020).

2.6 Digital finance potential for economic growth

Finance businesses are embracing new tools and abilities quickly as a result of how easy it is to learn new things and put them into practice thanks to digital technology. If we look at those who have applied since 2018, Ethiopia is a nation that changes periodically. The researcher came to the conclusion that the banking sector's reform is a key component in achieving Ethiopia's

national goals. Digitalization is a key element of the financial reform that is a generally discussed preference for economic progress. The financial industry also provides a governance framework that will be extensively employed to implement this strategy (Berhe, D. M., & Gebremedhin, B. 2019)

to address hurdles such as low levels of internet usage, poor communications infrastructure, insufficient customer awareness, and socio-cultural barriers, banks, and non-banking institutions have been offering digital financial services to reach out to financially excluded and underserved populations. These institutions have built on the existing digital strategies that have improved access channels for those already served by the formal financial sector. Over 80 countries have implemented digital financial services, utilizing mobile devices, with a sizable market. These services have allowed millions of previously uninsured, low-income customers to access formal financial services like payments, transfers, savings, credit, insurance, and even securities. (World Bank, 2020)

2.7 Components of digital finance

The three basic elements of Ethiopian digital finance are card banking, online banking, and mobile money. The term "mobile money" describes the practice of sending and receiving money using a mobile device. With over 22 million registered mobile money users in Ethiopia as of 2021, this is becoming more and more popular. M-Birr, which was created by the Ethiopian government in collaboration with the private sector in 2013 and is one of the most well-known mobile money service providers in Ethiopia, was established in 2013 (Kale, A., and Mente, R. 2018). Debit or credit cards are used in card banking transactions. Card banking is still a relatively new concept in Ethiopia, but it is expanding quickly. Customers can now get debit and credit cards from banks such Commercial Bank of Ethiopia and Dashen Bank (ABN 2020).

Finally, online banking, which enables users to access their bank accounts and conduct transactions online, is also growing popularity in Ethiopia. Ethiopian banks like Dashen Bank, Commercial Bank of Ethiopia, and Awash Bank currently provide internet banking services.

2.8 Empirical Review

The researcher examines the studies done on digital finance issues in the world and looks at the Ethiopian context and divides it into three parts: practice, challenges, and prospects.

2.8.1 Practice of digital finance

A number of empirical studies exist in the literature, which have examined the practice of digital finance. According to Bethlehem (2018), ET Switch was established in 2011 with registered capital of 80.5 million Br through the joint efforts of 16 banks. The initiative is focused on enhancing accessibility to Automated Teller Machines (ATMs) for bank customers, who stand to benefit from features such as cash withdrawal and balance inquiries. With a near nationwide network of nearly 2000 ATMs, the majority of these facilities are located in Addis Ababa, the country's capital. This development promises to have far-reaching positive consequences for the advancement of electronic banking (e-banking) in Ethiopia, advancing both convenience and accessibility for bank users. Customers can now make purchases and receive refunds using point-of-sale (POS) devices.

Chen (2019), countries in Africa where "first-stage" digital payments and banking solutions are not widely disseminated are not viewed as suitable candidates for merchant payment suppliers as initial digital finance infrastructure is necessary for demand to exist. The study found that while there is an unmet need for non-cash payments among merchants in some locations, it has not yet turned into an active demand in places where digital and card payments are still insignificant. The authors conducted informational interviews, analyzed literature, and conducted database analyses to arrive at this conclusion.

Fikadu, B., & Abrha, A. (2021), Current digital finance practices in Ethiopia include online banking services such as sending and receiving money, checking balances, transferring money between accounts, accessing account statements, and withdrawing cash from ATMs. To evaluate the effectiveness of these practices, the study recommends conducting surveys and interviews with users to understand their experiences and needs related to digital finance.

According to an article by Asfaw (2020), although just a few use cases exist, ten to twelve million consumers have used current digital financial services products in Ethiopia. However, bank-led digital financial services have not been able to satisfy the demand in the market. Ethio Telecom, on the other hand, could provide digital financial products by making use of its

dominant position and pre-existing distribution network. The article goes on to suggest that the introduction of TeleBirr, a digital financial service by Ethio Telecom, has the potential to fundamentally change Ethiopia's DFS ecology and could even surpass M-PESA in size in Kenya.

Fikadu, B., & Abrha, A. (2021), Current digital finance practices in Ethiopia include online banking services such as sending and receiving money, checking balances, transferring money between accounts, accessing account statements, and withdrawing cash from ATMs. To evaluate the effectiveness of these practices, the study recommends conducting surveys and interviews with users to understand their experiences and needs related to digital finance.

2.8.2 Challenges of digital finance

A number of empirical studies exist in the literature, which have examined the challenge of digital finance. A study by Bultum (2014) has identified the current adoption status of digital finance in Ethiopia and highlighted some of its major challenges. Among the most prominent obstacles is the perceived security risks and a lack of trust in utilising the technology. Distinct banks face different issues due to variations in the level of security risks associated with different digital financial products and services such as ATM, internet banking, mobile banking, among others. Improved measures are therefore required to enhance client confidence in digital financial services.

Chernet. A. (2015), the study conducted to investigate the challenges of digital finance, his result Ethiopian electronic banking or digital finance market penetration is difficult, electric outages pose a severe threat to the efficient operation of e-banking. Due to an electric power outage, e-banking is hampered from operating smoothly. For instance, when there is no electric power supply, ATMs and point-of-sale systems do not function. Mobile and internet banking are also slow or ineffective. Failures in the network pose a severe threat to the efficient operation of e-banking. Network failure is a significant obstacle to the everyday operations of Ethiopia's commercial banks in both e-banking and traditional banking. As a result, clients are less inclined to use e-banking and instead prefer to keep cash on hand, especially during times of urgent financial demands.

Meaza, S. (2016), She study conducted that to assess the challenges of digital finance found that the most significant ones were a lack of awareness, a system that was less responsive, a network

that was dependent on other companies, a lack of security, telecommunication network infrastructure, and power outages.

Ketterer, J. A. (2017), He's study put this, Incumbents might try to recourse to non-market actions to fight off the competitive threat coming from the new entrant-challenger firms, many regulatory challenges, arising from the new business models, need to be addressed in a proper and timely fashion. And the lack of good-quality and affordable digital connectivity (broadband access) available to most firms and individuals, due to a deficient regulatory framework and insufficient infrastructure, must be remedied. This is a sine qua non condition for digital transformation to take place

A study by Teka and Sharma (2017) has shed light on the major barriers to the full adoption of digital finance services in Ethiopia. These barriers include frequent network and internet outages, interruptions in power supply, lack of knowledge about digital finance service delivery channels, limited access to ATM and POS machines, apprehension towards security threats, slow response times on banks' part to correct erroneous transactions, and ATM breakdowns. The study thereby highlights the multitude of challenges that hinder users' full adoption of digital finance services in Ethiopia.

According to Fetu (2019), the development of digital finance in Ethiopia is hampered by several key challenges, including inadequate legal and regulatory frameworks for e-commerce and e-payments, as well as low levels of internet penetration and underdeveloped telecommunications infrastructure. Addressing these challenges is crucial for the successful advancement of digital finance for a country. Lack of adequate government support, high rates of illiteracy, a lack of trained and effective staff in the field of e-banking, a lack of customer awareness of the product, a lack of customer computer literacy, a lack of financial networks connecting various banks, a lack of dependable power supply, and resistance to change are some other factors.

2.8.3 Prospect of digital finance

Numerous empirical studies that have been published in the literature have looked into the relative contribution of digital finance to economic development or prospects. Chernet, A. (2015), did a study to look at the prospect of digital finance, and as a result, Customers can conduct banking transactions from the convenience of their home, office, or any other location they choose? Customers of Commercial Bank of Ethiopia can access their accounts, send money

overseas, locate ATMs, cancel payments, and acquire daily exchange rates, and other bank and banking information around-the-clock by using e-banking technologies, particularly internet and mobile banking. If ATM and POS are used, services can be rendered wherever the machine is and at any time, including on holidays and at night, without any limitations.

