The Role of DFS and Fin-techs for Financial Inclusion in Ethiopia

A Thesis Submitted in Partial Fulfillment of the Requirements for the Degree of Masters of Executive's Business Administrations

Tafesework Negussie

Advisor
Yitbarek Takele Bayiley (Ph.D.)
Associate Professor of Business Administration
Faculty of Business and Economics

Addis Ababa University
Addis Ababa

September 2020

DECLARATION

I, Tafesework Negussie, declare that the research project entitled "The Role of DFS and Fin-tech for Financial inclusion in Ethiopia" hereby submitted to Addis Ababa University for the partial fulfillment of the requirements for the Degree of Masters of Executive's Business Administration in Management is my original work and not submitted earlier for any degree either at this University or any other University and all source of material used herein has been duly acknowledged.

By:

Tafesework Negussie _____ _____

(Researcher) Signature Date

ADDIS ABABA UNIVERSITY

SCHOOL OF GRADUATE STUDIES

ADVISORS' THESIS SUBMISSION APPROVAL SHEET

This is to certify that the research project entitled "The Role of DFS and Fintech for Financial inclusion in Ethiopia" submitted in partial fulfillment of the requirements for the degree of Master's with specialization in Executive Business Administration (MBA), the Graduate Program of the Department of Management has been carried out by Tafesework Negussie : ID No: GSE/4116/10 under my supervision. Therefore, I recommend that the student has fulfilled the requirements and hence hereby can submit the thesis to the department for defence.

Yitbarek Takele Bayiley
(Ph.D., MBA, MA Econ)
Associate Professor of Business Administration
Addis Ababa University

_____ _____

(Advisor) Signature Date

ADDIS ABABA UNIVERSITY

SCHOOL OF POSTGRADUATE STUDIES

EXAMINERS' THESIS APPROVAL SHEET

We, the undersigned, members of the Board of Examiners of the final open defense by Tafesework Negussie have read and evaluated his research project entitled *"*The Role of DFS and Fintech for Financial inclusion in Ethiopia*"* and examined the candidate's oral presentation. This is, therefore, to certify that the research project has been accepted in partial fulfillment of the requirement for the degree of Executive Master of Business Administration with _____ corrections.

_____	_____	_____
Chairperson	Signature	Date
_____	_____	_____
External Examiner	Signature	Date
_____	_____	_____
Internal Examiner	Signature	Date

ACKNOWLEDGMENTS

First of all, I would like to thank the Almighty God who enabled me to accomplish this task and let me go through the whole process of life. I would be nothing without him.

I would like to thank my supervisor, Dr. Yitbarek Takele Bayiley, who took a chance on me, guided and motivated me with wisdom, patience, kindness, assistance, constructive comments, valuable advice, and suggestion.

My wife Woy Hirut Kassu and kids (Betselot Tafesework, Beemnet Tafesework, and Beamlak Tafesework) who scarce my love and engagement with them, and My friends Anteneh G/ Mariam (CBE), Meskerem Melese (CBE), Tigist Degefu (CBE), and Edom Tsgaye (Get foundation) thank you for your kind assistance and for encouraging me in all stage of my study. I also extend my thanks to Mr. Solomon Damtew (NBE), Fikremarkos (NBE), Tewodros Tassew (Private Consultant), Elfagid (Mastercard Ethiopia Representative) who were providing the required information for my research project. I am deeply grateful to all who were willing to participate and fill my questionnaire.

Contents

List of Figure

List of Table

Abbreviations

Abstract

Financial inclusion has increasingly become an important international financial policy objective and regulatory principle. Globally about 1.7 billion adults remain unbanked as of 2017. In Sub-Saharan Africa (SSA), largely known for its unbanked society, financial inclusion has increased rapidly owing to innovative DFSs (DFS) though a lot remains to be done. Ethiopia, located in SSA has developed a financial inclusion strategy in 2017 as part of Universal Financial Access by 2020. Following these developments, this research aimed to examine the role of DFSs (DFS) and fintech in implementing the financial inclusion strategy of Ethiopia. The study followed a quantitative approach, both descriptive and explanatory designs, survey method, and questionnaire as a data collection instrument. Financial service providers, fin-techs, and other DFS enablers established the study setting. We employed multistage sampling: purposive sampling to select the study population; purposive sampling to identify relevant survey participant units, and stratified random sampling to select survey participants. 228questionnaires were distributed, of which only 205 were properly filled and used for analysis. 80% of survey participants opine DFS and fintech are not contributing enough in implementing the financial inclusion strategy of Ethiopia due to the slow development of fintech and limited growth of DFS. The paper concludes the poor contribution of fintech and DFS in implementing the financial inclusion strategy of the country. The paper, thus, recommends a steadfast implementation of the regulatory sandbox and the establishment of fintech associations to improve their role. Increasing customer awareness, issuing digital ID, using tax identification certificates, and enhancing service provider readiness are also suggested to develop the right value prepositions and improve DFS consumption.

Keywords: DFS, Fintechs, Financial Inclusion, Ethiopia

Chapter One: Introduction

1. Introduction

1.1. Background of the Study

Over the last century, a series of initiatives were expected to increase access to finance to reach the bottom of the pyramid to create a financially included society, but these have accelerated recently with the development of technology and fintech (Arner & Zetzsche, 2018) . The introduction of new technologies, such as telecommunication, mobile internet, Big Data, cloud computing, etc. is a powerful tool to reach the bottom of the pyramid. Access to financial products and services is becoming more attainable than ever before following the introduction of DFS (DFS) and the development of Financial Technology (fintech).

Thus, the fintech's and DFS holds the boundless potential to create a financially included society. As a new phenomenon, it challenges old business models by providing a greater speed, accountability, and efficiency of financial services. The role of DFS and Fintech's is a lot for promoting financial inclusion and helps to create customer-centric financial products and services. These are innovative financial services to allow people to save, proxy and remote payment for good and service, insurance, finance (microloans), enabling entrepreneurs to invest in new and productive businesses, and making it possible for individuals, businesses, governments, and financial services providers to conduct transactions efficiently. [1]

The roles of fin-tech for financial inclusions are clear, focusing on providing all financial services with lower costs, wider and better access (24/7) (Le Thanh Tam, January 2018) . Financial inclusion is an important international financial policy objective and regulatory principle to curb inadequate access to financial services. The World Bank Group (WBG), with private and public sector partners, set an ambitious target to achieve Universal Financial Access (UFA) by 2020, adults globally will be able to have access to a transaction account or electronic instrument to store money, send and receive payments.

[1] *(McKinsey Global Institute (MGI), SEPTEMBER 2016)*

The World Bank's 2017 Global Findex report, shows that in the last three years, 515 million adults open an account at financial institutions or mobile money account, and between 2010 and 2017, 1.2 billion people opened an account with a formal financial institution or mobile financial services provider (World Bank A. D.-K., 2018). From the report 1.7 billion adults lack access at a financial institution or through mobile money for financial service and remain unbanked without an account.

Mobile and digital technologies, which are spreading in the world, especially in emerging economies allow the user to access digital wallets for payment, transfer, and agent banking service at an affordable cost and time by shortening distance for financial services (McKinsey Global Institute (MGI), SEPTEMBER 2016) . The number of financially excluded are still higher in developing and emerging market countries compared to other developed countries, but there has been substantial progress in developing countries and emerging markets. Particular progress has been made in East Africa, China, and India (Arner & Zetzsche, 2018).

Financial inclusion has been considered as an enabler for 7 of the 17 Sustainable Development Goals. It addresses at least three aspects like access to financial services and products; usage of financial services and products; and quality of financial services and products, defined by consumer ability to benefit from new financial services and products (and linked to consumer protection and financial capability). [2]

Thus, Counties have given key priorities for DFS and the development of fin-tech to enhance countries' economic growth and living standards by creating a financially included society. Ethiopia is one of the 25 priority countries for the UFA initiative, has been striving to create a financially included society. This has happened by adopting different financial technologies that promote financial service accessibility. However, this implementation has been facing a different challenge as a nation and even between different groups of the population in the same country and region. Thus, the focus of this research project was on the role of DFSs and fintech for financial inclusion in Ethiopia from the supplier perspectives.

[2] www.worldbank.org/financialinclusion

1.2. Statement of the problem

In emerging economies digital financial technology has the potential to provide access to financial services for unbanked and un-served, particularly for women. Expansion of financial service through digital financial technologies unlock productivity and investment gaps, reduce poverty, empower women, and help build stronger institutions with less corruption all while providing a profitable, sustainable business opportunity for financial service providers. It also avoids customers waiting long to get products of financial services. Consequently, the introduction of digital financial technologies allows the customer to access financial services at an affordable price that creates profitably, boosting financial inclusion, and enabling large productivity gains across the economy

Despite this fact, financial technologies were not deployed or optimally utilized in all emerging economies with the potentials of the society or consumers in the nations. Countries like Ethiopia, Nigeria, and Egypt exhibited less development of DFSs particularly in mobile money (GSMA, 2017 ; State of the Industry Report on Mobile Money, 2017). These countries with a combined adult population of over 242 million, and most populated in Africa had limited availability of mobile money services and low rates of financial inclusion. On the contrary, an exemplary deployment experience of mobile money was found in sub-Saharan countries like Kenya. In this deployment over 60% of the adult population has a mobile money account (GSMA, 2018 State of the Industry Report on Mobile Money, 2018).

In these countries and others, most of the DFS providers and non-financial like Fintech s, telecom operators, and other relevant organizations are expected to boost the number of accounts to create a financially included society. Thus, different studies have been made to understand the role and impact of DFSs on the financial inclusion of countries, which are mainly focused on consumer perspectives. This has been explained by different researchers, that the DFS are increasingly important contributors to financial inclusion. They contribute to the national objective by creating financial service accessibility and availability, increase service habits, employment opportunities, and subsequently impact the country's economic growth (Ravikumar, 2019; Ravikumar, 2019) . Impact of Digital Finance on Financial" founds that Digital finance through Fintech providers has positive effects on financial inclusion (Ozili, 2017).

Apart from the research undertaken internationally, in Ethiopia, the study which was conducted by Zewedu, 2014, examined the link between financial inclusion, regulation, and inclusive growth. He

found progress made in previous years but no change in the level of financial inclusion owing to lack of physical access (Zwedu, 2014). Moreover, involuntary and voluntary exclusion of customers was higher in Ethiopia that requires a policy change to narrow down gender, religious, and urban-rural gaps and foster financial inclusion in Ethiopia ((EEA), 2017).

However, supporting and enhancing the availability of DFS and fintech is one of the incentives that are expected to motivate customers and relevant stakeholders to expand the financial services and ultimately create a financially included society. Hence, existing research focused on the outcomes but not on causes that include consumption, conveniences, accessibility, and availability. Thus, the role and contribution of existing scenarios and forecasting future directions of DFS and fintech importance for financial inclusiveness were not sufficiently studied. Undertaking such research requires understanding the role of technology, potentials, infrastructure, government support, innovation, and balance between regulation and risks

There is no research exhibited that the role of DFS and the development of Fintech s for financial inclusion in Ethiopia. The DFS and fin-techs are influenced by government contribution, potentials, innovativeness, possible challenges, regulatory support, and related risks to support the financial inclusion of the country. I, the researcher observed that most of the research had been done with respect to consumers, not from the supplier /provider side. To the best of the researcher's knowledge, so far there are no researches conducted on “the role of DFSs (DFS) and fintech for financial inclusion in Ethiopia” which mainly focused on the supplier side.

There is no research conducted to investigate the role of DFS and fintech in enhancing financial inclusion in Ethiopia. Existing research studied the role of DFS and fintech with a focus on customer perspectives and no study has examined the supplier side, yet. The current study, therefore, attempted to fill this gap by examining the role of DFS and fintech in the financial inclusion of the country.

1.3. Research Questions

In view of the problem statement, the central research question of this research project tries to answer is: What are the roles of DFS and fintech to accelerate financial inclusion in Ethiopia?

The specific research questions are:

- What are the roles for the development and distribution of DFS and Fintech s for financial inclusion of the country from the supplier side?
- What are the contributions of government in the development of DFS and fintech for financial inclusion?
- What are the potentials for the development and distribution of DFS and Fintech s for financial inclusion of the country from the supplier side?
- What are the challenges for the development and distribution of DFS and Fintech s for financial inclusion of the country from the supplier side?
- Does innovative DFS enhance countries' financial inclusion?
- What are the pros and cons of the regulatory framework for the provision of DFS and fintech development in Ethiopia from the supplier side?
- What are the risks of the provision of DFS and Fintech s in Ethiopia from the supplier side?

1.4. Objective of the Study

1.4.1. General Objective

The overall objective of the research project is to provide a better understanding of the DFSs and fin-techs roles in the financial inclusion of the country. And also, to propose or show the DFSs and fin-techs implementation options for financial institutions based on the other countries experience.

1.4.2. Specific Objectives

To achieve this overall objective, the paper has seven specific objectives, namely:

- To identify contributions of government in the development of DFS and fin-tech for financial inclusion
- To identify the potentials of DFS expansion and fintech developments for financial inclusion;
- To identify imminent challenges of DFS expansion and Fintech developments;
- To review an innovative financial service that enhances DFS and Fintech developments for countries financial inclusion;
- To investigate the pros and cons of the regulatory framework and towards the provision of DFS and Fintech s in Ethiopia;

- To examine the different risk implications that impact the supply of DFS and the development of Fintechs.
- To identify the effect and roles of Fintech s and DFS to create financial inclusion;

1.5. Significance of the Study

Following the current economic reforms, the DFSs and Fintech s are placed at the top to create a digital economy in the country. Consequently, different initiatives and developments have been tried by the regulatory (NBE), Ministry of Innovation and Technology, and other stakeholders. Thus, this research project is significant in providing some inputs to the regulators, DFSs providers, and Fintechs.

The research project may also contribute to effective business practices by highlighting how parties involved in the ecosystem by introducing new and value-adding products and services. Also, the research results may indicate a policy instrument in the broader introduction of DFS and Fintech development and will contribute to pinpointing the specific strategies needed to expand DFSs and Fintech in Ethiopia.

Moreover, the result of this research project will serve as a base for further study.

1.6. Scope and limitation

This paper takes into consideration various findings linked to DFSs and fintech development, including functions typically discharged by the financial service providers and other stakeholders. It explores the potential and challenges of DFSs and Fintech s. Furthermore, it discusses issues of government regulation prevailing in related areas possibly affecting ecosystems and the introduction of instruments currently not in use in the country for possible solutions.

This paper focuses mainly on the Supply Side of the DFS and fintech development in the country. Thus, the research will explain the role of the DFS and Fintech s to create financial inclusion in the country concerning the provider/supplier side.

In this research, the majority of the population of the study is found in Addis Ababa, except Amhara Saving and credit association and Dedebit microfinance institutions, as most of the development and introduction of financial products are developed at headquarters. Thus, the sample is taken from employees who are working at the Commercial Banks's, Insurance Companies, Microfinance

Institutions, Fintech Companies, (Technology service Provider and Payment service Providers), National Bank of Ethiopia, Ethio Telecom, Ministry of Innovation and Technology and Agricultural Transformation Agency.