Meaza, S. (2016), conducted a study to evaluate the prospect of digital finance beyond the strategic advantages that banks gain from using the service. Customers of banks also benefit from lower costs, simpler information access, more comfort, and time-saving services because they can check on many accounts at once. CBE is introducing new services and implementing the newest technologies. A few of the recently introduced services include card banking, online banking, and mobile banking, which allow consumers to do transactions whenever they want, without having to visit the bank's counter. However, the bank has encountered some issues with the e-payment service.

Fetu, A. (2019), conducted a study to analyze the prospect for digital financing technology in the banking industry. The digital financing tool and similar digital finance services offer many benefits, mainly for the bank, including attracting customers by providing efficient and time-saving services, enhancing the bank's reputation, lowering employee loads or burdens, improving organizational performance through cost reduction, and it also al Along with the bank, the consumers profited from the service in a variety of ways, including time savings, convenience, and ease of use.

In their study, Purva, Stephanie, Sumiko, and Ratna (2021) utilized a cross-sectional instrumental variable analysis to explore the exogenous aspect of financial inclusion in the digital age, and its relationship with economic growth. The study finds a significant positive correlation between financial inclusion in the digital age and economic growth, suggesting that the strong relationship between these variables is not a result of biases attributed to omitted variables, simultaneity or reverse causation. These findings highlight the potential benefits of promoting digital financial inclusion as a means of advancing economic growth in contemporary economies.

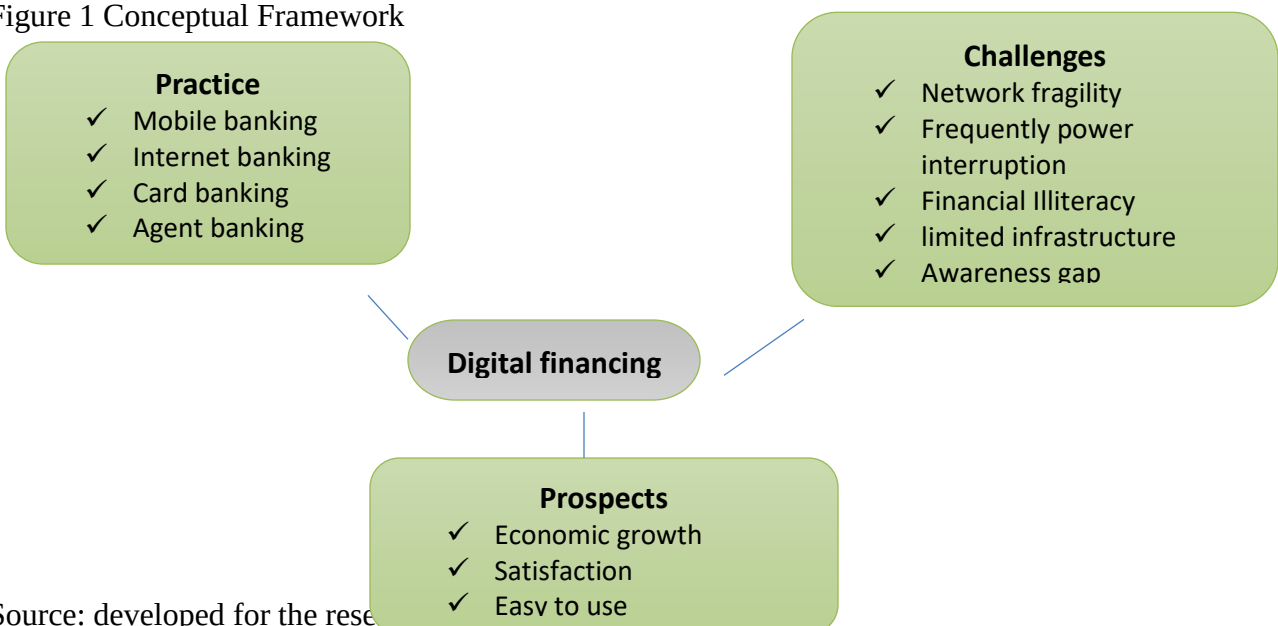
In a research study by Tinghua, Mengyuan, Ehsan, and Xiao (2022), digital finance was found to have a profound impact on the quality of economic growth over time. Leveraging an index system centered on economic growth, stability, efficiency, and sustainability, they examined the

effects of digital finance on the quality of economic growth. The authors concluded that inadequate digital finance infrastructure has an adverse effect on the standard of economic growth. They did discuss digital financial services separately and from different perspectives. But they didn't specify how much digital finance the country would need, they doesn't address the more general problems with digital finance that arise from using and deploying these services.

2.9 Conceptual Framework

A conceptual framework is a research tool that can assist in gaining a deeper understanding of the matter at hand and effectively conveying findings. The present study is focused on examining the use of digital finance within Ethiopia. This will involve an exploration of the availability and adoption of digital financial services, an examination of key challenges faced by both service providers and bank customers and an identification of the potential for digital finance within the country. Through this work, we aim to contribute to a more comprehensive understanding of the current state of digital finance in Ethiopia. To achieve this objective, a conceptual framework has been developed to depict how selected banks utilize digital finance, which is shown in Figure 2.1 utilizing three preferred frameworks. The information gathered from this framework is used as a guide to assist in achieving the study's objectives, which are to better understand the use of digital finance in Ethiopia and identify ways to enhance its growth and development.

Figure 1 Conceptual Framework



Source: developed for the research

CHAPTER THREE

Research design and Methodology

The research design, sample methodologies, data collection, Data Presentation and Analysis, and Ethical Considerations are all covered in this chapter.

3.1 Research approach

This study implemented both quantitative and qualitative research approaches. The quantitative research approach involved using computational statistical and mathematical tools to drive results. The qualitative research approach sought to understand digital finance usage from a more holistic perspective. It focused on what people think about digital finance and why they hold these opinions. By using both quantitative and qualitative approaches, the study was able to provide a comprehensive view of the digital finance landscape in Ethiopia.

Overall, the combination of research approaches proved useful in exploring the availability and adoption of digital finance services, identifying areas of resistance towards certain technologies, and highlighting opportunities for enhancing financial inclusion in Ethiopia

3.2 Research design

The research design outlines the researcher's plans for carrying out the investigation. The overall purpose of the study is to examine how digital finance is employed in Ethiopian banks. To achieve this objective, the study utilized descriptive research designs. The researcher aimed to examine how used digital financial service in Ethiopia. Additionally, a mixed research approach was employed to accomplish the study's goals and respond to its research questions. Descriptive type of research was also used in the study. This approach aimed to describe who, what, when, where, and how questions surrounding digital finance adoption in Ethiopian banks. By using this research design, the study was able to describe the current state of the effects of digital finance service in Ethiopia.

3.3 Data source and data collection method

The present study employs the availability and acceptance of digital financial services in Ethiopian banks using both primary and secondary data sources, with a particular focus on evaluating the challenges and prospects experienced by bank managers, bankers, and customers in practicing digital finance. To this end, structured questionnaires and open-ended interviews were administered to eleven selected participants from across various banks to obtain primary data. Both open-ended and multiple-choice, agree-disagree questions were used during the interviews to provide a comprehensive assessment of the participants' experiences.

On the other hand, secondary data was used as an extensive literature review performed on books, journal articles, related studies, government papers, financial reports of the institutions submitted to regulatory authorities such as the National Bank of Ethiopia and the technology and innovation minister, as well as any other relevant documents pertaining to digital finance. By leveraging these both primary and secondary data sources, this study aims to identify potential areas of resistance to digital finance technologies and highlight opportunities for enhancing the financial inclusion landscape in Ethiopia

3.4 Population of the Study

The research aims to analyze the customers of eleven Ethiopian commercial banks - namely, Commercial Bank of Ethiopia, Bank of Abyssinia, Addis International Bank, Dashen Bank, Awash International Bank, Zemen Bank, United Bank, NIB International Bank, Wegagen Bank, Amhara Bank, and Ahadu Bank. The first nine banks were purposively selected based on their digital finance seniority, and the second two banks were selected purposively to know how they digital finance adoption, practice and computation with others existing banks. The study utilizes a randomly selected sample of external customers of eleven banks as the target population from which the sample was drawn. This type of sampling technique follows the principle of equal probability selection in which every unit in the population has an equal chance of being included in the sample. As per Teddlie and Yu (2007), this technique is known as random sampling and ensures that the sample is representative of the population.

Table 1 classification of banks according to their adoption of digital services

No.	Banks providing digital services	Year of commencement
1	Commercial bank of Ethiopia	2001
3	Dashen Bank	2006
5	Zement Bank	2009
8	Abyssinia Bank	2010
4	Awash Bank	2012
7	Nib international Bank	2014
2	Wegagen Bank 2014	2014
6	Addis International Bank	2016
9	Amhara Bank	2022
10	Ahadu Bank	2022

Source: from the study survey

3.4.1 Target Respondents

The study on digital finance in Ethiopian banks targeted male and female customers who have a bank account above the age of 18 who have some knowledge of digital finance practices.

3.4.2 Sample Size Determination

Although a sample of 270 people was selected for the study, only 256 or 95% of the target demographic of digital finance service users were randomly selected and distribute structured questioners. The population of interest in this study comprised 24 commercial banks operating in Ethiopia out of those eleven commercial banks are selected using a purposive sampling method and asked open ended interviews. Almost all banks in Ethiopia now offer digital finance services, including mobile banking, internet or online banking, agent banking, and card banking. However, the usage rate varies between banks. It was observed that the selected banks had a higher level of digital finance usage compared to others.

3.5 Data presentation and analysis

To achieve the study objective, both qualitative and quantitative analytical procedures were employed to organize the collected data. Qualitative analysis examined the opinions, feelings, experiences, and behavior of the bank manager respondents in depth. Quantitative data were presented in tables and graphs using descriptive analysis, such as frequencies and percentages.

The stata tool was used to code and enter the data into the computer for analysis. For each questionnaire, means, standard deviations, and percentages were provided. The mean and standard deviation were the most descriptive statistical techniques used in this study to provide a precise representation of the data. The five-point scale measurements were interpreted based on the following mean score results: Strongly Agree, Agree, Neutral, Disagree, and Strongly Disagree.

3.6 Ethical consideration

Above all, the researcher conducted the study using both ethical and fundamental research principles. In particular, the study adhered to strict ethical guidelines to ensure the privacy and confidentiality of the respondents. The researcher made it a point not to disclose any personal information or answers provided by the respondent without their explicit permission.

Before completing the questionnaire, participants were informed of the questionnaire's ethical rules based on essential principles. The researcher ensured that the participants were fully aware that any information collected from them would remain private and confidential, and would only be used for academic purposes.

CHAPTER FOUR

4. Result and Discussion

The chapter begins by providing information on the respondents' demographics, their current practices, the challenges they face, and the future prospects of digital finance. This is followed by a comprehensive analysis of the gathered data conducted using Stata software. Through this study, it has become apparent that there is a high level of interest in digital finance from Ethiopian bank customers. However, certain challenges to adopting such technologies exist, particularly amongst some demographic groups. Improved communication and education on digital financial services may be required to increase adoption rates and address these challenge barriers. Overall, this study presents numerous ways for enhancing financial inclusion in Ethiopia through the promotion of digital financial services.

4.1 Response Rate

In this study, the researcher prepared and distributed 270 questionnaires to potential respondents. Despite the researcher's best efforts, 14 respondents did not return completed questionnaires. As a result, only 95% (256) of the distributed questionnaires were fully completed and received for analysis. The high percentage of completed questionnaires received indicates a strong response from the target audience and supports the validity of the findings.

Table 2 Response rate

Categories	Respondent	Percentage
Responded	256	95%
Not Responded	14	5%
Total	270	100%

Source: research survey 2023

4.1.1 Demographic profile of respondent

In this section, descriptive analysis was applied to the gathered data using Stata software to determine the demographic makeup of the respondents. This involved analyzing data on various factors such as gender, age, educational level, and tenure regarding the use of digital finance. The results of this analysis are presented in Table 4.2. The researcher selected the respondents

randomly, believing that they may represent the trends of the wider population, and these findings serve as a useful starting point for further research on the trends in the use of digital finance in the Ethiopian banking industry.

Table 3 Demographic Information of Respondents

No.	Demographic profile		Frequency	Percent
1	gender	female	104	40.63%
		male	152	59.37%
2	Age	less than 25 years	38	14.84%
		26 – 35 year	162	63.3%
		36-45 years	42	16.4%
		above 45	14	5.45%
3	Educational Level	Diploma	9	3.51%
		Degree	188	73.44%
		Master	48	18.75%
		Doctor (PHD)	11	4.30%
4	Tenure	Less than 1year	46	17.97%
		1-5 years	152	59.30%
		6-10 years	44	17.19%
		Above 10 years	14	5.46%
5	Number of respondents from each bank customer	CBE	201	78.51%
		Zmene bank	76	29.69%
		Abissinya Bank	54	21.09%
		Dashin Bank	42	16.40%
		Amhara bank	41	16.01%
		Awash Bank	30	11.72%
		Addis International Bank	15	5.60%
		Wegagen bank	9	3.51%
		Nib International bank	9	3.51%
		Ahadu bank	4	1.56%
		United Bank	3	1.13%

Source: research survey 2023

Gender: Table 4.2 displays the demographic data of the study participants, indicating that male and female respondents accounted for 59.4% and 40.6% of the sample, respectively. This means that male respondents comprise the majority of the study participants. It's essential to note that this observation is solely based on the data collected and analyzed in this study. Therefore, it may not necessarily reflect the overall gender distribution of digital finance users in Ethiopia or other geographies beyond the study's scope.

Age: According to this study, banks found that the largest group of respondents was between the ages of 26 to 35 years old, making up 63.3% of the total participants, Followed by those between the ages of 36 to 45 years old at 16.4% Respondents younger than 25 made up 14.84%. The remaining 5.45% were older than 45. Based on these findings, it can be confirmed that young adults take the lead in promoting and advancing digital adoption, which supports national digital payment strategies. Additionally, the average age of respondents was found to be around 31.33 years old, indicating that this age group is particularly crucial in promoting digital finance usage and adoption in Ethiopia.

Educational Level: This study shows that the majority of participants have a first degree (73.44%), while a small proportion has diplomas (3.51%). Additionally, 18.75% of respondents hold a Master's degree, and only 4.30% of the participants hold a Ph.D. The prevalence of first-degree holders among respondents implies that this group holds a significant role in shaping and promoting digital finance adoption in Ethiopia.

Tenure: The study found that 17% of the respondents had been using digital finance for less than a year. The majority of respondents (about 59.38%) had experience using digital finance for a period between 1 to 5 years, while 17.19% had experience dating back six to ten years. Only 5.46% of respondents have experience dating back more than ten years. This indicates that most participants start relatively recently in digital finance. On average, respondents have been using digital finance for at least 4 years, with the majority having between one and five years of experience with such services.

According to the study findings, the Commercial Bank of Ethiopia (CBE) has the highest percentage of participants (78.51%) in digital finance, indicating that the bank may be leading in terms of digital finance offerings or marketing efforts compared to other banks. Zemen Bank follows with 29.69%, followed by Bank of Abyssinia (21.09%), Dashen Bank (16.40%), Amhara Bank (16.01%), Awash Bank (11.72%), Addis International Bank (5.60%), Wegagen and Nib International Bank (both at 3.51%), Ahadu Bank (1.56%), and united bank (1.13%). Such data offers valuable insights into the competitive landscape of digital finance in Ethiopia.