1.7. Organization of the paper

The first chapter deals with the introductory part of the study, the second chapter discusses the details of the related literature of the study. The third chapter is all about the research design and methodology of the study. Results and discussion are dealt with under chapter four. The last chapter is about a summary of major findings, conclusions, and recommendations.

Chapter Two: Literature Review

2. Literature Review

This section outlines the literature review, which is mainly focused on how Fintech and DFS play a significant role to deepen financial inclusion, and organized as a theoretical and empirical literature review plus the summary of the review.

2.1. Concept and Definitions

2.1.1. DFSs

DFSs (DFS) are fundamentally about saving money, accessing credit and insurance, and performing transactions through digital channels mobile phones, cards, computers, tablets, and so on. The basic, functional capabilities that DFSs allow are Cash in / Out, transfer of funds, cross-border payment, etc (Digital Finance for Development, 2013) . Digital finance as financial services is mainly manifested by low use of cash and traditional bank branches (McKinsey Global Institute (MGI), SEPTEMBER 2016). DFS (DFS) enables banks and other financial service providers to reach the bottom of the pyramid (Digital Finance for Development, 2013).

DFS are enablers and facilitators of economic activity in every sector and a sector-agnostic means to many ends (Digital Finance for Development, 2013) . Financial services such as payments, savings accounts, credit, insurance, and other financial products are accessible by individuals, business, and government at all levels. These are provided by banks, payment providers, other financial institutions, telecom companies, financial technology (fintech) start-ups, retailers, and other businesses. These services are cost-efficient and easily accessible that can be applied in a variety of sectors, such as health, agriculture, education to increase development impact, and can similarly be leveraged to help support education outcomes (Galdava) .

In addition to the payment services using mobile phones and other channels, digital finance facilitates the delivery of a broad range of financial services that enable people to access formal financial services to manage income flows and smooth consumption, low-cost micro-savings, and credit services with no formal credit history and an insurance package for life crops, cattle, travel and others (Digital Finance for Development, 2013) .

Providers are more benefited from DFS implementations than conventional bank branches. The average cost of a full-fledged bank branch is by far higher than the cost of equipping an agent with a PoS device or a mobile phone. Thus, it dramatically reduces the fixed infrastructure costs, thereby changing the value proposition in the provisioning of services in rural, low-income areas.

2.1.1.1. Diversification of Financial Services Ecosystem

Traditionally most of the providers in the ecosystem were financial service providers particularly banks. The technological development in the world shifts the monopoly nature of banks in the delivery of financial services in the ecosystems by including others. These are mainly non-financial players diversify and invest in mobile-based payment businesses in order to gain market access in the payments space and then leverage their experience to strengthen portfolio companies. Consequently, in Asia's financial ecosystem non-banks play a major role, which constitutes a significantly different set of players than markets in Sub-Saharan Africa or the Middle East and North Africa. In addition to mobile money providers, the Asian market also hosts a sizeable number of Fintechs such as Alipay and tech giants such as Tencent. These players have been partners and develop many customer-centric use cases to enhance services in transportation and food, medical and financial services. Alipay alone has partnered with more than 200 financial institutions and offers over 2,500 mutual investment funds and is integrated with over 100,000 merchants outside China (GSMA, 2018 State of the Industry Report on Mobile Money, 2018).

Fintech in Southeast Asia, Ant Financial, expand its presence through the acquisition of Paytm in India, Mynt in the Philippines and bKash in Bangladesh. It has also entered into a strategic partnership with MoneyGram, and in Kenya partnered with Equitel and Red Dot Payments to serve Chinese tourists. A Singapore-based ride-hailing giant, Grab, first expanded into mobile payment services, is now available in major Southeast Asian markets such as Indonesia, Malaysia, the Philippines, and Vietnam. Grab's most recent move in digital payments is partnering with MasterCard to offer its 110 million+ registered users a virtual prepaid card to enable online payments and the possibility to cash-out (GSMA, 2018 State of the Industry Report on Mobile Money, 2018). In Latin America, the fin-tech companies have also promoted DFS. This has been manifested by MercadoLibre. it has become the most popular e-commerce platform in the region. With its marketplace, Mercado Pago, at its center, MercadoLibre has expanded into offering a range of payment and financial services, such as credit and wealth management, serving both MSMEs and individual users. Telecom Social platform Commercial platform Payment services Non-

transactional financial services Mobile operators (GSMA, 2018 State of the Industry Report on Mobile Money, 2018).

2.1.1.2. Potential's of DFSs

As reported by the World Bank Findex report 1.7 billion of the world population did not have access to regular and mobile money accounts. These populations are mostly found in emerging countries and the potential for DFSs. The provision of DFS is an opportunity for current banked and unbanked customer relationships. The DFS is a significant potential to provide affordable, convenient, and secure financial services for poor people in developing countries (IFC a. m., Note 34 | March 2017).

According to (Innovative financial technologies to support livelihoods and economic outcomes, 22 June 2018) Inclusive digital financial systems enable the bottom of the pyramid to save and borrow in the formal financial system, accesses to maintain account balances and assets, earn a financial return, smooth their consumption, and invest in entrepreneurial ventures. DFS for business is an opportunity to improve traceability of financial transactions and analysis of cash flow, streamline management of suppliers, and enhance their understanding of operations and customers.

Affordable cost of the transaction and simplified transfers through digital channels improve the liquidity of the firm's cash inflow at a faster rate and create digital records, which can be tracked and audited. This real-time, granular data bring much-needed transparency to organizations while allowing them to solve problems quickly and use their resources more efficiently (Alexande, 2019) . It offers significant benefits and a business opportunity for the providers by improving efficiency in resource mobilization through digital channels. Consequently, different players are shown interest than banks. These may include telecom companies, payment providers, financial technology start-ups, microfinance institutions (MFIs), retailers and other companies, and even handset manufacturers (McKinsey Global Institute (MGI), SEPTEMBER 2016) .

The digital payments reduce leakage in public spending and tax revenue collection. Digitizing payments of wage and government transfer has also contributed to increases in account ownership in some developing countries (Demirgüç-Kunt et al., 2017). This effectively would increase public investment in areas such as education, infrastructure, and health care that are critical for nations. Digital payments could further enhance revenue by reducing the size of the informal economy where businesses do not register, pay taxes, or comply with product and labor market regulations. Digital operations within the government can create large efficiency improvements and therefore

cost savings. Shifting social programs from cash to digital payments can also improve outcomes through better targeting of recipients (McKinsey Global Institute (MGI), SEPTEMBER 2016) . The government using digital channels for salary is a major benefit for the reduction in corruption, improved efficiency, and timeliness of payments (Digital Finance for Development, 2013).

On the other side, the DFS is supported in different sectors like agriculture, health, and educations. In the agricultural sector, a DFS is transforming the delivery of subsidized inputs to smallholder farmers using mobile phones and other technology to outreach smallholders by saving government spending (Digital Finance for Development, 2013) . It can provide a cost-effective and secure method to sell an agricultural product. Consequently, this activity has increased account ownership (Innovative financial technologies to support livelihoods and economic outcomes, 22 June 2018). The DFS is also promoting poor educations, increase accessibility to electricity and another source of energy, increase gender equity, improve health outcomes for individuals, families, and communities, facilitate humanitarian assistance, to manage financial risk, and handle income shocks, stemming from unforeseen emergencies (e.g. illness, loss of employment, livestock death, and harvest or business failure) (Innovative financial technologies to support livelihoods and economic outcomes, 22 June 2018). Reduce the cost of international remittances Remittance and supports social networks.

2.1.1.3. Challenges of DFSs

The DFS has been provided to all; particularly it is important for financially excluded in developing and emerging economies. This exclusion is mainly manifested by women, farmers, and others who don’t have access to formal financial services. However, DFS is not the only means to create a financially included society unless it is supported by appropriate regulations and consumer protections, good physical infrastructure, awareness, and trust in digital channels, among other factors. Lack of attention to these challenges can undermine the uptake of DFSs (Innovative financial technologies to support livelihoods and economic outcomes, 22 June 2018) .

a) Regulations

The regulation has different perspectives for providers in different countries, as it allows more players in the ecosystem and others are more rigid and monopolized by limited financial service providers. Thus financial regulators should consider policies to allow potential digital finance service providers to enter into the market without being attached to a bank. The government needs

to place appropriate regulations and customer protections to safeguard users from fraud, particularly for excluded ones, and promote interoperability across the provider (Innovative financial technologies to support livelihoods and economic outcomes, 22 June 2018) .

The most successful providers today overwhelmingly operate in markets where regulation is enabling. Conversely, restrictive regulatory frameworks can stifle investment, limit the rollout of new services, and raise costs for consumers, all of which can negatively affect adoption and activity rates. Thus, new regulatory developments appeared encouraging, yet their layers of complexity reveal increasingly restrictive requirements. Globally, the DFS particularly the mobile money industry encountered developments in five main areas of regulation in 2018, which affect the supply of DFS like taxation; Know Your Customer (KYC) requirements; cross-border remittances; national financial inclusion strategies; and data regulation (GSMA, 2018 State of the Industry Report on Mobile Money, 2018).

b) Infrastructure

Infrastructure is a critical tool to deliver the DFS; these are reliable electricity, mobile network, and internet connectivity. These help users and providers to build trust in the delivery of DFS. If not the poor infrastructure undermines the reliability and exclusion of participants in DFS usage (Innovative financial technologies to support livelihoods and economic outcomes, 22 June 2018). In addition to the physical infrastructure, a well-developed financial service ecosystem is important to promote uptake of DFSs and financial inclusion (Innovative financial technologies to support livelihoods and economic outcomes, 22 June 2018) .

c) Awareness and understanding

Awareness and understanding is an important part of promoting and taking of DFSs. Thus to reach low income and financially excluded society requires greater financial awareness and literacy. Moreover, lack of collaboration among providers through interoperability can further reduce the ability of all potential users to experience how to use digital financial technologies (Innovative financial technologies to support livelihoods and economic outcomes, 22 June 2018).

d) Trust

Trust is one of the critical parts of DFS delivery. Consumers should have built trust while accessing their accounts via digital channels. Lack of customer trust in DFS delivery will impact the service up taking, account ownership, and the possibility of improving financial inclusion. This problem is

mainly seen in countries that lack strong consumer protection institutions and frameworks. Users' distrust can be caused by a high degree of uncertainty and perceived risk in electronic financial transactions due to digital data security breaches. Users need safety and security in DFS (Innovative financial technologies to support livelihoods and economic outcomes, 22 June 2018).

2.1.1.4. Legal Review of DFSs

The technology allows new operating models that involve a wider range of actors in the chain of financial services, from design to delivery. This in turn brings new risks and new ways to mitigate them. Thus, the regulators have to prepare themselves to issues a specialized licensing for nonbank DFS providers without being subject to the full range of rules applicable for commercial banks and without being permitted to intermediate funds (CGAP.-Stefan Staschen, 2018). To protect user interest and subsequent risks related to the new development of the DFS product, the regulator needs to work with innovators in the private sector to promote test-and-learn approaches. These approaches also include regulatory sandboxes which are developed in Singapore and the UK. The regulator should provide equal treatment between established banks and the new nonbank financial service providers (Bank A. D., Financial inclusion in the digital economy., 2016).

Moreover, the regulators should have to work with other stakeholders to create an innovative DFS to create an inclusive society. These can be creating full access to technology to the pyramid so the digital divide must be addressed. To properly address this issue, countries need to focus on ensuring access to the internet for all, supporting digital identification systems for everyone, Allow and promote partnerships between banks to use big data coming from social media or other forms of alternative data to expand access and encourage innovation. And Allow cloud-based solutions especially important for smaller players and in smaller economies where shared, cloud-based solutions can better enable financial players to offer expanded access to financial services. Despite all, the regulator should work on consumer protection and education to bridging the gap in the use of technology, lacking familiarity with digital technology, customers often experience difficulties as they adapt and learn to trust it. Effective, consumer-centric financial education can address this challenge and protect those consumers against digitization’s risks (Bank A. D., Financial inclusion in the digital economy., 2016).

2.1.2. Fintech's

Financial technology (Fintech) is a new industry that uses new technologies and innovation to improve activities in finance and aims to compete with traditional financial methods in the delivery of financial services (Silva, 2018). Fin-tech leverages technology for the design and delivery of financial services and products in an innovative way. Fin-Tech usually covers all aspects of the bank-client relationship and creates digital alternatives that are more efficient, offering lower cost, more convenience, and overall a better user experience. It has emerged as the platform bringing together banks and major service providers such as utilities, telecom, transportation, card schemes, retailers, healthcare, education, etc (Mehrotra, Financial Inclusion Through FinTech – A Case of Lost Focus, 2019).

The technological breakthroughs within the scope of financial services change the payers in the ecosystems. These changes brought economic growth through innovative financial services (Liudmila Zavolokina*, 2016) . Fintech companies can provide more innovative and customer-centric business models. These disruptive organizations are gradually gaining market share and profits against traditional financial services, which are in serious need of reviewing their business models and changing strategy in order to be more competitive in the market (Nicoletti, The Future of FinTech, 2017) .

2.1.2.1. Fintech s Developments

For centuries, technological progress has been an important force in the transformation of finance. In recent years have witnessed a rise in automation, specialization, and decentralization, while financial firms have found increasingly efficient and sophisticated ways of leveraging vast quantities of consumer and firm data (Fintech and Financial Services, 2017). These undergoing a major transformation, brought about by the rapid development and spread of new technologies. The confluence of 'finance' and 'technology' is often referred to as 'Fintech', typically describing companies or innovations that employ new technologies to improve or innovate financial services. 'Fintech' developments are seen across all areas of the financial sector, including payments and financial infrastructures, consumer and SME lending, insurance, investment management, and venture financing (World Bank H. N., 2017) . Fintech is a term used to denote firms that offer modern technology in the financial sector with a clear idea to introduce new products and improve existing ones. Fintech has a clear idea of how to introduce new or how to improve existing services in the financial services market (Svetlana Saksonova1, 2017).

The FinTech revolution starts after the financial crisis of 2008 in the collapse of banks, which are mainly from North America. The emergence of start-ups has not followed any particular path or trend across geographies and subsequently emerged in Sub Saharan countries. Consequently, the startups disrupt the financial service delivery of the banks.[3] A large number of all FinTech globally are from the United States. Ironically, most of the financial firms in North America are centered in and around the East coast, while a large number of Fintechs have emerged from Silicon Valley, which is on the West coast (Arjunwadkar, 2018) .

Fintech is changing the game for the financial services industry by introducing Chatbots for customer service, Machine learning and AI for fraud detection, Omni-channel banking and obsolescence of bank branches, Biometrics for stronger security, and Blockchain for digital transactions. (Five ways fintech is disrupting the financial services industry (Gada, 2018). Fintech relies on innovative technologies and business models to provide financial services outside the traditional financial sector. Lending, payments, and cross border transfers are some of the segments most highly affected by this development. [4] "Fintech" covers a range of different models operating in different niches, with different value prepositions. The first model is Fintech s as new entrants, startups, and attackers looking to enter financial services using new approaches and technologies. The second model is Fin-techs as incumbent financial institutions that are investing significantly in technology to improve performance, respond to competitive threats, and capture investment and partnership opportunities. The third model is Fintech s as ecosystems orchestrated by large technology companies that offer financial services both to enhance existing platforms (e.g., AliPay supporting Alibaba's e-commerce offering) and to monetize current user data or relationships. The fourth is Fintechs as infrastructure providers selling services to financial institutions to help them digitize their technology stacks and improve risk management and customer experience.