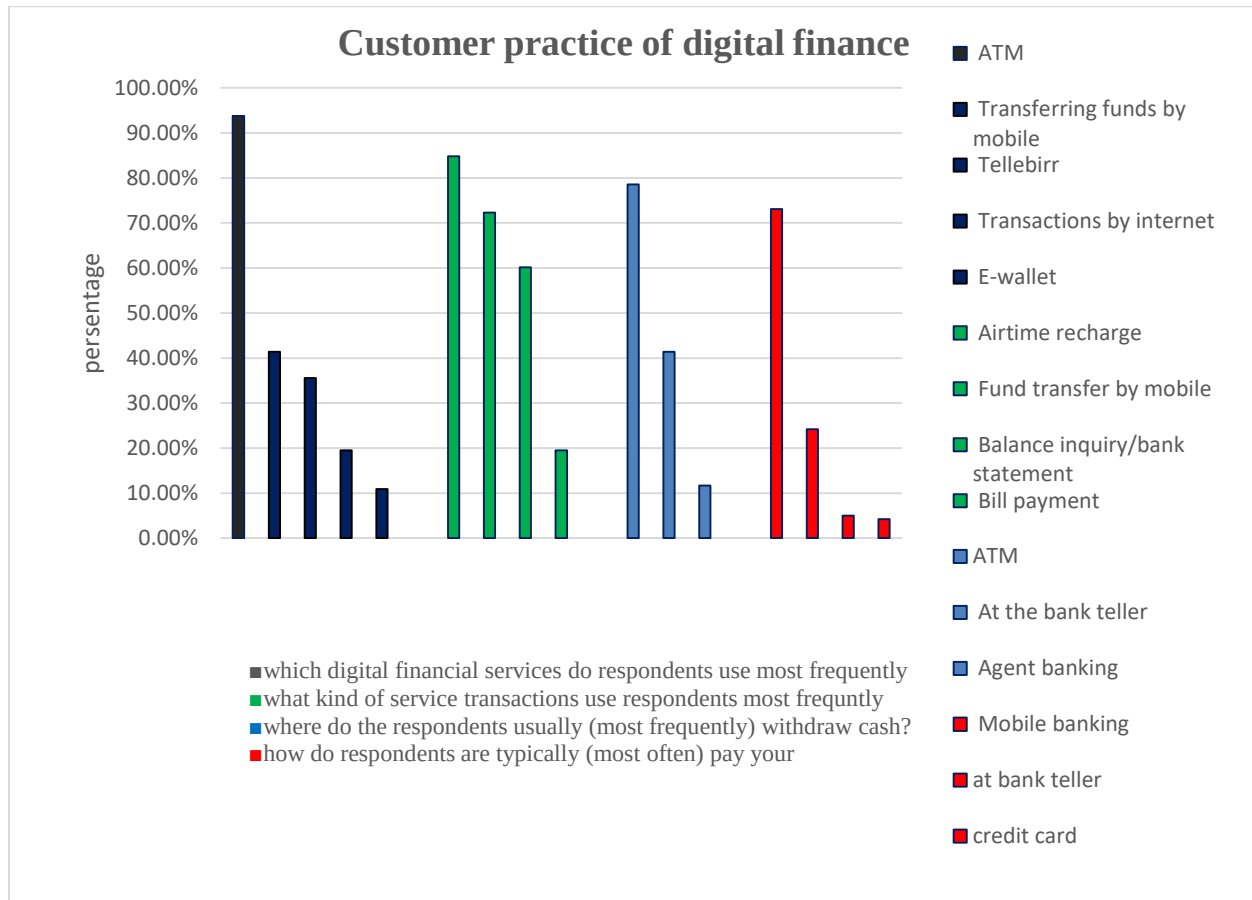
4.2 Practice of digital finance in Ethiopia

It is possible Examining the practice of Ethiopia's digital financing from two angles, from the banking sector and customers' viewpoints.

4.2.1 Practice of digital finance in customer

The graph below offers insightful information on the general degree of customer utilization of digital services, including which, what, where, and how respectively individuals use them. Banks and other financial institutions looking to enhance their digital finance products and better understand their clientele may find this information to be of great value.

Figure 2 customers practice of banking digital finance



Source: own survey 2023

The black color on the graph represents respondents' use of different digital services. Among 256 respondents, 240 (93.75%) used ATM and point of sale (POS), 106 (41.40%) used fund transfer by mobile, 91 (35.54%) used Tellebir, 50 (19.53%) used internet transaction, and only 28

(10.9%) used e-wallet. The vast majority of respondents only use ATMs, with 6.25% or 16 respondents not utilizing any digital services.

The green color on the graph indicates the most frequently utilized transactions using digital finance. Of those, 84.77% said airtime recharge, 72.27% mentioned cash transfers by mobile, 60.16% mentioned balance inquiries/bank statements, 19.53% mentioned bill statements, and only 16.02% mentioned purchases. This data indicates that simple transactions such as checking balances and recharging their phones with airtime were the most utilized among the respondents.

The blue color on the graph showcases the preferred method of cash withdrawal among respondents. The results of the study indicate that the majority of respondents prefer to withdraw cash using ATMs, followed by bank teller machines (41.41% of respondents), mobile banking, and agents (11.72% of respondents). These insights may offer valuable guidance for banks and financial institutions seeking to improve their digital finance offerings and meet customer preferences more effectively.

The red color on the graph indicates the preferred method of bill payment among respondents. From the study, it was found that 73.05% of respondents prefer to pay their bills via direct payment to the company or seller using cash. Other payment methods used by respondents included mobile banking (24.22%), bank teller services (1.95%), and credit cards (0.78%). These findings may provide useful insights for banks and financial institutions seeking to enhance their digital finance solutions for bill payments, as well as for companies and sellers looking to optimize their payment collection processes.

Overall, this study found that revealed that despite a high preference for cash-based transactions, there is an increasing trend toward the adoption of digital financial services among Ethiopian consumers for quick and simple transactions like checking their account balances or recharging their mobile airtime. This suggests that there is potential for greater digital payment uptake in Ethiopia, though it may take time for more traditional users to adjust to the shift.

4.2.2 Practice of digital finance in the bank sector

The adoption of digital finance practices in Ethiopia's banking sector has been steadily increasing in recent years. With the growth of mobile money services, both telecommunication companies and banks are offering mobile money options for their customers. In addition, several Ethiopian

banks have begun to provide online banking services as part of their digital finance offerings. This increased investment in digital finance solutions suggests that there is a growing demand for more convenient and secure digital alternatives to traditional cash-based transactions in Ethiopia's financial landscape (Kassa, W., & Teshome, S. 2019)

However, there are certain challenges and barriers that could impede the growth of digital finance in Ethiopia. These include low levels of digital literacy among certain demographic groups, concerns around cybersecurity and trust in digital platforms, and limited access to digital devices among some consumers. Despite these challenges, the potential benefits of digital financial services - including increased financial inclusion and more secure transactions - means that continued investment and support for the sector could help to realize its full potential (Woldie, A., & Admassu, M. 2020)

The digital finance practices of the Ethiopian banking industry were investigated by interviewing concerned managers of the digital finance department of the banks. The study revealed that digital finance is high on the agenda for all banks as evidenced by their independent departments, each with several subdivisions such as Card Banking, Agent Banking, Online (internet) Banking, and mobile/Tele/banking divisions. Additionally, the National Bank of Ethiopia (NBE), which provides guidance on a range of issues, has established regulations, strategies, and norms to support and facilitate the use of digital finance by banks. The NBE's efforts help to increase the resilience and growth of the financial system while ensuring its proper management. (Excerpt sourced from interview responses from bank managers.)

4.3 Digital financing accessibility in Ethiopia's banking industry

In this study, data was collected from respondents through questionnaires and analyzed using Stata software to gain insights into all banking activity. As per Zaidaton and Bagheri's (2009) criteria, scores between 1 and 1.80 are considered "strongly agree," 1.81 to 2.60 indicate "agree," 2.61 to 3.40 indicate "neutral agreement," 3.41 to 4.20 indicate "disagree," and 4.21 to 5.00 are considered "strongly disagree." Additionally, the standard deviation (SD) of the data indicates how spread out it is: high SD indicates a more dispersed distribution of data, while low SD indicates that the data is clustered around the mean.

Table 4 accessibility of digital finance in Ethiopia banking sector

S.no	Item		Frequency	%	Mean	SD
1	Mobile and online banking services make it easy for individuals to access digital financial services through their cell phones.	Strongly agree	76	29.69%	2.48	1.44
		Agree	93	36.33%		
		Natural	23	8.99%		
		Disagree	17	6.64%		
		strongly disagree	47	18.35%		
		Total	256	100%		
2	Digital finance Services of Ethiopian commercial Banks are convenient, because it is available 7 days a week and 24 hour a day ,to access my bank account	Strongly agree	49	19,14%	2.58	1.21
		Agree	103	40.23%		
		Natural	26	10.16%		
		Disagree	64	25%		
		strongly disagree	14	5,47%		
		Total	256	100%		
3	Travelers can make purchases without carrying cash by using a credit card.	Strongly agree	13	5.08%	3.88	1.05
		Agree	21	8.2%		
		Natural	24	9.37%		
		Disagree	126	49.22%		
		strongly disagree	72	28.13%		
		Total	256	100%		
4	If there have one ATM card for can withdraw of money from any of bank ATM machine. (interoperable)	Strongly agree	25	9.77%	2.82	0.98
		Agree	69	26.95%		
		Natural	104	40.63%		
		Disagree	48	18.75%		
		strongly disagree	10	3.90%		
		Total	256	100%		
5.	Mobile banking apps enable users to send or receive money and make purchases from participating merchants.	Strongly agree	4	1.56%	4.11	.87
		Agree	11	4.30%		
		Natural	33	12.89%		
		Disagree	116	45.31%		
		strongly disagree	92	35.94%		
		Total	256	100%		
6.	Telebir is the most prefer to use cashless transactions.	Strongly agree	74	28.90%	2.21	1.09
		Agree	101	39.45%		
		Natural	51	19.92%		
		Disagree	18	7.03%		
		strongly disagree	12	4.69%		

		Total	256	100%		
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Source: research survey 2023

With respect to the first item listed in Table 4.4, which pertains to respondents' experiences using mobile and internet banking services provided by local banks, the findings suggest that a significant majority of respondents found such services to be both accessible and convenient. This is evidenced by the notable agreement expressed by 93 (36.33%) respondents who agreed, and an additional 76 (29.69%) who strongly agreed with the statement. Furthermore, the mean value of 2.48 coupled with the standard deviation of 1.44 provided a valuable context in highlighting the degree of agreement among the sample. Though most respondents did express agreement with the statement, there was nonetheless some variation observed within the sample population.

For the second item in Table 4.4, which discusses the convenience of digital finance services in Ethiopian commercial banks due to their availability 24/7, the results indicate a relatively high degree of agreement among respondents. With 103 individuals agreeing and strongly agreeing, comprising 40.23% and 19.14% of respondents respectively, a total of 57.03% of respondents expressed agreement towards this statement. Additionally, with a mean value of 2.58 and a low standard deviation value of 1.21, the results suggest that this view is widely held and there is little variation in terms of agreement among the sample.

In reference to table item number 3, which posed the statement that credit cards could be used by buyers to facilitate travel without the need to carry cash, it can be observed that the results indicate a noteworthy incidence of disagreement among respondents. Specifically, 126 participants- comprising 49.22% of respondents - expressed disagreement with this statement, while an additional 72 participants or 28.13% of total respondents gave a strong negative response. With a mean value of 3.88 and a standard deviation of 1.05, the data further illustrate the degree of disagreement maintained by most survey participants in relation to the feasibility of using credit cards as an alternative to carrying cash while traveling.

In the above table question number 4, the respondents can withdraw money from any bank ATM machine with one ATM card (interoperable). The level of agreement of respondents indicates that the majority, which is 104 (40.63%), said neutrally. The mean result is also supported by a mean value of 2.81. Because interoperable is a new idea, the idea is that of an Eth switch. As it

is known, Eth Switch was introduced in Ethiopia in 2016, so the bank managers I interviewed told me that it was not well received by the customer.

With regard to question number 5 as presented in the above table, which inquires about respondents' perceptions regarding the ability to withdraw money from any bank ATM machine using an interoperable ATM card, it can be inferred that the results reflect a mixed response. Specifically, a majority of 104 respondents, comprising 40.63% of participants, indicated a neutral stance towards the statement. With a mean value of 2.81, this data provides adequate context for interpreting the mixed response. Notably, the introduction of interoperability in Ethiopia via Eth Switch, a relatively new concept implemented in 2016, may have not played a role in shaping customer attitudes towards this convenience. In interviews with bank managers, it was reported that the concept had not been widely received by customers.

As per the data presented in item number 6 of the aforementioned table, the majority of respondents have expressed agreement towards the use of Telebirr as their preferred cashless transaction method. Specifically, 101 (39.45%) respondents agree, while 74 (28.90%) strongly agree. The combined number of responses, amounting to 175 (68.36%), indicate a favorable view towards Telebirr. The mean result of 2.2 and the 1.08 standard deviation value further support this sentiment, reflecting a majority agreement with the proposed cashless transaction system.

The survey results indicate that mobile banking, particularly Telebirr, is a preferred choice for cashless transactions, while ATM withdrawals have become a common practice among customers. However, credit cards and ATM cards that allow customers to withdraw funds from any bank ATM machine (Interoperable) are sparsely utilized, with only a few respondents acknowledging knowledge or usage of these applications. As such, these tools remain unfamiliar and underutilized among the majority of customers.

4.3 Challenges

This study places emphasis on the challenges that both bank customers and service providers face with respect to the implementation and operation of digital finance. The aim is to identify the key barriers hindering the widespread adoption of digital finance practices by customers, as well as service providers.

4.3.1 Challenges faced by bank customers

the questions and analyses presented in Table 4.4 aim to identify the challenges faced by customers as they utilize digital finance practices, as well as the factors prohibiting them from adopting these practices altogether. This section provides a detailed examination of the various challenges hindering customer engagement with digital finance opportunities.

Table 5 challenges faced by customers about digital finance

S.no	Item		Frequency	%	Mean	SD
1	Withdraw cash from the bank teller, Since ATM machines frequently fail to functions.	Strongly agree	96	37.5%	1.87	0.91
		Agree	122	47.66%		
		Natural	20	7.81%		
		Disagree	14	5.47%		
		strongly disagree	4	1.56%		
		Total	256	100%		
		Total	256	100%		
2	To use digital financial services properly, one must be educated and competent.	Strongly agree	6	2.34%	4.22	0.89
		Agree	12	4.69%		
		Natural	14	5.47%		
		disagree	116	45.31%		
		strongly disagree	108	42.19%		
		Total	256	100%		
3	The respondents spend most of their time at the bank waiting in line because they don't have convenient access to the internet at home.	Strongly agree	99	38.68%	1.73	0.78
		Agree	147	57.42%		
		Natural	1	0.39%		
		disagree	2	0.78%		
		strongly disagree	7	2.73%		
		Total	256	100%		
4	There is Frequent power interruption and security issues are affecting the use of digital finance.	Strongly agree	108	42.19%	1.69	0.8
		Agree	138	53.90%		
		Natural	2	0.78%		
		disagree	8	3.13%		
		strongly disagree	0	0%		
		Total	256	100%		
5	Many sellers in the market do not use digital payment methods, hence individuals	Strongly agree	114	44.53%	1.95	1.11
		Agree	80	31.25%		
		Natural	36	14.25%		

	tend to carry cash while making purchases	disagree	14	5.47%		
		strongly disagree	12	4.68%		
		Total	256	100%		
6	Stop utilizing digital banking because most people think makes it convenient for fraudsters.	Strongly agree	2	0.78%	4.26	0.66
		Agree	7	2.74%		
		Natural	4	1.56%		
		disagree	156	60.94%		
		strongly disagree	87	33.98%		
		Total	256	100%		

Source: research survey 2023

The data presented in the first question of Table 4.4 indicates that customers commonly withdraw cash from bank tellers as opposed to using ATMs, which are prone to frequent breakdowns. Specifically, 122 respondents (47.66%) support this statement, with 96 (37.5%) strongly supporting it. In total, 218 responders (85.16%) agreed with this view. The mean of 1.87 and standard deviation of 0.91 provide additional context to the data and reveal a clear consensus among respondents that bank tellers remain a more reliable option for cash withdrawals compared to ATMs.