2.1.2.2. Fintech's Potentials

Fintech has been finding a way to enter the financial service market, which has mainly been manipulated and run by big financial institutions. These institutions are highly organized to comply with any strong regulatory requirements developed by the regulator. And they had the highest

[3] The Fintech Revolution: A Threat to Global Banking?, Research & Policy Briefs From the World Bank Chile Center and Malaysia Hub, No. 14, April 2018)

[4] The Fintech Revolution: A Threat to Global Banking?, Research & Policy Briefs From the World Bank Chile Center and Malaysia Hub, No. 14, April 2018)

customer base and resources at the time of tough economic conditions. However, Fintech es is innovative fast-moving companies particularly start-ups, focused on innovative technology or process in everything from payments to insurance. And, they have been attacking some of the most profitable elements of the financial services value chain. This has been particularly damaging to the incumbents who have historically subsidized important but less profitable service offerings. Global investments in Fintech more than tripled in 2014, reaching more than $12 billion. In comparison, banks spent an estimated $215 billion on IT worldwide in 2014, including hardware, software, and internal and external services. This is a material number, and because it is so highly targeted, the Fintech spending will make an impact (Courbe, 2016) .

The potential of Fintech for financial inclusion may be realized with a strategic framework of underlying infrastructure and an enabling policy and regulatory environment to support digital financial transformation. These can be explained by Building digital identification and e-KYC systems to simplify access to the financial system; Digital payment infrastructure is the primary way to facilitate digital financial flows in an economy; It combines all the promotion of account opening and access with the electronic provision of government services, particularly for public transfers and payments, to scale up the use of digital finance and related services. By supporting access, payments, and savings, together these three pillars provide a foundation for digital financial transformation and financial inclusion ((AFI SPECIAL REPORT) Smits3, 2018).

2.1.2.3. Effects of Fintech

The effect of Fintech for financial inclusion gives a boundless potential to reach the bottom of the pyramid at an affordable cost. It has been challenging the old or traditional technologies and models of business with new models of delivery. It creates financial service accessibility which has not been covered before (Badruddin, 2018) . With all development opportunities in financial service delivery, transferring funds across the globe often anonymously, using means such as cryptocurrencies might increase illicit financial flows. These also risks in transferring and accessing financial accounts that makes customer susceptible to cybercrime. Moreover, the entry of non-traditional players poses new challenges for policy, regulation, and supervision WORLD DEVELOPMENT REPORT 2016). It is conceivable that the full range of services currently offered by banks, central banks, and certain market infrastructures could be at least partly supplanted by new entrants, automated processes, and decentralized networks. The increased competition is forcing incumbents (banks and non-banks) to react by adopting new technologies, improving

service offerings, altering business models, and reducing costs as reported by IMF staff discussion note FINTECH AND FINANCIAL SERVICES (Fintech and Financial Services, 2017).

2.1.2.4. Fintech Regulatory Framework

The availability of high-speed computing advances in cryptography and innovations in machine learning and data analytics are only some of the elements behind the latest fin-tech wave. For supervisors and overseers, is to up-to-date with the developments and learn about their application to finance that requires. The regulators are also equipped with the necessary knowledge to maintain payers' interest like Fintech includes non-bank financial firms, as well as non-financial firms such as tech companies and network operators. Thus, the authorities responsible for the more traditional areas of finance will need to cooperate more with other authorities at the national level to exploit synergies where appropriate, to fill in the gaps, to balance different interests, and to avoid working at cross-purposes. And last one, technology as well as finance now span national borders. Cooperation at the international level is essential. The international cooperation agenda these days has many competing priorities (Caruana, 2016) . According to (Gayatri Murthy, 2019) Several regulators are allowing private firms to conduct small-scale, live testing of innovations in a controlled environment called sandboxes by providing a special exemption, license, or other limited, time-bound exceptions under the regulator's supervision (Jenik and Lauer 2017). Countries that permit sandboxes include Sierra Leone, Kenya, Jordan, Mexico, and Thailand. These sandboxes encourage firms, including Fintech s, to test innovative solutions in a safe and discreet environment to understand customers and adjust their business models before sorting out what kind of licensing scheme is needed, if any.

2.1.3. Financial Inclusion

The SDGs comprise an ambitious 17 goals. Greater access to financial services is a key enabler for many of them. Financial inclusion helps create the conditions that ultimately bring many of the SDGs within reach. Creating cash lit society using digital payments to distribute social benefits and wages, governments can reduce costs and leakage, while at the same time advancing financial inclusion. Digitizing these payments could bring millions of adults into the financial system for the first time and strengthen the digital financial infrastructure in emerging economies. Switching to digital payments could potentially save significant time and resources for businesses and workers alike. Thus, financial inclusion is an enabler to meet some of the Sustainable Development Goals

(SDG) like Eliminating extreme poverty (SDG 1), Reducing hunger and promoting food security (SDG 2), Achieving good health and well-being (SDG 3), Fostering quality education (SDG 4) and Promoting gender equality (SDG 5) (Leora Klapper, 2016).

Financial inclusion has become an important international financial policy objective and the financial regulatory principle and has been incorporated into several international declarations and codes of good practice. Some of the international initiatives to promote financial inclusion include the Maya Declaration on Financial Inclusion (2011) that was set forth by the Alliance for Financial Inclusion, a network of central banks, financial supervisors and other regulatory authorities from developing and emerging market economies, to improve the economic and social potential of the world's poorest by improving their access to financial services and products. Significantly, the Maya Declaration states that financial inclusion is critical for empowering and transforming the lives of all people, especially the poor, and that policies designed to promote it should also enhance global and national financial stability and market integrity. The G20 has recognized the importance of DFSs in supporting the objective of financial inclusion (Alexander, , 18-20 July 2017Financial).

2.1.3.1. DFSs and Financial Inclusion

Developing country governments in Asia and the Pacific are exploring ways to encourage their populations to use DFSs. There are four key instruments of financial inclusion like payment system, credit, insurance, and investment. By creating such an ecosystem, the countries will expand access to affordable financial services to the financially excluded. The emergence of new digital technology, including Fintech, can ensure financial inclusion and improve financial wellbeing (Bank A. D., Financial inclusion in the digital economy., 2016).

Digital Business Models for Financial Inclusion (Bank A. D., Financial inclusion in the digital economy., 2016) requires to address the challenges of delivering appropriate and affordable financial services. These new DFS models provide opportunities and challenges. The most promising innovations in technology for enabling inclusive DFSs with a new business model that expands outreach to those who have been financially excluded. These can be explained differently as the establishment of a regulatory sandbox, allowing cloud-based services and use of biometrics are mentionable, Freemium models and cross-selling other financial services (Bank A. D., Financial inclusion in the digital economy., 2016) .

In addition to the business model adopted to create a financially included society through DFSs, the partnership is also mentioned as critical to enhance inclusive DFS. In India, in partnership with YES Bank, digital financial technology tools are helping improve the gathering of information in order to enable big data analysis to expand access to credit. (Bank A. D., Financial inclusion in the digital economy., 2016)

Financial inclusion through DFSs can be moving from traditional business models to customer-centric ones. It is complicated and long, with a steep learning curve. Digital technology innovators in financial services are driving growth and the market is changing rapidly. DFS providers meet the financial needs of different segments of the population. Risk-Based Customer Due Diligence (CDD). A proportionate anti-money laundering framework is adopted, allowing simplified CDD for lower-risk accounts and transactions. The latter may include opening and using e-money accounts and conducting over-the-counter (OTC) transactions with DFS providers. (CGAP.-Stefan Staschen, 2018)

2.1.3.2. Fintech for financial inclusion

In the research "Review of Fintech Strategies for Financial Inclusion in Sub-Saharan Africa" (G20 2019 Japan Krish Chetty, 2019), Fintech provides an opportunity to promote the financial inclusion of low-income households in developing countries. Greater financial inclusion can be a catalyst for eradicating poverty, and for developing the small business sector. Fintech includes both access and usage of financial services focusing on affordability, availability, creating financial literacy, triggering a regulatory framework, and promoting fair competition. As drivers of financial inclusion differ depending on different contexts requiring policymakers, regulators, and innovators to have a clear understanding of the needs of their respective markets. While adopting fin-techs most significant challenges are identified by stakeholders like the high cost of mobile wallet transactions, lack of proper value proposition, low or minimal financial literacy, and regulatory requirement (G20 2019 Japan Krish Chetty, 2019).

2.2. Theoretical Literature Review

The diffusion innovation and financial innovation theory are used to explain financial inclusion, Fintech, and DFS adoption respectively.

2.2.1. Diffusion Innovation Theory

Diffusion of Innovation (DOI) Theory, developed by E.M. Rogers in the last 50-plus years, in 1962 first edition, is one of the oldest social science theories. It explains how the concept or a product communicated diffused to the consumer or society through time. The result of this diffusion is that people, as part of a social system, adopt a new idea, behavior, or product. Adoption means that a person does something different than what they had previously (i.e., purchase or use a new product, acquire and perform a new behavior, etc.). The key to adoption is that the person must perceive the idea, behavior, or product as new or innovative. [5]

Adoption of a new idea, behavior, or product (i.e., "innovation") does not happen simultaneously in a social system; rather it is a process whereby some people are more apt to adopt the innovation than others. Diffusion of innovation is understanding of trends, and factoring in consumer tendency groups like influencers, early adopters, and those "laggards". This adoption happens in phases, leveraging different types of consumers, one can easily adopt new and the other take time to consume it. The first in line is the innovators who create new ideas and technologies or financial service products. The early adopters are those who want to try new innovative financial product and services and always wants to check the new product and services. The early majority adopters are, those who are willing to acquire new products and services following early adopters. The late majority and laggards are consumers who proof for the innovative financial services, peer pressure to accept new product and services.[6]

[5] http://sphweb.bumc.bu.edu/otlt/MPH-Modules/SB/BehavioralChangeTheories/BehavioralChangeTheories4.html
[6] https://www.thestreet.com/technology/what-is-diffusion-of-innovation-14804157

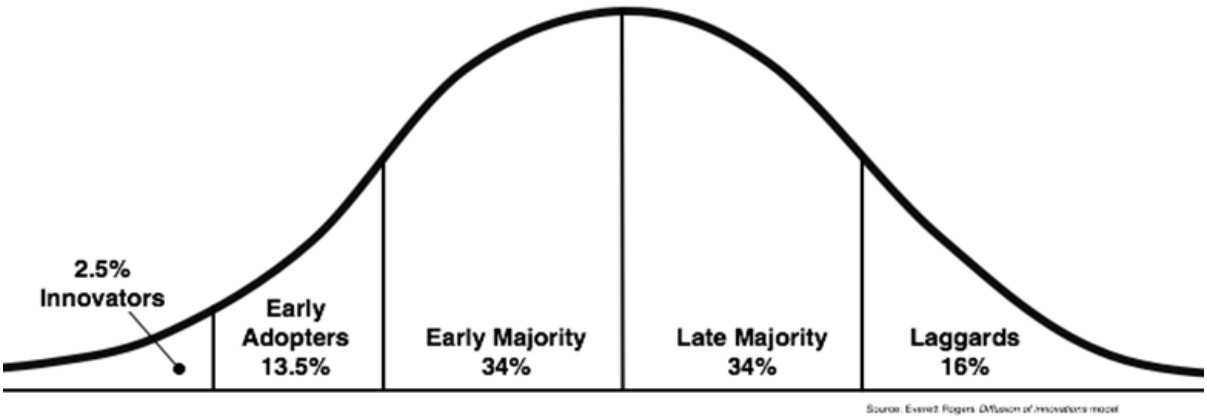


Figure 2-1 Technology Adoption Lifecycle (Adopted Source: http://blog.leanmonitor.com/early-adopters-allies-launching-product/

The Diffusion of Innovation (DOI) theory, stages by which a person to adopt an innovation shall have awareness about the innovation and decision to adopt. And then the diffusion is accomplished subsequently. Five factors influence the adoption of an innovation, and each of these factors is affecting differently on the above stages to a different extent in the five adopter categories. These are.[7]

a. Relative Advantage - The extent or degree in which an innovation is better than the idea, program, or product it replaces.

b. Compatibility - How consistent the innovation is with the values, experiences, and needs of the potential adopters.

c. Complexity - How difficult innovation is to understand and/or use.

d. Trainability - The extent to which the innovation can be tested or experimented with before a commitment to adopt is made.

e. Observability - The extent to which the innovation provides tangible results.

However, it works better with the adoption of behaviors rather than cessation or prevention of behaviors. And doesn't take into account an individual's resources or social support to adopt the new behavior (or innovation). These are among the limitation mentioned in the Diffusion of Innovation Theory

[7] http://sphweb.bumc.bu.edu/otlt/MPH-Modules/SB/BehavioralChangeTheories/BehavioralChangeTheories4.html

2.2.2. Theory of Financial Innovations

The role of innovations in economic development is undeniable, financial innovation is explained in different ways and some are defined as the creation of new products and services. Others also define financial innovation as not limited to the creation of products and services and encompass all the activities from the back end to the front to supply an innovative financial product and services. Financial innovation is defined as a process, carried out by any institution, that involves the creation, promotion, and adoption of new (including both incremental and radical) products, platforms, and processes or an enabler of technologies that introduce new ways or changes to the way a financial activity is carried out. This means that financial innovation does not necessarily come from financial institutions. Innovations such as Amazon's one-click payments, Blockchain, PayPal, and others are all financial innovations that came from nonfinancial institutions (Khraisha1, 2018)

The application of innovations increases the competitiveness of a business entity and creates value for its owners. The sustainable growth of the modern business entity is impossible without the proper innovation management accompanied by the knowledge, information, reputation, and trust management (Aardhra. V.1, 2016)

The source of the financial innovation can be the internal (Supply-side) and external (Demand side), however, the implementation process is quite similar whether sourced from internal or external. In the contemporary economy, a lot of financial innovations have been introduced but not stayed with patent compared with technological innovations. Thus, the diffusion of financial innovation is quite fast. In the beginning, the new developments are introduced in the less regulated international market and then, after they have been positively verified they are implemented into the more supervised domestic market. Financial innovations that have not succeeded are withdrawn from the market, and after some time their modifications are implemented. The successful financial innovations can be easily imitated by the competitors in the market, so the new financial developments that are introduced by different financial institutions may be quite similar. Thus, the process of creating and implementing financial innovations is quicker, less complicated, and cheaper than the similar process in case of the technological innovations. The speed of financial innovations diffusion in the global financial system is enhanced by the dynamic development of new communication and information technologies (Aardhra. V.1, 2016)

To enhance the contemporary challenges of liquidity management, financial innovation has a solution in cash management using state-of-the-art settlement techniques, information channeling systems, new ways of investing cash surpluses, and managing risk (Joanna Błach, 2014) . Finding innovative models to extend financial services to the poor has now become an urgent challenge. The excitement around mobile money has arisen in part because it is widely seen as an effective way to provide access to finance to millions of people around the globe (Bank I. B., 2012) . According to the theory of the product life cycle, every business enters four steps consist of introduction, growth, maturity, and decline. One of the strategies to strengthen the maturity stage is through innovation. Innovation in the financial service business is known as digital finance. Digital finance gives more easy access for businesses, especially for small and medium enterprises (SME)[8].