Based on the data presented in the aforementioned table, it is clear that there is a significant number of respondents who do not believe that having the necessary knowledge is a requirement for utilizing digital finance. Specifically, 116 participants (45.31%) strongly disagreed with this notion; while another 108 (42.19%) simply disagreed. Collectively, these figures represent an overwhelming majority of 218 (87.5%) individuals who expressed some level of disagreement towards this concept. Furthermore, statistical measures such as the mean and standard deviation also support the idea that there is a widespread resistance towards the notion of needing expertise in order to utilize digital financial services, with values of 4.22 and 0.89, respectively..

According to response number 3 in the aforementioned table, since there is no internet connectivity, respondents spend the majority of their time in line at the bank. The majority of respondents, or 147 (57.42), agree, and 99 (38.68%) strongly agree. There were 246 agree, agree strongly, and agree on replies in all (96.09%). It is further corroborated by the mean result of 1.73 and the standard deviation of the responses, which is 0.8.

The table findings indicate that the use of digital finance is often impacted by frequent power interruptions and security concerns, as stated in question number 4. A majority of respondents, specifically 138 individuals (53.90%), indicated agreement with this statement, with 108 (42.19%) expressing strong support for this perspective. Taken together, these findings reveal that an overwhelming number of individuals -- 246 in total (96.09%) agree or strongly agree that these challenges significantly impact the use of digital financial services. Statistical measures such as the mean and standard deviation also support this observation, with values of 1.68 and 0.8, respectively, indicating strong agreement among the participant base.

As reflected in question number 5 of the table, the majority of respondents indicated that they carry cash with them when making purchases at the market due to a lack of digital payment options among sellers. Specifically, 114 individuals (44.53%) expressed agreement with this statement, and 80 (31.25%) agreed. In total, 194 respondents (75.78%) agreed with this perspective, indicating a significant degree of alignment with this experience. Statistical measures such as the mean value of 1.95 and standard deviation of 1.11 further support this observation, underscoring the high level of agreement within the respondent base.

According to the survey data, item number 6 indicates that the respondent avoids using digital banking due to concerns of potential fraud, with 156 participants (60.09%) disagreeing and 87 participants (33.98%) strongly disagreeing with this statement. The mean and standard deviations for these responses were calculated as 4.26 and 0.66, respectively. It should be noted that the majority of responses (94.92%) disagreed with this statement, including both those who disagreed and strongly disagreed. In order to further describe and elaborate upon this finding, the mean and standard deviation were used to provide more detailed information. Specifically, the mean response was calculated as 4.25 with a standard deviation of 0.66, indicating that most respondents agreed that digital banking is a convenient and secure way to manage their finances.

After analyzing the data, it was noted that customers of banks face a number of challenges. These challenges include ATM machines that frequently fail to function, limited internet access, frequent power interruptions, security concerns, and a lack of available digital payment options among sellers. These challenges constitute significant obstacles for bank customers and should be addressed in order to improve the overall banking experience.

4.3.2 Challenge faced by service provider

During interviews with bank managers, a number of key challenges were identified as barriers to adopting and implementing new financial technological innovations. These challenges include the quality and cost of existing network infrastructure in the country, customer comprehension and reluctance to adopt new technologies, employee comprehension and ability to effectively operate new technology, employee knowledge gaps, and increased workloads resulting from potential losses associated with cash transactions. Their customer not using digital financing is the key issue. The workload at each banking location and the finance department of the bank may increase significantly as a result of the potential losses associated with cash transactions. Because a significant quantity of human resources is required to handle those cash transactions, the bank's employment and pay costs rise. Poverty is one of the reasons that delay digital finance from bank managers. Because their customers think that the more they put their money in a way that is not convenient for them to move, the more they save.

The following is an excerpt from the NBE and Ethio Telecom ' interview responses:

After perceiving the challenges facing both service providers and their customers in regard to digital finance in Ethiopia, the researcher sought to inquire about how pertinent parties, namely the National Bank of Ethiopia and EthioTelecom, are addressing these issues. Upon inquiry, the following response was provided with regard to actions being taken to mitigate these challenges.

The National Bank of Ethiopia has recognized the importance of improving digital finance services in the country and is taking steps to address the challenges faced by banks and customers. One initiative is the implementation of a national payment system, which aims to facilitate electronic payments and improve financial inclusion. The central bank is also working to improve financial literacy among the population through various educational programs and initiatives. Additionally, the government is investing in infrastructure development, such as expanding access to electricity and internet connectivity, which are essential for the development of digital finance services. These initiatives align with the national development priorities outlined in the Ethiopia Digital Financial Services Strategy, which seeks to increase access and usage of digital financial services to promote economic growth and reduce poverty.

EthioTelecom is the largest telecommunications company in Ethiopia and has a vital role in improving the country's digital finance system. One of its key initiatives to address network

fragility is to expand the physical infrastructure of the telecommunication network by building new cell towers and improving connectivity in underserved areas. Additionally, EthioTelecom is investing in the deployment of 4G technology across the country, which provides faster internet connectivity and can improve access to digital finance services. The company is also working with other stakeholders in the telecommunications sector to develop policies that encourage innovation and competition, as well as better coordination to improve service delivery. Furthermore, EthioTelecom has implemented several measures to enhance network resiliency to natural disasters and political instability, such as building backup power systems and strengthening its disaster management plans. These initiatives align with Ethiopia's national development priorities under the Digital Ethiopia 2025 Strategy, which aims to increase internet penetration and improve connectivity across the country to support the development of digital finance services.

4.4 Prospect of digital finance

Respondents are participated for seven questions below on what digital finance is currently offering them and its prospect.

Table 6 prospect of digital finance

S.no	Item		Frequency	%	Mean	SD
1	There is level of satisfaction with digital finance services is increasing from time to time.	Strongly agree	114	44.53%	1.73	0.88
		Agree	120	46.88%		
		Natural	4	1.56%		
		disagree	14	5.47%		
		strongly disagree	4	1.56%		
		Total	256	100%		
2	Digital financial services enable individuals to effectively manage their financial affairs.	Strongly agree	102	39.84%	1.77	0.84
		Agree	128	50%		
		Natural	16	6.25%		
		disagree	4	1.56%		
		strongly disagree	6	2.34%		
		Total	256	100%		
3	There is increase a productivity of bank, When	Strongly agree	96	37.50%	1.80	0.71
		Agree	116	45.31%		

	using Digital finance well.	Natural	44	17.19%		
		disagree	0	0%		
		strongly disagree	0	0%		
		Total	256	100%		
4	With digital financing services, it is possible to cover a wide geographic area.	Strongly agree	58	22.66%	2.12	0.97
		Agree	148	57.81%		
		Natural	24	9.38%		
		disagree	16	6.25%		
		strongly disagree	10	3.90%		
		Total	256	100%		
5	Digital finance is get money secure	Strongly agree	98	38.28%	1.76	0.73
		Agree	127	49.61%		
		Natural	26	10.16%		
		disagree	4	1.56%		
		strongly disagree	1	0.39%		
		Total	256	100%		
6	When the user of digital finance increases, Reduce number of customers comes to the banking hall.	Strongly agree	84	32.81%	1.82	0.72
		Agree	145	56.64%		
		Natural	19	7.42%		
		disagree	8	3.13%		
		strongly disagree	0	0%		
		Total	256	100%		
7	Using digital finance services helps to perform transaction at lower cost.	Strongly agree	62	24.22%	2.08	0.84
		Agree	130	50.78%		
		Natural	53	3.13%		
		disagree	8	3.13%		
		strongly disagree	3	1.17%		
		Total	256	100%		

Source: research survey 2023

Based on the survey data, it appears that the level of satisfaction with digital finance services is on the rise. Specifically, when asked about their level of agreement with item Number 1, 120 participants (46.88%) responded with agreement while 114 participants (44.53%) strongly agreed, resulting in a total of 234 participants (91.40%) indicating agreement to some degree. The mean and standard deviation values calculated using Stata software also support this trend, with a mean score of 1.73 and a standard deviation of 0.88. These findings suggest that the

majority of respondents are generally satisfied with digital financial services and view them as a valuable tool for managing their finances.