2.3. Ethiopian Experience

2.3.1. Supply of DFS in Ethiopia

2.3.1.1. Trends of Financial Service Delivery Channels

DFS in Ethiopia is a recent phenomenon and now at the infant stage. In Ethiopia DFSs have been provided predominantly by banks, As presented below in *Table 2.3-1: DFS Channels* have been increased from year to year in past seven years. Initially, the changes were at an increasing rate and later changes at minimal rates. However, these changes were overwhelming the changes in the opening of bricks branches.

[8] (**Conference Paper The Role of Digital Finance to Strengthen Financial Inclusion and the Growth of SME in Indonesia**)[8]

Table 2.3-1: DFS Channels

Fiscal Year	ATM	Agent	Digital Financial Service Channels			
			DFS		Branch	
			Year Total	% Increase Year	Year Total	% Increase Year
June,13	494		494	-	1,589	
June,14	867		867	76	1,998	26%
June,15	1,234	360	1,594	84	2,496	25%
June,16	*1,689*	*2,244*	*3,933*	*147*	*3,152*	*26%*
June,17	2,743	4,227	6,970	77%	3,885	23%
June,18	3,131	9,739	12,870	85%	4,542	17%
June,19	4,896	12,863	17,759	38%	5,175	14%

Data Source NBE and modified for this research project

With this tremendous change in the financial service access point, the DFS access point took a visible position compared to conventional banking branches. However, an agent can serve for 7,670., an ATM can serve for 20,152, and a branch for 19,065 individuals respectively. Thus, this distribution shows that DFS is more available and less costly than the branch establishment.

As per the World Bank standard for automated teller machine distribution per 100,000 populations as of June 2019 was expected to be 986. Whereas, in Ethiopia, the ATM distribution was 4,896.

Table 2.3-2 Trends of Financial Service delivery Channels Distributions with a population density

Fiscal Year	estimated Pop Size July 1	Pop Size /ATM	Pop Size /Agent	Pop Size /Branch
June,13	85,838,000.00	173,761.13		54,020.14
June,14	87,952,000.00	101,444.06		44,020.02
June,15	90,074,000.00	72,993.52	250,205.56	36,087.34
June,16	92,205,000.00	54,591.47	41,089.57	29,252.86
June,17	94,352,000.00	34,397.38	22,321.27	24,286.23
June,18	96,503,000.00	30,821.78	9,908.92	21,246.81
June,19	98,665,000.00	20,152.17	7,670.45	19,065.70

Data Source NBE and CSA, compiled for this research project

Looking at the financial service accessibility coverage per Kilometre squares, in June 2019, ATMs, Agents, and branches were covered 55.56, 145.97, and 58.73 square Kilometres, respectively[9].

2.3.1.2. Distribution of Financial Service delivery channels

In Ethiopia the financial services were delivered through different channels, As of December 2019, 47 %, 24%, 15%, and 14% of the delivery channels were Agents, POS, Branch, and ATM respectively. However, these distributions may not necessarily show the performance of the channels. Most customers were still using the conventional branches and ATMs respectively. Likewise, POS was served for merchant payments in exchange for goods and services. The Agent distribution in the country was found high as compared to other channels but that does not mean that they were active and performing well.

The distribution of Digital channels was also evaluated by regions[10]. The provision of DFS has been successful in the urban area because of the availability of required infrastructure like telecommunication, power, and others to provide the service. On the contrary, service adoption from the consumer side also depends on the level of awareness, accessibility, and availability of services. The Financial service providers deploy ATMs in a different place for customer convenience and availability of required infrastructure like network and power. In addition, providers were also considering their customers and security. Thus, as depicted in Table 2.3-3 ATM Distribution in regions of Ethiopia (December, 2019), out of the total ATMs deployed in the country, 53% were found at branch premises, and 47% were found at the Business mall, Government offices, Universities and others which were expected to have different users or customers. Moreover, most of the financial service providers deployed 47% of the total ATMs in Addis Ababa, 20% and 13% were in Oromia and Amhara regions, respectively. The rest were installed in other regions. As per the World Bank standards ATM per 100,000 individuals, most of the regions were found to have an excess ATM deployment except Somalia Region.

[9] Ethiopia covers 1,119,683 square kilometres , of which more than 80% live in rural areas.

[10] Ethiopia is composed of 9 National Regional states: namely Tigray, Afar, Amhara, Oromia, Somali, Benishangul-Gumuz, Southern Nations Nationalities and People Region (SNNPR), Gambella Harari and recently Sidam , and two Administrative states (Addis Ababa City administration and Dire Dawa city council).

Table 2.3-3 ATM Distribution in regions of Ethiopia (December, 2019)

Region	ATM			% age	Estimated Population Size 2017 (000')	expected as per World bank /100,000	ATM as per World bank /100,000
	on Premises	off Premises	Total				
	a	b	c=a+b	d=c/total	E	f=e/total	g=c-f
Tigray	247	65	312	6%	5,247,918	52	260
Affar	25	13	38	1%	1,812,558	18	20
Amhara	336	334	670	13%	21,136,526	211	459
Oromiya	578	505	1,083	20%	35,466,785	355	728
Somali	35	16	51	1%	5,748,462	57	(6)
Benish-Gumuz	8	21	29	1%	1,065,334	11	18
SNNP	275	228	503	9%	19,170,830	192	311
Gambella	20	2	22	0%	435,135	4	18
Harari	26	11	37	1%	244,711	2	35
Addis Ababa	1,192	1,288	2,480	47%	3,435,028	34	2,446
Dire Dawa	68	16	84	2%	465,592	5	79
Total	2,810	2,499	5,309	100%	94,228,879	942	4,367
Percent (%)	53%	47%	100%	0%			

Data Source NBE and CSA, compiled for this research project

The Point of Sale terminal (POS) is one of the channels used to read a payment card to authenticate transactions in Ethiopia. Depending on the functionality which is configured on POS, the providers deploy at Merchants' outlets and their premises. When the device is deployed at Merchants like hotels, restaurants, supermarkets, and others to collect money to their account electronically in exchange for goods and services. Moreover, providers deploy at their branch to serve the customer who came with payment cards to withdraw money from the bank account. Thus, as of December 2019, Merchant POSs constitute 66% and the rest were deployed at branches.

As portrayed in, 76 % of the POS terminal were deployed at Addis Ababa, 9% in Oromia, 6 % in Amhara, 4% in SNNP, and 3% in Tigray regions. From this distribution, high merchant distribution was found in the Oromia region next to Addis Ababa. These proportions were mainly because of POS deployed in an urban area with the merchant who is mainly engaged in the hotel, tour, and travel, restaurants, supermarkets business. These merchants were also visited by the consumer with international payment cards. Thus, this device is expected to reduce physical cash transactions in the economy.

Table 2.3-4 POS Distribution in regions (December 2019)

Region	POS			Total
	Branch	Merchant	Total	
	a	b	c=a+b	d=c/total
Tigray	107	132	239	3%
Affar	11	1	12	0%
Amhara	292	322	614	6%
Oromiya	546	306	852	9%
Somali	39	11	50	1%
Benish-Gumuz	3	2	5	0%
SNNP	168	172	340	4%
Gambella	7	2	9	0%
Harari	16	24	40	0%
Addis Ababa	2,020	5,177	7,197	76%
Dire Dawa	37	55	92	1%
Total	3,246	6,204	9,450	100%
Percent (%)	34%	66%	100%	

Data Source NBE, compiled for this research project

Distribution agents in the country were also expected to increase financial service accessibility. These agents were expected to recruit and serve more customers in their areas. Hence, the Agent distribution in the regions as portrayed **Error! Reference source not found. Error! Reference urce not found.** Were found 35% in Oromia , 23% in Addis Ababa , 14% in Amhara , 12% in SNNP and 9% in Tigray

Table 2.3-5 Agent Distribution in Different region (December 2019)

Region	Agent	%age
Tigray	1,590	9%
Affar	197	1%
Amhara	2,502	14%
Oromiya	6,321	35%
Somali	351	2%
Benish-Gumuz	118	1%
SNNP	2,242	12%
Gambella	211	1%
Harari	138	1%
Addis Ababa	4,156	23%
Dire Dawa	325	2%
Total	18,151	100%

Data Source NBE, compiled for this research project

2.3.1.3. Usage of DFS

In Ethiopia, financial service providers availed different DFSs to meet their different objectives. The country's financial inclusion strategy also promoted financial services accessibility and consumption of the DFSs.

Table 2.3-6 DFS users / Consumer (December, 2019)

Digital Channels	User / Customer		
	Active	Non-Active	total
Payment Cards	5,916,854.00	8,023,669.00	13,940,523.00
Mobile Banking	4,224,793.00	2,395,324.00	6,620,117.00
Internet Banking	182,288.00	641,564.00	823,852.00
Mobile wallet	3,250,715.00	2,835,645.00	6,086,360.00

Source: NBE

The debit card was found the most dominant in the market, and as of December 2019, there were 13,940,523.00 payment cards in the market. Of these 42% (5,916,854) cards were reported as active and the rest 58% (8,023,669) were inactive. As of December 2019 users of Mobile and internet banking were 6,620,117 and 823,852, respectively. Of the total Mobile banking users/subscribers 64 % of them were active users and the rest 36% were non-active. On the other hand, 22% of internet banking users were active. The mobile wallet users in Ethiopia were 6,086,360as in December 2019. However, from the total wallet users, only 53% were active. Apart, all users may have one or many of the DFS channels. With respect to the account status or channel status to define active or not, the active user shall not yet generally have defined KPI (Key Performance Indicator).

2.3.1.4. Trends of DFS user

As depicted in Table 2.3-7 Trends of DFS Users in the last seven years continuously increased. The Payment cards technology was found before any other channels and its user adoption rate also took an extended time. Whereas, other technologies like Mobile and internet banking were introduced after the deployment of core banking technologies in banks. The payment card (not always work for prepaid cards and possible to access the mobile wallet account), Mobile, and internet banking predominately use conventional bank accounts and technology. On the contrary, mobile wallet users access their wallet account which was introduced after the issuance of NBE directive FSI

/001/2012. These channels also support users to access their conventional bank account if integration between Core banking and Mobile Wallet Account is done.

Table 2.3-7 Trends of DFS User

Fiscal Year	Mobile Banking	Internet Banking	Debit Card	Mobile Wallet	Prepaid Card
June,13	9,236	215	649,246		105
June,14	125,328	1,771	1,464,328		212
June,15	526,455	17,239	2,329,285		718
June,16	1,307,609	48,383	3,602,347		12,221
June,17	2,430,697	79,082	6,383,748		36,646
June,18	2,688,007	120,577	6,948,571	1,396,033	52,021
June,19	4,526,434	547,691	11,235,875	3,599,057	58,119

Source: NBE

2.3.1.5. Digital channels Transactions Performance

Based on the information found from the National Bank of Ethiopia, as of June 30, 2019, the yearly total transaction using digital channels were 108,418,362 and a birr value of 138,343,573,722. Among the digital channels, ATM was the first in both value and volume of transaction. Mobile banking was also found next to ATM

Digital Channel	Transaction as of June 2019	
	Volume	Value ('000)
ATM	99,529,312.0	87,421,217,201.8
POS	2,259,754.0	5,348,167,303.2
Mobile Banking	4,697,907	29,742,510,405
Internet Banking	256,135	14,981,497,626
Wallet	1,675,254	850,181,187
Total	108,418,362.0	138,343,573,722.1

Source: NBE

On the contrary, as of June 30, 2019, the total value and volume of the transaction at branches were 687,656,237 and Birr 38,384,221,945,591.00. The transaction mainly includes cash deposit and

withdrawal from saving and demand accountability, and local transfer of funds and payments related to checks and /CPO

Table 2.3-8 Transaction total at the branch as of June 2019

Service at branch	Transaction as of June 2019	
	Volume	Value ('000)
Cash Withdrawal	306,665,589	4,012,002,513,419.08
Cash Deposit	237,542,088	4,377,809,454,112.36
Local Money Transfer	121,832,191	28,008,064,415,015.20
Check/CPO/	21,616,369	1,986,345,563,043.89
Total	687,656,237	38,384,221,945,591.00

Source: NBE

The transaction at branches was found greater than the transaction using digital channels. Both transaction reporting missed different ingredients of the services like types of service, local and international transaction, transaction currency, credit, and other utility payments which makes it difficult to compare. Thus, these missing variables allow the supplier to engage in product development to fill the gap.

2.4. Empirical Literature Review

This part of the literature review is designed to present different researches and empirical studies that have investigated the role of DFS and Fintech s for financial inclusion.

2.4.1. Role and Impact

According to Dr. Tabitha Durai and G. Stella (Ph.D.) research entitled DIGITAL FINANCE AND ITS IMPACT ON FINANCIAL INCLUSION (Stella, 2019), Digital Finance plays a vital role in the day to day activities of the people. The findings of the study mention that usability, convenience, accurate timing, and easy interbank account facility has positive impacts on Mobile banking, Low service charge, and accurate timing has significant impacts on mobile wallets (apps) even low service charge has positively impacted the credit card. Hence the study concludes that digital finance (Internet banking, mobile banking, mobile wallets (apps), credit card, and debit card has a

significant impact on financial inclusion. Though digital finance has many negatives on an issue like affordability, security, adaptability, etc. Every human being intends to avail the facility of digital finance in their lives.

According to Le Thanh Tam and Le Nhat HANH (Le Thanh Tam, January 2018) Financial inclusion has been considered as an enabler for 7 of the 17 Sustainable Development Goals. With the development of industrial revolution 4.0, Fintech is the key driver for financial inclusion, in both developing and developed countries. The roles of Fintech for financial inclusions are clear, focusing on providing all financial services with lower costs, wider and better access (24/7). In Vietnam, a legal framework on fintech has been developed, the Fintech steering committee has been set up, and Vietnam is preparing the national financial inclusion strategy. The opportunities for fintech in Vietnam are huge, from the demand side, infrastructure, and the market gap. However, the challenges remained, coming from its nature, legal framework, small transaction, and active client's ratio, and the low awareness of people on fintech for financial inclusions. The recommendations to fintech companies, commercial banks, State Bank of Vietnam, and other stakeholders have been proposed for better fintech utilization in promoting financial inclusion (Le Thanh Tam, January 2018).