The survey results show that adopting digital finance practices can greatly aid individuals in managing their finances in a more successful manner. Over 89% of respondents agreed with this statement, with a majority of 50% outright agreeing and an additional 39.84% strongly agreeing. These results are supported by the mean result of 1.77 and standard deviation of 0.83 for all responses received, indicating a clear trend toward satisfaction with digital finance services. Despite any challenges that may arise with adoption and implementation, it is clear that the convenience and security offered by digital banking are resonating with customers in Ethiopia.

Based on the findings in the table, it is evident that utilizing digital finance services can contribute to an increase in banking productivity. Over 82% of respondents indicated agreement with this statement, with a majority of 45.31% agreeing and an additional 37.50% strongly agreeing. These results are well supported by the mean of 1.80 and standard deviation of 0.71, which further confirm this trend of increased productivity. While challenges to implementing digital finance practices may arise, it is clear that there is potential for tangible benefits to be reaped by banks and financial institutions in adopting these technologies.

The data presented in the table indicates that digital financing services enable a broader reach across larger geographic areas. A sizable majority of respondents, totaling 80.46%, agreed with this proposition, including 57.81% who agreed and an additional 22.66% who strongly agreed. This trend towards agreement is further supported by the mean and standard deviation results of 2.13 and 0.97, respectively.

Digital finance is getting money secure, From the above table item number 5, the majority of the respondent agree on this item which is 127 (49.61%) agree and 98(38.28%) disagree. Mean and standard deviation of 1.76 and 0.72 respectively also supported this item.

Question number 6 in the above table indicates that when the user of digital finance increases, Reduces the number of customers who comes to the banking hall. Most of the respondents agree which are 145 (56.64%) agree and 84 (32.82%) strongly agree. Of the total respondents, 229 (89.45 %) agreed on it. The mean result is also 1.81 and the standard deviation is 0.72, which is highly near to the agreement level.

The study show that adoption of digital finance practices in Ethiopian banks found overwhelming agreement among respondents regarding the fundamental benefits of digital finance for customers. These benefits include higher levels of satisfaction, better management of personal finances, increased bank productivity, wider geographic coverage, enhanced financial security and reduced physical to banking halls. It is evident from the positive response that users of digital financial services will continue to intensify their use of digital services."

The following is an excerpt from the bank managers' interview responses:

The selected bank managers made the following prospect perspective in response to questions regarding the potential of digital finance: For the economy to grow, i.e. the main factor contributing to Ethiopia's economic downturn is its failure to utilize digital money. It has not yet experienced the advantages of digital finance. But given the shift in activity and strategy witnessed in the financial sector, now is the moment for us to accept and advance. Thus, digitalization is used to expand citizen access to public services, reduce unemployment, and improve quality of life. They claimed that when a transparent audit system is established, government activities are made more open and efficient, which benefits the nation's economic expansion.

Ethiotelcom is the only integrated telecommunications services provider in Ethiopia. Which provides, Internet, mobile communications, and telephony services. Ethiopia has never had a free-standing, competitive, or private-sector telecommunications industry. Safaricom M-Pesa Mobile Financial Services Plc has been granted a mobile money service license by the National Bank of Ethiopia, indicating the advancement of digital finance in Ethiopia. This recent approval is seen as one of the potential opportunities for the growth of digital financial services in the country.

Chapter five

Summary of finding, conclusion and recommendation

Based on the study's goal of identifying practices, challenges, and prospects in Ethiopia's banking industry, the overall findings of the data were produced, gathered, and analyzed. The findings summary and conclusion are provided below.

5.1 summary of finding

Based on the study's goal of identifying practices, challenges, and prospects in the Ethiopian banking sector, specifically the sample of ten banks that operate in Addis Ababa, Respondents considered and described the challenges they encounter when using digital finance, while service providers considered and described these challenges when implementing digital finance. Accordingly, the overall findings of the data were created, gathered, and analyzed. The findings summary and conclusion are provided below.

The study shows the use of digital financial services in Ethiopia is still relatively low, with the majority of respondents (93.75%) utilizing ATMs for transactions, while other services like mobile fund transfers (41.40%) and e-wallets (10.9%) were less commonly used. Despite the potential benefits of digital payments, a significant number of respondents (73.05%) still preferred to pay bills in cash, with only a small percentage reporting the use of Internet banking (11.2%) or agent banking services (5.7%). The study highlights the importance of education and awareness-raising initiatives to promote digital financial literacy and encourage greater adoption of these services. Overall, greater investment and support will be necessary to advance digital financial practices in Ethiopia.

In Ethiopia, the banking sector has seen a rise in digital finance practices, including mobile money services and online banking offerings. Ethiopian banks have established independent

digital finance departments with several subdivisions, and the study categorizes digital financial practices into four main categories: mobile banking, online banking, card banking, and agent banking. Mobile banking services include airtime recharging, balance checks, money transfers, bill payments, fundraising, cash deposits, tax payments, and tilleber. Card banking allows customers to withdraw cash using ATMs and make credit card purchases. Internet banking offers customers access to almost all of the banking services that are available at a branch from the convenience of their own home. Finally, agent banking provides partial banking services through representations of the main bank at locations such as supermarkets, gas stations, electronics stores, and other such areas where physical branches are absent. Continued investment in these digital financial practices can help improve financial literacy and promote greater financial inclusion in Ethiopia's population. The National Bank of Ethiopia has created regulations and strategies to promote the use of digital finance.

The survey highlights several challenges that are currently obstructing access to digital financial services in Ethiopia. Particularly noteworthy is the fact that 96.09% of respondents agreed that poor network efficiency and lack of internet connectivity can result in long wait times instead of using digital financial services at banks. Power outages and security concerns were also cited as significant barriers to these types of services. Additionally, since many customers still prefer carrying cash and there is limited acceptance of digital payment options among small and medium-sized enterprises, this further limits access to digital financial services.

Furthermore, buyers and sellers alike reported issues with delayed confirmation messages during transactions another hindrance that needs to be addressed by the banking sector. It is, therefore, crucial for Ethiopia's banking industry to prioritize improving its digital banking experiences and take meaningful steps to overcome these challenges -- this will not only advance access to financial services for customers, but it will also bring us closer to a more modern and inclusive financial system throughout the country.

Despite the promising outlook for digital financial services in Ethiopia, service providers still face significant challenges in implementing new technology. According to interviews and questionnaires conducted with bank managers and employees, the quality of the national network represents the primary challenge that hinders the adoption of technology. The deployment of new technologies is costly and requires a fast and reliable network with stable internet connectivity.

However, due to ongoing instability and conflict within the country, interruptions to the national network occur frequently, posing a significant challenge to both the growing digital industry and the national economy alike.

Moreover, a severe scarcity of experienced technology professionals amplifies these challenges by hampering efforts to both implement and explain new technologies to the public. In addition, there is a lack of awareness, knowledge, and public trust towards digital financial services in Ethiopia -- which further limits adoption among the general public. These factors create significant challenges for service providers in Ethiopia's banking industry that must be resolved to unlock the full potential of digital financial services in the country.

Given the persistent challenges facing both service providers and their customers regarding digital finance in Ethiopia, the researcher investigated how pertinent parties, such as the National Bank of Ethiopia and EthioTelecom, are addressing these issues. The National Bank of Ethiopia is tackling the difficulties faced by banks and customers in adopting digital financial services through the implementation of a national payment system, the promotion of financial literacy across the population via educational programs, and investment in infrastructure development, including expanding access to electricity and internet connectivity. In parallel, EthioTelecom is working to combat network fragility by expanding the physical infrastructure of its telecommunications network, deploying 4G technology across the country, working collaboratively with stakeholders in its industry to enhance service delivery, and implementing measures to improve network resiliency. Notably, both organizations have aligned their efforts with national development priorities outlined in the Ethiopia Digital Financial Services Strategy and the Digital Ethiopia 2025 Strategy.

5.2 Conclusion

This study underscores the need for continued efforts to promote greater digital financial literacy and inclusion across the population. The study reveals that while many Ethiopians utilize ATMs for the withdrawal of money, few use other digital services such as e-wallets, paying bills, purchase by credit cards, and fund transfers by mobile. To promote greater adoption of these valuable services, investment in infrastructure is needed to improve network resiliency and establish strong relationships with local communities to foster trust and awareness. The National

Bank of Ethiopia has implemented regulations and strategies aimed at promoting digital finance practices, but sustained investment and support will be necessary to achieve the goal of improving financial literacy and promoting financial inclusion across Ethiopia's population.

Survey in this study identified several key challenges that currently hinder access to these services. These include poor network efficiency, a lack of internet connectivity, power outages, security concerns, and Delayed confirmation messages during transactions also factor into an overall lackluster user experience. In order to maximize the potential of digital financial services in Ethiopia, the banking industry needs to prioritize initiatives that focus on enhancing the quality of the national network, building greater awareness and public confidence in digital financial services, and investing in the necessary infrastructure to support these technologies. Additionally, recruiting and training experienced technology professionals will be crucial for successfully implementing new technologies and improving the overall user experience. Despite these challenges, the researcher believes that the continued investment and dedication of all stakeholders involved will lead to a more modern and inclusive financial system throughout Ethiopia.

5.3 Recommendation

The following recommendations are made in light of the analysis of the data that was gathered in order to help Ethiopia create a robust digital financial system.

Recommendation for government

- Encourage collaboration among the stakeholders including government, financial institutions, and telecommunication companies, to increase innovation and development of digital financial services.
- When the government declares that it will increase digital finance, it should first focus on improving network efficiency.
- The government shuts down the Internet every now and then for political reasons. Because of this, it will cause huge economic loss, so recommended that it is better the case peace and security are respected in some other way.
- Insufficient storage infrastructure, unreliable power supply, and other logistical challenges that limit the growth of digital financial services.

Recommendation for financial sector

- Since security is the primary issue when implementing technology, all banks should implement stringent security measures. Banks should use cutting-edge, dependable technology to enable customers to access digital goods and services without being concerned about security threats.
- The bank needs to pay attention i.e. That is, they must constantly monitor the ATM network and power supplies and provide adequate cash flow through ATMs, and take appropriate precautions to prevent machines from breaking down. They must update the software regularly to avoid interruption of services. By creating awareness, customers should be encouraged to use digital services through rewards and various subsidies.
- The potential for digital finance to increase banking productivity and cover a wider geographic area than traditional banking services.
- Undertake regular user surveys to assess the level of satisfaction with existing digital financial services and identify areas for improvement.
- According to the interview findings, there aren't enough skilled employees to implement and raise awareness of the bank's digital programs. Most of the time, the personnel is occupied with ordinary retail banking tasks. The bank has to hire more employees who work in digital and technology and educate customers about digital finance solutions. Additionally, there should be training programs for all staff members in order to hierarch to execute banks' digital products and services in an efficient manner.
- It is recommended that banks continuously make awareness of the advantages of their services and give tips on how to use them through advertisements, symposiums, and door-to-door community outreach.

5.4 Suggestion for further study

The practice, challenges, and prospects of digital finance in Ethiopia were examined in this study. The researcher recommended doing additional studies on this topic. This is due to the National Bank of Ethiopia giving the issue of developing the digital financial sector priority because it is crucial to economic growth and technology is still developing. The research explored the experience, issues, and possibilities with a focus on customers and service providers. Other studies are recommended doing that to assess the impact on economic growth as well.

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Appendix

Questionnaire to study

Part (1): Demographic Information

1. Gender; ☐ Male ☐ Female
2. Age; ☐ less than 25 years ☐ 25 – 35 year ☐ 35 – 45 years ☐ More than 45years
3. Educational Level; ☐ Secondary School or less ☐Diploma ☐ BA ☐ Master ☐ PhD
4. Job Title; ☐Government Employee ☐ Private Sector Employee
 ☐Free Lance ☐ Firm owner / project

Part two: customer feelings about the digital finance (You can tick more than one service)

5. Do you have a bank account? If yes, please specify the bank.
7. Do you use digital finance? If yes, which digital finance services do you utilize the most frequently?
☐ATM ☐ Transactions by internet ☐POS
☐ Tellebirr ☐ E-wallet ☐Transferring funds
9. What long have you use digital finance services?
☐ Less than 1year ☐ 1-5 years
☐ More than 5years until 10years ☐ More than 10 to 15 years

8. How frequently do you use digital finance services for business transactions?

- ☐ Low extent (Sometimes) ☐ Medium extent (Frequently)
☐ Great extent (Often) ☐ Always (Continuously)

10. Do you use mobile banking? If yes, for what kind of service transaction do you typically use?

(You can tick more than one service)

- ☐ Airtime recharge ☐ Fund transfer
☐ Balance inquiry/bank statement ☐ Bill payment
☐ International remittance ☐ save
☐ Cash withdrawal ☐ purchasing
☐ Commodity dealing / investment ☐ Pension fund management

12. Do you use ATM?

- ☐ Yes ☐ No

13 Where do you typically (most often) withdrawal money?

- ☐ At the bank teller ☐ Automatic teller machine
☐ Agent or mobile banking

14 What is the typical (most frequent) method of money transfer?

- ☐ At the bank teller ☐ Automatic teller machine
☐ Western Union, Money Gram ☐ Mobile money
☐ Online/Internet

15. How do you typically (most often) pay your bills?

- ☐ Cash direct to company ☐ at the bank teller
☐ Automatic teller machine ☐ Pay outlet by company
☐ Third party pays outlet ☐ Mobile banking
☐ By Cheque ☐ Credit card

☐Prepaid car

Part three please indicate the extent to which you agree or disagree with each statement below:

No	Questions	Strongly agree	Agree	Neutral	disagree	strongly disagree
	available and practice of digital finance					
1	I can easily use banking services by using their cell phones with the bank's mobile and online banking services.					
2.	digital finance Services of Ethiopian commercial Banks are convenient, because it is available 7 days a week and 24 hour a day ,to access my bank account					
3	I use a credit card to make purchases in order to travel without carrying any cash.					
4	I can withdraw of money from any of bank ATM machine with one ATM card					
5	I don't worry if there is a bank distance because I use online banking					
6	Since I can send or transfer money using a mobile banking app and make purchases from merchants, I have ceased visiting to the bank.					
7	I prefer Telebir to use cashless transactions.					
	Challenges faced by bank customers.					

8	I withdraw cash from the bank teller, Since ATM machines frequently fail to function.					
9	I haven't trust the technology that the bank is utilizing.					
10	Despite the problem of ICT infrastructure, it does not stop me from using digital finance.					
11	I don't use digital finance since I don't know how to use it.					
12	I spend most of my time waiting in line at the bank since there is no internet access.					
13	Frequent power interruption and security an issue is affect the use of digital finance.					
14	When I go to the market to buy products, I carry cash because many sellers do not use digital service options.					
15	I don't use digital finance because I think it is convenient for fraudsters.					
	the prospect of digital finance					
16	The level of my satisfaction with digital finance services is increasing from time to time.					
17	I can manage my financial affairs more successfully by use digital finance services.					
18	When i using Digital finance, will Increased the productivity of bank.					
19	With digital financing services, it is possible to cover a wide geographic area.					
20	My money is more secure when I use digital finance than when I use other traditional banking services.					

21	When the user of digital finance increases, Reduce number of customers comes to the banking hall.					
22	Using digital finance services helps to perform transaction at lower cost.					

Part four key Informant Interview (meant for Alternative Channel Banking Division Manager)

1. How do you view about the current digital finance services available in Ethiopia?
2. As it is widely known in our country, transactions are done in cash. Why do you think we have not entered into digital financing?
3. Is there anything the bank can loss because of the customer uses cash for transaction?
4. What awareness have you created for the customer to use digital finance?
5. One of the problems with digital finance is network fragility. What do you think about solving it?
What are the basic challenges of adopting and run new technological innovations?
6. There is a Lack of technical and managerial skills to adopt or run digital finance?
7. Do you think Lack of local bank competition for challenge of digital finance growth?
8. What are the government (especially NBE) roles and supports for growth of digital finance service?
9. What are the challenges been faced by the bank(s) in associated with digital finance service?
10. Have you promoted your bank's digital financial services in a way that all of your bank customers can understand?
11. Your bank has adequate skilled IT personnel dealing with technological innovation and associated problems?
12. What are prospects of digital finance in Ethiopian banking?