According to MIGUEL ANGEL SORIANO (SORIANO, 2017) the role of digital technologies in financial inclusion from the perspective of new financial technology (Fintech) ventures serving the unbanked and underbanked. Supported by strategy management theories, the researcher identified key factors that impact the success of these Fintech start-ups, as measured by financial performance and financial inclusion. The results showed that founders with prior financial services experience, the degree of customer-centricity in the company's business model, and strategic partnerships with financial institutions and e-commerce firms, had a significant and positive correlation with financial inclusion (as measured by Active Customers) and financial performance (as measured by Annual Revenue). A qualitative analysis of 4 Fintech start-ups from the data sample demonstrated that other factors such as scalability, prior start-up experience, and type of product sold (pull vs. push) are also critical to the start-ups' success, and provide insights for further empirical research. This study has immediate practical applications for Venture capital firms and investors that evaluate new technology ventures in financial inclusion by providing a quantitative, data-driven methodology. Finally, the results highlight that a mix of quantitative and qualitative insights is important to move

research forward on the vital role that Fintech start-ups play in driving financial inclusion in emerging markets.

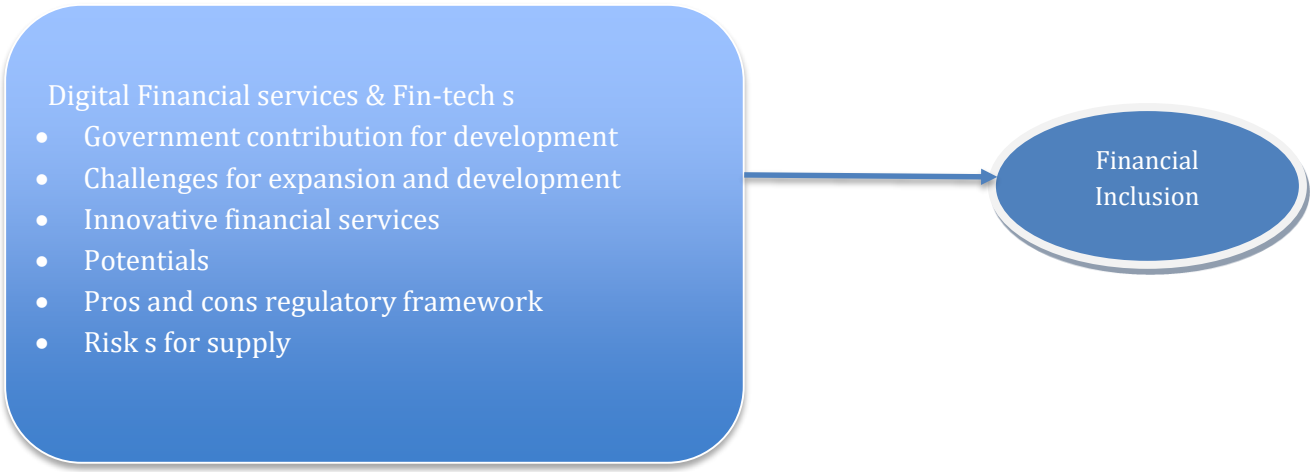
Apart from the research findings institutions also reflects the role and impacts of DFS and fin-tech to accelerate financial inclusion.

The DFI Principles were produced in 2016 by the Global Partnership for Financial Inclusion (GPFI), under the Chinese Presidency of the G20. The digital financial inclusion (DFI) Principles are intended to drive the adoption of digital approaches to achieve financial inclusion goals, as well as the related G20 goals of inclusive growth and increasing women's economic participation. The DFI Principles are focussed on the need to provide the financially excluded and underserved with high-quality and appropriate financial products and services and the potential to use digital technologies to achieve this goal, where possible. Importantly, the DFI Principles reflect the fact that access to financial services alone is insufficient. Rather, fostering widespread usage and understanding of responsible DFSs is critical to individual, national and global welfare. The DFI Principles also recognize the need to actively balance the promise of digital innovation with the new risks that rapidly evolving technology introduces (OECD, 2018).

2.5. Conceptual Framework

A conceptual framework is a diagrammatical representation that shows the relationship between the independent with the dependent variable. For this study, DFSs and Fintech's playing a role in accelerating the financial inclusion of the country. Theoretically, the theory of financial innovations suggests that the application of digital financial innovations enhances financial inclusion while the Technology acceptance model postulate that acceptance of DFSs enhances the accessibility of financial services by various users. And the theory of diffusion of innovation has also dictated the accessibility and expansion of products and services over time. Empirically several studies show that the DFS and Fintechs influence not only the performance of banking institutions but also enhance the access to financial services without the presence of the traditional banking infrastructure. The study's conceptual model is shown below figure.

Figure 2-2 Conceptual Framework



Source: adapted from the literature review

Chapter Three: Research Methodology

3. Research Methodology

3.1. Introduction

In this chapter, the research methodology which is used for this study is discussed. Topics of coverage in this chapter include research design, population and data type, data source, sampling design, and data collection method, data collection instruments, data analysis, and presentation method, finally, validity and reliability and ethical consideration are included.

3.2. Research philosophy

This research employed positivism. According to Creswell (2014), The post-positivist assumptions have represented the traditional form of research, and these assumptions hold more for quantitative research than qualitative research. Thus, the problems studied by post-positivists reflect the need to identify and assess the causes that influence outcomes, such as those found in experiments and surveys.

3.3. Research Design

The research design for this research was quantitative. According to (Creswell, 2014) strategies of inquiry associated with quantitative research were those that invoked the post-positivist worldview, and that originated mainly in psychology. The research is *correlational in design* which measures the degree of association (or relationship) between two or more variables or sets of scores (Creswell, 2012). And the type of research is explanatory.

The Designs often employ longitudinal data collection over time to examine the development of ideas and trends. Designs have also included elaborate structural equation models that incorporate causal paths and the identification of the collective strength of multiple variables. Apart, all the research was focused on a survey as a strategy to collect data.

3.4. Research Approach

The research approach was a quantitative approach, in which the researcher tests a theory by specifying narrow hypotheses and collecting data to support or refute the hypotheses. The data were collected on an instrument that measures attitudes, and the information was analyzed using statistical procedures and hypothesis testing. The assumption of collecting diverse types of data has

to provide a more complete understanding of a research problem than either quantitative or qualitative data alone. The study began with a broad survey to generalize results to a population.

3.5. Target Population

In order to get substantial data that related to the objective of the study, the target population was selected from DFS providers and fin-techs that are operational and potential to be a provider-based purposing. Thus, in this group, all banks are included except the Development Bank of Ethiopia, as it is not mainly focused on retail banking services. Insurance and Micro Finance Institutions are selected in their conveniences and believe to represent the populations.

The number of financial technology service providers or fin-techs in Ethiopia is different in their purpose and deliverables. For this research employees of Fintech companies were approached based on conveniences that are the potential to show the real situations for the research.

3.6. Sampling Technique and sample size

According to Catherine Dawson (2009), the correct sample size in a study is dependent on the nature of the population and the purpose of the study. Although there are no general rules, the sample size usually depends on the population to be sampled. In this study, the sample size was determined through random sampling techniques. Thus a list of professionals that are working in Banks, Insurances, Microfinance, National Bank of Ethiopia, Fintech s (Including Eth switch, Premium Switch Solutions), Ministry of Innovation and Technology, Agricultural Transformation Agency, and others were the potential candidates.

To define the appropriate sample size, the study used a proportional allocation method under which the sizes of the samples from the different strata were kept proportional to the sizes of the target population.

For the sake of sample size determination, the study applied Yamane (1976) sample size calculation approach with the confidence of level 95% and 5% margin of error. Accordingly, based on the table for the target population (N) of 529, the sample size (n) was determined 228.

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

$$=529/\ [1+(529(0.05)^2]$$

228 numbers

Proportion of the sample to the target populations are: P

Sample of Target Population = Sample * Target population /Total Target population

Table 3.6-1 Target Population

	Name of Organization	Target Population	Sample Size		
			5%	Distributed	Collected
1.	Banks				
1.1.	Abay Bank	12	5	5	5
1.2.	Addis International Bank	12	5	5	5
1.3.	Awash Bank	15	6	6	6
1.4.	Bank of Abysiniya	20	9	9	7
1.5.	Berhan International Bank	20	9	9	9
1.6.	Bunna International Bank	10	4	4	4
1.7.	Commercial Bank of Ethiopia	40	17	17	17
1.8.	Cooperative Bank of Oromiya	15	6	6	6
1.9.	Dashen Bank	20	9	9	9
1.10.	Debub Global Bank	8	3	3	2
1.11.	Enat Bank	4	2	2	2
1.12.	Lion International Bank	18	8	8	7
1.13.	Nib International Bank	23	10	10	9
1.14.	Oromiya International Bank	18	8	8	8
1.15.	United Bank	15	6	6	6
1.16.	Wegagen Bank	18	8	8	6
1.17.	Zemen Bank	17	7	7	5
2.	Microfinance Institutions				
2.1.	Agar	12	5	5	5
2.2.	Amhara	12	5	5	4
2.3.	Bussa Gonfa	8	3	3	3
2.4.	Dedebit	8	3	3	3
2.5.	Nisir	8	3	3	3
2.6	Oromia	12	5	5	2
2.7	Vision Fund	5	2	2	1
3.	Insurance				
3.1.	Awash	6	3	3	2
3.2.	Ethiopian Insurance Cooperation	9	4	4	2
3.3.	Lion insurance	4	2	2	2
3.4.	Nile	12	5	5	4
3.5.	Oromia	6	3	3	3

	Name of Organization	Target Population	Sample Size		
			5%	Distributed	Collected
4.	Financial Technologies				
4.1.	Amole (powered by Moneta)	10	4	4	4
4.2.	E- Birr	8	3	3	2
4.3.	Elbat Solution	6	3	3	3
4.4.	Eth Switch	17	7	7	7
4.5.	Hello Cash (Powered by Bel Cash)	10	4	4	4
4.6.	Kifya	6	3	3	3
4.7	M-birr (Powered By Moss)	15	6	6	5
4.8	Premium Switch Solution	12	5	5	5
5.	Relevant stakeholders				
5.1.	Agricultural Transformation agency	6	3	3	3
5.2.	Ethio Telecom	23	10	10	10
5.3.	Ministry of innovation and technology	4	2	2	1
5.4.	National Bank of Ethiopia	25	11	11	11
		529	228	228	205

Source own survey, 2020

3.7. Method of Data Collection

Methods of data collection were own developed questionnaires. The survey questionnaire consisted of background questions and 68 questions that the respondents had to answer with a 5-point Likert scale. The Likert which had five scales that ranged from “Strongly Agree” (5) to “Strongly Disagree” (1) depended on the conceptual framework of the study and its objective to be achieved. The Likert Scale supposed respondents to give their approach in simple ways.

3.8. Source of Data

For this study, a primary and secondary source of data was used. The primary data were collected from individual who was working on DFSs delivery and Fintech development using its developed survey questionnaire. And secondary data was mainly collected from World Bank, McKinsey, IFC, GSMA, Report of National Bank of Ethiopia, Ethio telecom, and financial institutions in Ethiopia. Reports on trend and progress of banking in Ethiopia, Newspapers, Research Articles, Research Journals, E-Journals, Books, Magazines and Various websites also accessed and used. The period under consideration for the study mainly focused on the performance of the DFS and Fintech s on

financial inclusion until the end of the fiscal year December 31, 2019, and tried to review secondary data seven years back to 2012.

3.9. Method of data analysis

In this study for analyzing the data, descriptive analysis was used to describe the behavior of the individual variables over the period under review, and the Statistical Package for the Social Science (SPSS) was used. Multiple linear regression was used to find the value of R, R Square, F. Pearson Correlation, a significance test of the variables.

The analysis mainly used a descriptive statistical approach to identify the roles of the different variables on financial inclusion. And multiple regression analysis was also used to establish an empirical relationship between the role of DFSs and Fin-tech s to accelerate the Financial Inclusion of the country.

3.10. Variable definition

1. Contribution of Government in the development and expansion of Fintech s and DFS is one of the variables that signifies the contribution of government in the digital ecosystems to support the providers to enhance the level and accessibility of DFS

2. Eminent Challenges in the development and expansion of Fintech s and DFS is a variable that explains the challenges in the DFSs expansion and fintech development that hider suppler to accelerate the financial inclusion of the country.

3. Potentials for expansion of Fintech s and DFS are the availability and opportunity to enhance the DFS expansion and development of fintech in the country.

4. New innovative financial service to enhance the delivery of DFS and development of Fintech s, is to try to explain the innovativeness of financial service providers for the expansion of fintech and DFS.
5. The pros and cons of the regulatory framework towards the provision of Fintech s and DFS are to identify the regulatory of the country in a position to support the fintech development or DFS expansion to promote financial inclusion in the country.

Where Y = the role of DFS and Fintech to accelerate Financial Inclusion

X_1= contribution Government in the development and expansion of Fintech s and DFS

X_2= eminent Challenges of Fintech s and DFS

X3= Potentials for expansion of Fintech s and DFS services

X4 = New innovative financial service to enhance the delivery of DFS and development of fin-techs

X5=Pros and cons of the regulatory framework towards the provision of Fintech s and DFS

X6=Risk implications that impact the supply of DFS and development of Fintechs

$$Y = b0 + b1X1 + b2X2 + b3X3 + b4X4 + b5X5 + b6X6 + e$$

Hypothesis of the study

Based on the objectives of the study, the following hypothesis has been formulated:

1. To identify contributions of government in the development of DFS and fin-tech for financial inclusion

H1: Contribution of Government in development and expansion of Fintech s and DFS has a significant effect on the role of DFS and Fintech to accelerate the financial inclusion;

2. To identify imminent challenges of DFS expansion and Fintech developments;

H2: Eminent Challenges in development and expansion of Fintech s and DFS has a significant effect on the role of DFS and Fintech to accelerate financial inclusion;

3. To identify the potentials of DFS expansion and Fintech developments for financial inclusion;

H3: Potentials for expansion of Fintech s and DFS has a significant effect on the role of DFS and Fintech to accelerate the financial inclusion;

4. To review an innovative financial service that enhances DFS and Fintech developments for a country's financial inclusion;

H4: New innovative financial service to enhance the delivery of DFS and development of Fintech s has a significant effect on the role of DFS and Fintech to accelerate the financial inclusion;

5. To investigate the pros and cons of the regulatory framework and towards the provision of DFS and Fintech s in Ethiopia;

H5: Pros and cons of the regulatory framework towards the provision of Fintech s and DFS has a significant effect on the role of DFS and Fintech to accelerate the financial inclusion;

6. To examine the different risk implication that impacts the supply of DFS and the development of Fintech s.

H6: Risk implications that impact the supply of DFS and development of Fintech s have a significant effect on the role of DFS and Fintech to accelerate financial inclusion;

3.11. Validity and Reliability Test

Validity is the extent to which a test of an instrument measures what the researcher wishes to measure. This is a way of justifying the appropriateness of the instrument utilized by the researcher in the study. Validity is concerned with whether or not findings are really about what they appear to be about (Saunders and Thornhill, 2000). Reliability has to do with the accuracy and precision of a measurement procedure. It refers to the extent to which data collection techniques or analysis procedures yield consistent findings (Saunders and Thornhill, 2000). To ensure the validity and reliability of the measurement a pilot study was conducted.

Variable Name	No. of Items	Cronbach's Alpha
Contribution of Government	10	0.925
Eminent challenges	8	0.648
Potentials	8	0.743
New innovativeness	9	0.834
Pros and cons of regulatory requirements	10	0.858
Implication of risks	9	0.831
DFS for Financial inclusion	6	0.825
Fintech s for financial inclusion	6	0.894
Overall		0.92

Source own survey, 2020

3.12. Ethical Consideration

To assure the data furnished, and the identity of the respondents' data was kept confidential. Once the study is accomplished the data will never be handed over to anybody else. The obtained data were only used for this academic purpose. The privacy and morality of the respondents have been preserved.

Chapter Four: Result and Discussion

4. Result and Discussion

This chapter includes the data presentation, analysis, and interpretation of the findings. The analysis starts with a description of the respondents' demographic profiles. The total sample of the study was 228. Out of the 228 questionnaires distributed, 205 were returned with a sufficient amount of response rate of 89.9%.

4.1. Descriptive statistics

4.1.1. Background Information

a) Respondents Information

As summarized below in Table 4.1-1: Respondent Position in the organization, 54.6 % of the respondents were officers or experts, 21.5 % of the respondents were found in managerial positions,7.8 % of the respondents were directors, 6.3% of the respondents were executives, 5.9 % of the respondents assumed their positions as other, system admin and principal officers. However, eight or 3.9% of the respondents did not mention their positions while filling the questionnaires.

Table 4.1-1: Respondent Position in the organization

Current Positions	Freq	Percent	Cumulative Percent
Valid	8	3.9%	3.9%
Executive	13	6.3%	10.2%
Director	16	7.8%	18.0%
Manager	44	21.5%	39.5%
Officer / expert	112	54.6%	94.1%
Other	5	2.4%	96.6%
Principal officer	4	2.0%	98.5%
System Admin	3	1.5%	100.0%
Total	205	100.0%	

Source own survey, 2019

The respondents were asked about their professional experience as depicted in Table 4.1-2: Respondent Professional Experience. 20% of the respondents have below 5 years of experience, 41.5 % of the respondents have 6 – 10 years of experience and 38.5% of the respondents have above ten years of experience. Therefore, it can be concluded that 80% of the respondents have above 5 years of experience.

Table 4.1-2: Respondent Professional Experience

Years of Experience	Freq.	Percent	Cumulative Percent
Below 5 years	41	20 %	20.%
6 -10 years	85	41.5 %	61.5%
Above 10 years	79	38.5%	100.0%
Total	205	100.0	

Source own survey, 2019

The respondents were also asked about their educational background. As depicted in Table 4.1-3: Educational Background 50.2 % of the respondents have a second degree, 44.5% 1st degree, 2% have a second degree and above educational background, 1.5% of the respondents didn't mention their educational background.

Table 4.1-3: Educational Background

Educational Background	Freq	Percent	Cumulative Percent
Missing	3	1.5%	1.5%
Certificate	1	.5%	2.0%
Diploma	3	1.5%	3.4%
First degree	91	44.4%	47.8%
Second degree	103	50.2%	98.0%
Above second degree	4	2.0%	100.0%
Total	205	100.0%	

Source own survey, 2019

b) Organization Information

As depicted in Table 4.1-4: Type of industry/organization distribution table, 55.1% of the respondents who fill the questionnaires were from banks, 6.3% of the respondents were from five selected insurance companies;10.2% of the respondents were from seven selected microfinance institutions; 11.2% of the respondents were from eight selected Fin-tech companies/technology providers; 4.9% of the respondents participated from two payment service providers; 5.4% of the respondents participated from National Bank of Ethiopia; 4.9% of the respondents participated from Ethio telecom;2% of the respondents were from Ministry of Innovation and Technology and Agriculture Transformation Agency.

Table 4.1-4: Type of industry/organization distribution table

No	Type of industry/organization	Number of		% age
		Institutions	Respondents / Participants	
1	Bank	17	113	55.1%
2	Insurance	5	13	6.3%
3	Microfinance institutions	7	21	10.2%
4	Fintech technology Provider	8	23	11.2%
5	Payment service provider	2	10	4.9%
6	National bank of Ethiopia	1	11	5.4%
7	Ministry of innovation and technology	1	1	0.5%
8	ATA (Agricultural Transformation Agency)	1	3	1.5%
9	Telecom	1	10	4.9%
Total		43	205	100%

Source own survey, 2019

As indicated in Table 4.1-5 Case Processing Summary, 68.3% of the total respondents indicated customer base of their organization; 92.7% of the respondents indicated statutes of their DFS expansion and or fin-tech development strategy, 76.1% of the respondents indicated types of channels their organization is using for DFS delivery; 66.3% of the respondents indicated DFS adopted by their organization; 94.1% of the respondents mentioned about their organizational

experience in DFS delivery and fin-techs developments and 100% of the respondents indicated their organization's ownership style or type.

Table 4.1-5 Case Processing Summary

Type of industry/organization	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Name of Institutions	205	100.0%	0	0.0%	205	100.0%
Customer base	140	68.3%	65	31.7%	205	100.0%
Strategy	190	92.7%	15	7.3%	205	100.0%
Channel type	156	76.1%	49	23.9%	205	100.0%
DFS	136	66.3%	69	33.7%	205	100.0%
Experience	193	94.1%	12	5.9%	205	100.0%
Ownership of organization	205	100.0%	0	0.0%	205	100.0%

Source own survey, 2019

The respondents were also requested to fill about the ownership of their organization. Accordingly, 73.2 % of the respondents selected a privately owned organization,24.4% selected a government-owned organization and the rest 2.4 % selected a non-government organization.

Table 4.1-6 Ownership of organization

Ownership	Frequency	Percent %	Cumulative Percent
Non-Government	5	2.4	2.4
Private	150	73.2	75.6
Government	50	24.4	100.
Total	205	100.	

Source own survey, 2019

The respondents were asked to fill the organizational target customer/customer bases. 68.3 % of the respondents mentioned their customer base and the rest 31.7% left the questionnaire blank. Thus, of the total 68.3% respondents, 51.4 % of them replied that unbanked customers as their target customers, 24.3% selected Banked customers, 21.4 % of the respondents' selected underbanked customers, and the rest 2.8 % of the respondents selected banked, underserved, and unbanked customers.

Table 4.1-7 Customer base

Customer Base	Freq	Percent	Valid Percent	Cumulative Percent
Banked and Un banked	2	1.0	1.4	1.4
Banked and under-served	2	1.0	1.4	2.8
Unbanked	72	35.1	51.4	54.3
Under banked	30	14.6	21.4	75.7
Banked	34	16.6	24.3	100.0
Total	140	68.3	100.0	
Missing	65	31.7		
Total	205	100.0		

Source own survey, 2020

The respondents were also asked about their organization's experience in DFS delivery and Fintech developments. Out of the total respondents, 94.1% answered the question and the other 5.9% left the question blank. Of 94.1% of the total respondents, 59.1% of the respondents said their organization experienced in DFS delivery, and or fin-techs developments were below 5 years, 28.5% of the respondents said 6 to 10 years, and the other 12.4% said above 10 years.

Table 4.1-8 Experience in DFSs delivery or Fintech development

Experience (Year)	Freq	Percent	Valid Percent	Cumulative Percent
Above 10	24	11.7%	12.4%	12.4%
6-10	55	26.8%	28.5%	40.9%
Below 5	114	55.6%	59.1%	100.0%
Total	193	94.1%	100.0%	
Missing	12	5.9%		
Total	205	100.0%		

Source own survey, 2019

Regarding having a strategy for DFS expansion and or Fintech development of their organization, 61.1 % replied that their organization has a strategy, while the rest 32.6% and 6.3% answered that

their organization strategy is under process and they do not have a strategy for DFS expansion respectively.

Table 4.1-9 Strategy for DFS expansion and/or Fintech Development is developed by your organization

Strategy	Freq	Percent	Valid Percent	Cumulative Percent
Not at all	12	5.9	6.3	6.3
Under Progress	62	30.2	32.6	38.9
Yes	116	56.6	61.1	100.0
Total	190	92.7	100.0	
Missing	15	7.3		
Total	205	100.0		

Source own survey, 2019

4.1.2. DFS (DFS), Fin-techs, and Financial Inclusion

This part of the questionnaire focused on respondents' agreement or disagreement on 68 questions provided. The questions have a 5-point Likert scale that ranged from "Strongly Agree" (5) to "Strongly Disagree" (1). Moreover, this part of the questioner was divided into dependent variables and independent variables, based on the research project's general objective. The independent variables are the contribution of governments in the development of DFS and fin-techs, eminent challenges of DFS expansion and fin-tech development, new innovative financial services, pros and cons of the regulatory framework towards the provision of DFS and fin-techs, and the risk implication in the supply of DFS and development of fin-techs. These variables were believed to impact the role of DFS and fin-techs to accelerate the financial inclusion of the country.

The Average statistical results of respondents are presented in subsequent Table 4.1-10 Average statistical results, each of the results shows the average role and extent of independent variables on dependent variables. Regarding the respondents' agreements on the general question of the DFS and fin-techs role to accelerate the financial inclusion of the country, respondents' responses exhibited an average of 4.5756 agreements. Same questions were also asked for the respondents' agreements with details of sub-questions that enhance the roles of DFS and Fintech s which

exhibited an average result of 4.2622. Thus, the respondents believe that DFS and fin-techs have a role to accelerate the financial inclusion of the country.

The respondents were also asked about their agreement on the contribution of government, eminent challenges, Potentials, New innovative financial services, pros and cons of regulatory frameworks, and risk implications that impact the acceleration of the financial inclusion. Accordingly, their mean value found 3.3659, 3.4061, 3.5762, 3.2461, 3.1566, and 3.3902 respectively.

Table 4.1-10 Average statistical results

	Average statistical results of							
	Independent variables						Dependent Variables	
	CG	CHALL	POT	INN	PROCONS	RISK	ADFSFINFIN	ADFSFINFIN2
Valid	205	205	205	205	205	205	205	205
Missing	0	0	0	0	0	0	0	0
Mean	3.3659	3.4061	3.5762	3.2461	3.1566	3.3902	4.2622	4.5756
Std. Deviation	.79175	.51183	.54068	.62857	.65882	.64822	.57604	.74287

Source own survey, 2020

a) DFSs play a role in accelerating a country's financial inclusion

The DFS (DFS) has been believed to play a vital role to reach the unserved and underbanked society of the economy. Apart from the financial service accessibility and availability, it also addresses issues related to women's empowerment, income inequalities, poverty reductions, and others. Thus, the evaluations were made on the respondents' agreement and disagreement level on the role of DFSs in accelerating a country's financial inclusion.

As depicted in Table 4.1-11 DFSs play a role in accelerating a country's financial inclusion, among the total respondents 75.1 % of them strongly agree that DFS accelerate the financial inclusion of the country and 19.0% of the respondents also agree on the role of DFSs in accelerating a country's financial inclusion. While the rest 2.9%, 0.5%, and 2.4% of the respondents Moderately Agree, Disagree, and strongly disagree, respectively.

Table 4.1-11 DFSs play a role in accelerating a country's financial inclusion

		Frequency	Percent	Cumulative Percent
Valid	Strongly Dis Agree	5	2.4%	2.4%
	Disagree	1	.5%	2.9%
	Moderately Agree	6	2.9%	5.9%
	Agree	39	19.0%	24.9%
	Strongly Agree	154	75.1%	100.0%
	Total	205	100.0%	

Source own survey, 2019

b) Fintech s play a role in accelerating financial inclusion

The development of fin-techs has been changing the world's financial service outlooks. Particularly this development has been changing the customer journey from service inceptions to completions. Beyond all, Fintech s allows individuals and organizations to access and provide financial service in a simple and easily accessible manner. Consequently, this development has been believed to impact the financial inclusion of the country. Thus, the respondents' response was evaluated based on their agreement or dis-agreement level on the role of fin-techs development to accelerate the financial inclusion of the country.

Thus, 64.4% of the respondents strongly agree that Fintech s have a role to accelerate the financial inclusion of the country;26.3% of the respondents also agree on the role of Fintech s to accelerate the financial inclusion of the country while the other 6.3%, 2.0 % and 1% of the respondents moderately agree, disagree and strongly disagree on the role of fin-techs to accelerate the financial inclusion of the country.

Table 4.1-12 Fintech s play a role in accelerating financial inclusion

		Frequency	Percent	Cumulative Percent
Valid	Strongly Dis Agree	2	1.0%	1.0%
	Disagree	4	2.0%	2.9%
	Moderately Agree	13	6.3%	9.3%
	Agree	54	26.3%	35.6%
	Strongly Agree	132	64.4%	100.0%
	Total	205	100.0%	

Source own survey, 2019

c) Contribution of government in the development of DFS and fin-tech

The contribution of government for the development of DFS and fin- techs had been evaluated by different questions that are posed to respondents.

In this part of the questionnaire, the questions are asked to evaluate the government contribution for the development of fin-techs and DFS, by raising questions like the value of fin-techs and DFS for Financial inclusion, infrastructure for DFS and fin-techs, new Policy development, collaborations among different relevant stockholders, digitalization of government payment.

To have the respondents' agreement or disagreement, the results of the responses were summarized. Accordingly, 46 % of the respondents moderately agree on the contribution of government in the development of DFS and Fintech s, 34.0 % of the respondents agree on the government contributions for the development of Fintech s and DFS, 10.0% of the respondents strongly agree on the government contributions. While the other 8.0% and 1.0% of the respondents disagree and strongly disagree with government contributions for the DFS and fin-techs respectively.

Table 4.1-13 Contribution of government in the development of DFS and fin-tech (Average Results)

		Frequency	Percent	Cumulative Percent
Valid	Strongly Dis Agree	3	1.0%	1.0%
	Disagree	17	8.0%	10.0%
	Moderately Agree	95	46.0%	56.0%
	Agree	69	34.0%	90.0%
	Strongly Agree	21	10.0%	100.0%
	Total	205	100.0%	

Source own survey, 2019

d) The role of DFS (DFS) and fin-techs for financial inclusion in Ethiopia

In addition to the general questions for the respondents to give their agreements or disagreements, this part of the questionnaire presented with different attributes to explain the role of DFS and fin-techs to accelerate the financial inclusion of the country. Questions related to the role of DFS were

expressed by contributions to countries' financial inclusion, a tool to reach financially excluded, increase additional customer, increase accessibility by 24/7, increase new financial institution (Digital Native), and value additions over the layers of the conventional banking services. By the same token, the development of fin-techs was expressed by its role to enhance financial inclusion, to build a digital economy, a strategic partnership for DFS, innovative financial service delivery, enhance customer experience and support financial service providers to be innovative.

As depicted in Table 4.1-14 The role of DFS (DFS) and fin-techs for financial inclusion in Ethiopia, the respondents' responses were evaluated on the average results of the role of DFS and Fintech s for financial inclusion of the country. Hence, 49.8% of the respondents agree that DFS and Fintech s play a role to accelerate financial inclusion of the country, 42.9% of the respondents also strongly agree that DFS and Fintech s have a role to accelerate financial inclusion of the country. The remaining 6.3% and 1.0 of the respondents moderately agree and disagree respectively.

Table 4.1-14 The role of DFS (DFS) and fin-techs for financial inclusion in Ethiopia

		Frequency	Percent	Cumulative Percent
Valid	Disagree	2	1.0%	1.0%
	Moderately Agree	13	6.3%	7.3%
	Agree	102	49.8%	57.1%
	Strongly Agree	88	42.9%	100.0%
	Total	205	100.0%	

Source own survey, 2019

e) Eminent challenges of DFS expansion and Fintech s Development in Ethiopia

The questions presented in this part are the main challenges that are believed to hinder the development of fin-tech and DFS expansion in Ethiopia. These questions were explained by different sub-questions that are believed to describe the challenges. These are lack of willingness of financial institutions to collaborate with fin-techs, lack of finance, lack of encouraging ecosystem, lack of clear regulatory requirements, DFS is not customer-centric / doesn't meet customer interest, lack of resource and infrastructure to reach a wider area of geographic location.

As depicted in Table 4.1-15 Eminent challenges of DFS expansion and Fintech s Development in Ethiopia, the respondents were asked about their agreements on challenges for expansion of DFS and

development of fin-techs in Ethiopia. The respondents' results were presented on an average. Accordingly, 2.4% of the respondents strongly agree, 47.3% of the respondents agree, and another 47.3 % of the respondents moderately agree on the challenges of expanding the DFS and development of Fintech s. The rest 2.9% of the respondents disagree on the challenges to expand the DFS and development of fintech in the country.

Table 4.1-15 Eminent challenges of DFS expansion and Fintech s Development in Ethiopia

		Frequency	Percent	Cumulative Percent
Valid	Disagree	6	2.9%	2.9%
	Moderately Agree	97	47.3%	50.2%
	Agree	97	47.3%	97.6%
	Strongly Agree	5	2.4%	100.0%
	Total	205	100.0%	

Source own survey, 2019

f) Potential for DFS expansion and Fintech s Development in Ethiopia

It is believed that the country has the potential for DFS expansion and Fin-Techs Development. These potentials also accelerate the financial inclusion of the country. These potentials were listed in the questionnaires as current and prevailing ecosystems, demand for new DFS and products, policy predictability on government encouragement for the investment of DFSs, government support on DFS and Fintech development, population size, and financial institutions willing to partner with Fintech s to add values on DFS.

Thus, based on the respondents' response, the country's potentials for expansion of DFS and development of fin-tech had been evaluated as depicted in Table 4.1-16 Potential for DFS expansion and Fintech s Development in Ethiopia. Accordingly, 60.5% and 4.4 % of the respondents agree and strongly agree that the country has a potential for DFS expansion and development of fin-techs. Whereas 33.2% of the respondents moderately agree, and the rest 2.0% disagree on the country's potentials for Fin-techs and DFS development and expansion.

Table 4.1-16 Potential for DFS expansion and Fintech s Development in Ethiopia

		Frequency	Percent	Cumulative Percent
Valid	Disagree	4	2.0%	2.0%
	Moderately Agree	68	33.2%	35.1%
	Agree	124	60.5%	95.6%
	Strongly Agree	9	4.4%	100.0%
	Total	205	100.0%	

Source own survey, 2019

g) New innovative financial services enhance the delivery of DFS and fin-tech development for financial inclusion

Innovative financial service is believed to change the delivery of DFS and fin-tech developments. Innovative DFS and fin-techs accelerate the financial inclusion of a country by reaching unserved and unbanked society. In this regard, different questions were posed to the respondents. These are innovative DFS provided by financial institutions, a technology used by financial institutions to scale up DFSs, supports of a regulatory body, exposure to new and disruptive technologies, sales and marketing of new technologies, fintech business model to solve problems of the underbanked society in a cost-efficient manner, financial institutions business model to solve problems of the underbanked society in a cost-efficient manner, usage of financial service encouraged for new innovative product development.

As depicted in Table 4.1-17 New innovative financial services enhance the delivery of DFS and fin-tech development for financial inclusion, respondents were asked about new innovative financial services that enhance the delivery of DFS and fin-tech development for financial inclusion. . The average results indicate that 53.7% of the respondents moderately agree that new innovative financial services enhance the delivery of DFS and fin-tech development for financial inclusion, 33.2 % of the respondents agree and, 2.4% of the respondents also strongly agree on new innovative financial services to enhance the delivery of DFS and fin-tech development for financial inclusion. Whereas, 10.2% and 0.5% of the respondents disagree and strongly disagree, respectively.

Table 4.1-17 New innovative financial services enhance the delivery of DFS and fin-tech development for financial inclusion

		Frequency	Percent	Cumulative Percent
Valid	Strongly Disagree	1	0.5%	0.5%
	Disagree	21	10.2%	10.7%
	Moderately Agree	110	53.7%	64.4%
	Agree	68	33.2%	97.6%
	Strongly Agree	5	2.4%	100.0%
	Total	205	100.0%	

Source own survey, 2019

h) The pros and cons of the regulatory framework towards the provision of DFS and Fintech s

The country‘s regulatory requirements are essentials for the development of Fin-techs and DFSs. In this respect, the questionnaires are designed to evaluate the regulatory framework for the provision of DFS and fin-techs in Ethiopia. This evaluation has been made with a composition of different questions. These are the regulatory body gives the required attention for the development of new digital services, a legal requirement to promote collaboration among DFS provider and fin-techs, a regulatory body has a good graph of fin-techs development, the regulatory body realizes the advantage of DFS delivery, issuance of supportive and innovative bills or directive, placement of stringent KYC that hinders the expansion of DFS, and lack of national ID that hinders the development of fin-techs and introduction of disruptive DFSs .

The respondents were also asked about their agreement level on the regulatory framework for the provision of DFS and the development of Fintech s. These questions are explained by the above-listed sub-questions and the respondent’s responses were computed on an average base. Accordingly, 54.6 % of the respondents moderately agree that the regulatory framework supports the provision of DFS and Fintech s; 29.8% of the respondents agree, 2.4% of the respondents strongly agree while the other 11.7% and 1.5% of the respondents disagree and strongly disagree respectively on the support of regulatory framework for the provision of DFS and fin-tech.

Table 4.1-18 the pros and cons of the regulatory framework towards the provision of DFS and Fintech s

		Frequency	Percent	Cumulative Percent
Valid	Strongly Disagree	3	1.5%	1.5%
	Disagree	24	11.7%	13.2%
	Moderately Agree	112	54.6%	67.8%
	Agree	61	29.8%	97.6%
	Strongly Agree	5	2.4%	100.0%
	Total	205	100.0%	

Source own survey, 2019

i) Risk Implication that impacts the supply of DFS and development of fin-techs

Subsequent disruption of financial technology in the provision of DFS has been exposed to different risks that may be systemic or operational. Thus, the risk implication on the supply of DFS and the development of fin-techs were evaluated by the respondents with different questions of attributes. These questions are DFS exposure to different risks, organization data lost when the partner with third-party / Fintech s, DFS more risker than conventional banking and exposure to cyber attach, SIM swap, Identity theft, providers lack security requirements, level of awareness about fin-tech and DFS to protect the digital environment from malicious attacks and lack of national ID.

Consequently, the Risk Implication that impact the supply of DFS and development of fin-techs were evaluated by the respondents indicating that 45.4% of the respondents agree on the impact of risk on the supply of DFS and development of fin-techs, 42.4% of the respondents moderately agree while 8.3% and 3.9% of the respondent disagree and strongly agree respectively on the impact of risk on the supply of DFS and development of fin-techs.

		Frequency	Percent	Cumulative Percent
Valid	Disagree	17	8.3%	8.3%
	Moderately Agree	87	42.4%	50.7%
	Agree	93	45.4%	96.1%
	Strongly Agree	8	3.9%	100.0%
	Total	205	100.0%	

Source own survey, 2019

4.2. Inferential Statistics

This part of the chapter is a discussion about the results of inferential statistics. According to Reimann, Filzmoser, Garrett, and Dutter (2008) correlation analysis estimate the extent of the relationship between any pair of variables. Correlation analysis was used to measure the strength of the relationship between the independent variables. Regression analysis is concerned with measuring and explaining the relationship between a given variable (usually called the dependent variable) and one or more other variables (usually known as the independent variable/s). It is used to understand the relationship between variables and predict the value of one variable based on another variable. Regression analysis established the relative significance of each of the variables on DFS and fin-techs to accelerate the financial inclusion of the country.

Moreover, to have valid multiple regressions analysis, the important assumptions should be satisfied. These are normality of the distribution, linearity, multicollinearity, homoscedasticity, independent of residuals, model fitness test, and F test. For this study, before discussing the regression model, these assumptions were tested. The results of these assumptions are briefly summarized and presented in Appendix 1.

The study discussed five major assumptions that must be fulfilled for one to analyze data using multiple linear regression models. So, since all five assumptions were not violated, the researcher examined the data collected by the questionnaires using correlation and multiple linear regression models.

In addition to that, the validity and reliability of the questionnaires were measured using Cronbach's alpha. All data were processed and the number of missing data is zero. From the reliability test, the research questionnaires are found highly reliable as all scored greater than 0.7, except eminent challenges variable registered 0.648. The overall value of Cronbach's alpha value was 0.92 and on the comment, it was found reliable. Since the minimum requirement of Cronbach's alpha value is 0.7, which is beyond the minimum requirement. Based on the validity and reliability test using SPSS version 23, the questionnaires were found valid and reliable. (See Appendix 2; Reliability Statistics)

4.2.1. Pearson Correlation Analysis

According to Reimann, Filzmoser, Garrett, and Dutter (2008) correlation analysis estimate the extent of the relationship between any pair of variables. The Pearson correlation coefficient is a statistic used to determine the degree and direction of relatedness between two continuous variables. Correlation analysis was used to measure the strength of the relationship between the independent variables. Likewise, the relationship between independent variables with dependent variables was also assessed (the role of DFS and fin-tech to accelerate the financial inclusion of the country).

: Table Correlations

			1	2	3	4	5	6	7
1	Contribution of Government in development of DFS and fin-techs	Pearson Correlation	1						
		Sig. (2-tailed)							
		N	205						
2	Eminent challenges of DFS expansion and Fintech s development in Ethiopia	Pearson Correlation	-.036	1					
		Sig. (2-tailed)	.605						
		N	205	205					
3	Potentials for expansion and development of DFS and Fintech s in Ethiopia	Pearson Correlation	.609**	.049	1				
		Sig. (2-tailed)	.000	.486					
		N	205	205	205				
4	New Innovative financial service enhance the delivery of DFS and Fintech s development for financial inclusion	Pearson Correlation	.453**	-.115	.508**	1			
		Sig. (2-tailed)	.000	.100	.000				
		N	205	205	205	205			
5	The pros and cons of the regulatory framework towards the provision of DFS and fin-tech	Pearson Correlation	.607**	-.042	.542**	.565**	1		
		Sig. (2-tailed)	.000	.549	.000	.000			
		N	205	205	205	205	205		
6	Risk implication that impacts the supply of DFS and development of Fintech s	Pearson Correlation	.168*	.088	.227**	.192**	.334**	1	
		Sig. (2-tailed)	.016	.211	.001	.006	.000		
		N	205	205	205	205	205	205	
7	The role of DFS and fin-techs for financial inclusion in Ethiopia	Pearson Correlation	.224**	.291**	.345**	.105	.002	.060	1
		Sig. (2-tailed)	.001	.000	.000	.133	.978	.397	
		N	205	205	205	205	205	205	205
**. Correlation is significant at the 0.01 level (2-tailed).									
*. Correlation is significant at the 0.05 level (2-tailed).									

Own Source: Survey data, and SPSS analysis, 2019

As depicted in the independent variables, three correlations were significant. The non-significant correlations were new innovative financial service and the role of DFS and fin-techs to accelerate the financial inclusion (r=.105, p=.133), the pros and cons of the regulatory framework and the role

of DFS and fin-techs to accelerate the financial inclusion (r=.002, p=.978), and risk implication that impact the supply of DFS and development of fin-techs and the role of DFS and fin-techs to accelerate the financial inclusion (r=.060, p=.397). The relationship of the independent variables, new innovative financial service delivery, Pros and cons of regulatory frameworks, Risk implications with the role of Fintech s and DFS to accelerate the financial inclusion are positive, low, and negligible as depicted in Appendix 4 Correlation.

Whereas, the remaining three variables were all significant. These are the contribution of government and the role of DFS and fin-techs to accelerate the financial inclusion (r=.224, p=.001), eminent challenges and the role of DFS and fin-techs to accelerate the financial inclusion (r=.291, p=.000), and Potentials for expansion and development of DFS and fin-techs and the role of DFS and fin-techs to accelerate the financial inclusion (r=.345, p=.000)

Looking at the magnitudes and significance correlations, the r values vary widely the coefficients range from .345 (the moderate) to .224 (the weakest). It indicates that there is a significant relationship, even though it is a weak relationship

4.2.2. Multiple Linear Regressions Result

Multiple linear regression analysis to determine the effect of multiple independent variables on the dependent variable. Before the in-depth test of multiple linear regression, the assumption test was processed. Multiple regression is the most common and widely used to analyze the relationship between a single continuous dependent variable and multiple continuous on the categorical independent variable (George et al, 2003). In this research project, multiple regression analysis was used to examine the role and impact of DFS and fin-techs to accelerate the financial inclusion of Ethiopia.

4.2.2.1. Analysis of Variance (ANOVA)

The purpose of the ANOVA test is to show whether the model is significantly better at predicting the dependent variable or using the means. As depicted in Table 4.2-1 Overall Model Fit of the Regression Model (ANOVA) the ANOVA is significant ($F=11.215$, df(regression) = 6, df (residuals) = 198, $Sig<0.05$). Hence, it can conclude that at least one of the six independent variables can be used to predict the role of DFS and Fintech s to accelerate the financial inclusion of Ethiopia. Or in other words, independents variables significant effect on the role of DFS and Fintech s to accelerate the financial inclusion of Ethiopia.

Table 4.2-1 Overall Model Fit of the Regression Model (ANOVA)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	17.169	6	2.862	11.215	.000[b]
	Residual	50.522	198	.255		
	Total	67.692	204			

A. Dependent variable: adfsfinfin
B. Predictors: (constant), ariskdfsfin, achalldfsfi, acgfdfsf, ainovdfsfin, apotdfsfin, aprocodfsfin

Source: Own Survey, 2019

The regression model was applied to test the extent to which DFS and Fintech s had an impact and role to accelerate the financial inclusion of the country. Coefficient of determination or R^2 is the measure of the proportion of the variance of a dependent variable about its mean that is influenced by the independent or predictor variables. A higher value of R^2 represents the greater explanatory power of the regression equation. As can be seen on

Table *4.2-2* Result of Multiple Regressions Model (Model Summary) below, the R^2 is 0.254. This showed that about 25.4% of the dependent variable can be explained by the independent variables, the contribution of governments, eminent challenges, new innovative financial services, pros and cons of the regulatory framework, and the risk implication.

Table 4.2-2 Result of Multiple Regressions Model (Model Summary)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
	.504[a]	.254	.231	.505	1.891

A. Predictors: (constant), ariskdfsfin, achalldfsfi, acgfdfsf, ainovdfsfin, apotdfsfin, aprocodfsfin
B. Dependent variable: adfsfinfin

Source: Own Survey, 2019

4.2.2.2. Regression Coefficients

Multiple linear regression analysis is used to determine the effect of independent variables (there is more than one) on the dependent variable. A two-tail test at 95% confidence level (α=0.05) showed

that the positive beta values for variables indicate a positive influence of the independent variables on the dependent variable. Whereas, the negative beta value indicates that a negative influence on the dependent variables opposite to the hypothesis and the argument presented.

Table 4.2-3 Regression Coefficient of Independent Variables

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	2.075	.361		5.749	.000	1.363	2.786
	ACGFDFSF	.135	.062	.185	2.168	.031	.012	.258
	ACHALLDFSFI	.303	.071	.269	4.297	.000	.164	.442
	APOTDFSFIN	.395	.089	.370	4.410	.000	.218	.571
	AINOVDFSFIN	.045	.072	.049	.629	.530	-.097	.187
	APROCODFSFIN	-.294	.078	-.336	-3.786	.000	-.447	-.141
	ARISKDFSFIN	.020	.058	.023	.348	.728	-.095	.136

a. Dependent Variable: ADFSFINFIN

Source: Own Survey, 2019

As shown in the above Table 4.2-3 Regression Coefficient of Independent Variables, the regression results showed a positive relationship between the dependent variable and the independent variables except for the pros and cons of the regulatory framework. From the findings, one unit change in the contribution of Government, eminent Challenges, Potentials for expansion, new innovative financial service, Risk implications that impact the supply of DFS and development of Fintech s results .185, .269, .370, .049, .023-unit increase in the role and impact of DFS and fin-techs to accelerate the financial inclusion of the country respectively. However, looking at their significant level, only contribution Government, eminent Challenges, potentials for expansion, and pros and cons of the regulatory framework that impact the supply of DFS and development of Fintech s has a significant effect on the role and impact of DFS and Fintech s for financial inclusion.

Hence, from the above analysis, it can be concluded that only the contribution of Government, eminent Challenges and, potentials for expansion that impact the supply of DFS and development of Fintech s has a positive and significant effect on the role and impact of DFS and Fintech s for financial inclusion. Whereas, the pros and cons of the regulatory framework that impact the supply of DFS and the development of Fintech s has a negative significant effect on the role and impact of DFS and Fintech s for financial inclusion

$$Y = 2.075 + .185X1 + .269\,X2 + .370X3 + .049X4 - .336X5 + .023X6 + .361$$

Where:

Where Y = the role of DFS and Fintech to accelerate Financial Inclusion

X_1= contribution Government in the development and expansion of Fintech s and DFS

X_2= eminent Challenges of Fintech s and DFS

X_3= Potentials for expansion of Fintech s and DFS services

X_4 = New innovative financial service to enhance the delivery of DFS and development of fin-techs

X5=Pros and cons of the regulatory framework towards the provision of Fintech s and DFS

X6=Risk implications that impact the supply of DFS and development of Fintech s

4.3. The implication of the Study

Considering all facts and findings of descriptive and inferential statistics results in-depth discussion has been made based on the research questions in the expectation to fulfill the research objectives. In this depth review and discussion, the questions were reviewed and explained with the results of Descriptive, inferential, and finding on literature review.

1. What are the contributions of government in the development of DFS and Fintech s for financial inclusion?

In Asia and the Pacific are exploring ways to encourage their populations to use DFSs instruments of financial inclusion like payment system, credit, insurance, and investment (Bank A. D., Financial inclusion in the digital economy., 2016) Consequently, the government's in this countries has been providing the required support by for development of the infrastructure like telecom service and

power supply in the ecosystem. By doing so, the government has been saving lots of leakage from digital payment, transferring program payment cash to digital. Digital finance increase transaction in the economy enhances a countries GDP by reducing the size of the informal economy where businesses do not register, pay taxes, or comply with product and labour market regulations (McKinsey Global Institute (MGI), SEPTEMBER 2016) As the literature indicates the government has a significant role in DFS provision by providing the necessary support in other countries. Looking at the analysis of the survey result in descriptive and inferential it can be concluded that similar to the other countries' experience the government has a significant role in DFS provision in Ethiopia as well.

2. The role of DFS and fin-techs to accelerate financial inclusion of the country

As described in the literature part of this research, the role of DFS and the development of fin-techs to accelerate the country's financial inclusion are undeniable facts. The DFSs are service can be provided for without limitation of time and locations. Moreover, services can be tailored as per the customer's willingness and ability to consume. There has been supported mostly by financial technology providers, who discover the pain areas of the population to give the right prepositions.

DFS and fin-techs, has been playing a pivotal role to reach the unserved and un-banked society of the emerged and developing countries of the world. These are mainly supported societies which were not accessed to financial service and supported by the conventional banking service. Late alone in the unbanked society, technological advancement also gives a chance to banked customers to access their accounts 24/7.

In this development and distribution of DFS and fin-tech has been given a chance to access services like international remittance, Micro saving, and credit, and payment for utility, cash transfer, insurance, Moreover, these technologies also support sectors like agriculture, health, educations, and others. As a result, DFS and Fintech s have been enhancing the customer saving habits particularly for women, avoid extra time and travel to access finance.

Thus, as depicted in detail in the analysis and results, the role of DFS and Fintech to accelerate the financial inclusion of the country is highly supported by the respondents as well. the variable mentions in the research are also 25.4% of the dependent variable can be explained by the

independent variables, the contribution of governments, eminent challenges, new innovative financial service, pros and cons of the regulatory framework, and the risk implication.

Thus, it is concluded that the DFS and fin-techs has played a role in the acceleration of financial inclusion of the country's if it is properly managed and framed the ecosystems

3. What are the eminent Challenges in the development and expansion of Fintech s and DFS to accelerate financial inclusion;

As per The Diffusion of Innovation (DOI) Theory a person who adopts a new idea or product and service shall have the awareness to make a well-informed decision. The new idea or product and service does meet the values, experiences, and needs of the potential adopters / the society. In DFS and fin-tech development, providers have been challenged by regulators. These are mainly faced at the time of the approval process as they are requested to comply with the conventional or preexisted financial institutions. This impacts service provision inappropriate and affordable manner

The technology provider has been mainly faced a problem of partnership in the delivery of new financial services from government and conventional financial institutions. And a lack of unified data to access the information about user profile and use of cloud system. And these products and services can serve as a layer above the conventional or traditional services. However, banks and the government were reluctant to partnership requests.

The other challenges are the availability of the required infrastructure to reach the remote part of the country, that needs internet and power supply to deliver the service.

To this effect, the respondent in this research is showing their agreement the availability of challenges in the development of DFS and fin-tech in the country. Likewise, the regression results showed a positive relationship between eminent Challenges in the supply of DFS and the development of Fintech s results. 269, a unit increase in the role and impact of DFS and fin-techs to accelerate the financial inclusion of the country respectively.

Thus, the eminent Challenges in the supply of DFS and the development of Fintech s has a significant effect on the role and impact of DFS and Fintech s for financial inclusion.

4. What are the Potentials for expansion of Fintech s and DFS to accelerate financial inclusion;

Digital Finance Plus treats DFS as the financial infrastructure or "rails" linking consumers to providers of critical services in, among other sectors, health, education, energy, water, and agriculture (Jeremiah Grossman, 2013). The DFS and Fin-techs have potentials for banks and other organizations. For banks these financial technologies enable banks to enhance their DFS by providing value-added services. Moreover, it helps them to reach the unserved population of the society, or attract new and retain an existing customer. For an organization, it makes the company's financial system more efficient and avoids leakage in disbursement and collection of salary and other payments. Beyond all, it has the potential to give transaction to be traceable and easily monitored.

The DFS and Fin-techs use a social media network as a payment option to extend financial services. Consequently, new technology helps the country to use its infrastructure efficiently like telecom services. It helps to reduce the leakage in government payments that would help to fill the deficit in the government budget.

The potentials of DFS and Fin-techs have been found in expanding of financial services like remittance international (Regional), loan disbarment and collection, transfer (safety net), Payment for good and service

In addition to the global view of the DFS and fintech potentials in accelerating the financial inclusion, in this research project, potentials for DFS expansion and Fin-Techs Development to accelerate the financial inclusion of the country were evaluated. These potentials were evaluated by survey questionnaire for current and prevailing ecosystems, demand for new DFS and products, policy predictability on government encouragement for the investment of DFSs, government support on DFS and Fintech development, population size, and financial institutions willing to partner with Fintech s to add values on DFS.

Accordingly, the respondents agree on the potentials of DFS and Fin-techs acceleration of the financial inclusion of the country on the country's potentials for Fin-techs and DFS development and expansion. The regression results showed a positive relationship between the Potentials for expansion that impact the supply of DFS and development of Fintech s results .370, a unit increase in the role and impact of DFS and fin-techs to accelerate the financial inclusion of the country respectively. Likewise looking at their significant level potentials for expansion framework that

impact the supply of DFS and development of Fintech s has a significant effect on the role and impact of DFS and Fintech s for financial inclusion.

Thus, the Potentials for expansion of Fintech s and DFS has a positive and significant effect on the role of DFS and fin-tech to accelerate financial inclusion.

5. Does innovative financial service enhance countries' financial inclusion?

As per the Diffusion of innovation theory, the first in line is the innovators who create new ideas and technologies or financial service products. This is mainly based on the type of customer, income level, experience in a specific location, provider efficiency due to innovation takes time as it involves the transmission of new ideas and processes to its customers and employees. Innovation does not necessarily come from financial institutions, Fintechs and DFS providers have taken the place to provide innovative products and services such as Amazon's one-click payments, Blockchain, PayPal, and others are all financial innovations that came from nonfinancial institutions.

This innovation may not be limited to services, and also review the customer experience in service acquisitions and know your customer (KYC). Thus in this development financial services can be distributed to unbanked and unserved, and for banking as well in an enhanced manner.

In addition to, the global view of the DFS and fin-tech potentials in accelerating financial inclusion, in this research project, Innovative DFS and fin-techs to accelerate the financial inclusion of a country by reaching unserved and unbanked society were evaluated. In this regard, different questions posed to the respondents moderately agree and others express their disagreement. Likewise, the regression results showed a positive relationship between new innovative financial services that impact the supply of DFS and development of Fintech s results .049-unit increase in the role and impact of DFS and fin-techs to accelerate the financial inclusion of the country respectively. However, looking at their significant level .530 is less significant. Despite the global facts, the DFS and Fintech s development in Ethiopia were not found innovative to fill gaps of consumer demand/service not customer-centric. Thus, the financial service provider and non-financial service provider have to engage in the development of innovative DFS to reach the unbanked and unserved society.

6. What are the pros and cons of the regulatory framework towards the provision of DFS and Fintech s in Ethiopia;

The potential of Fin-Tech for financial inclusion may be realized with a strategic framework of underlying infrastructure and an enabling policy and regulatory environment to support digital financial transformation ((AFI SPECIAL REPORT) Smits3, 2018) DFSs (DFS) differ from traditional financial services in several ways that have major implications for regulators (CGAP.-Stefan Staschen, 2018) Provide equal treatment between established banks and the new nonbank financial service providers. The challenge for regulators is how to balance regulation and oversight for both the new players and the existing financial players and there is no easy answer (Bank A. D., Financial inclusion in the digital economy., 2016). The regulator needs to work with innovators in the private sector to promote test-and-learn approaches by establishing a regulatory sandbox. And allow cloud-based solutions, work on consumer protection and education to bridging the gap in the use of technology, to maintain trust in DFS (Bank A. D., Financial inclusion in the digital economy., 2016)

For supervisors and overseers, is to keep up with the developments and learn about their application to finance that requires, among other efforts, greater engagement and dialogue with the private sector and innovators. A capacity-building is needed to help supervisors and overseers do their job well. The actors in Fintech include non-bank financial firms, as well as non-financial firms such as tech companies and network operators. This means that the authorities responsible for the more traditional areas of finance will need to cooperate more with other authorities at the national level to exploit synergies where appropriate, to fill in the gaps, to balance different interests, and to avoid working at cross-purposes (Caruana, 2016)As reported by IMF staff discussion note FINTECH AND FINANCIAL SERVICES (Fintech and Financial Services, 2017) Technology and regulation closely interact. As technology alters financial service attributes and market structure, financial regulation must adapt to remain effective.

Apart from the global view about the regulator to the DFS and fin-tech development, in this research project, the Country‘s regulatory requirements for the development of Fin-techs and DFSs had been evaluated with a composition of different questions. These are the regulatory body gives the required attention for the development of new digital services, a legal requirement to promote collaboration among DFS provider and fin-techs, a regulatory body has a good graph of fin-techs

development, the regulatory body realizes the advantage of DFS delivery, issuance of supportive and innovative bills or directive, placement of stringent KYC that hinders the expansion of DFS, and lack of national ID that hinders the development of fin-techs and introduction of disruptive DFSs .Accordingly, 54.6 % of the respondents moderately agree that the regulatory framework supports the provision of DFS and Fintech s; 29.8% of the respondents Agree, 2.4% of the respondents strongly agree while the other 11.7% and 1.5% of the respondents disagree and strongly disagree respectively on the support of regulatory framework for the provision of DFS and fin-tech.

As shown the regression results showed significant negative relationship pros and cons of the regulatory framework were results (ß-.336, sign 000) unit decrease in the role and impact of DFS and fin-techs to accelerate the financial inclusion of the country respectively. However, looking at their significant level, pros, and cons of the regulatory framework that impacts the supply of DFS and development of Fintech s have a negative significant effect on the role and impact of DFS and Fintech s for financial inclusion. Thus, from the analysis and results, the regulatory framework was not in a position to support the DFS and development of fin-techs in different perspectives mentioned in the global experience above.

7. What are the pros and cons of the risk towards the provision of DFS and Fintech s in Ethiopia;

Effective, consumer-centric financial education can address this challenge and protect those consumers against digitization's risks (Bank A. D., Financial inclusion in the digital economy., 2016). Financial technology (Fintech) is a new industry that uses new technologies and innovation to improve activities in finance and aims to compete with traditional financial methods in the delivery of financial services. Fintech companies consist of both start-ups and established financial and technology companies trying to enhance the services provided by existing financial companies (Silva, 2018). Fin-tech leverages technology for the design and delivery of financial services and products in an innovative way. It has emerged as the platform bringing together banks and major service providers such as utilities, telecom, transportation, card schemes, retailers, healthcare, education, etc. and has transformed the payment and settlement process from complex to highly simplified (Mehrotra, Financial Inclusion Through FinTech – A Case of Lost Focus, 2019)

DFSs is highly relying on the foundation of digital technology development or the infrastructure in general. From the supply side, Big Data enriches sales and risk control mechanisms and cloud

computing enhances time and cost efficiency ((CAFI), 2018). Like all great opportunities, digital finance also comes with risks. What makes online financial systems easy to use for customers also makes them susceptible to cybercrime. The entry of non-traditional players poses new challenges for policy, regulation, and supervision. And the ease of transferring funds across the globe often anonymously, using means such as crypto currencies might increase illicit financial flows (Enabling digital development Digital finance, world development report 2016).

Despite the global view of risk implication on the supply of DFS and development of Fintech, this research project had been evaluated respondents' agreement and disagreement about the risk implication on the supply of DFS and development of fin-techs by the respondents with different questions of attributes. These questions are DFS exposure to different risks, organization data lost when the partner with third-party / Fintech s, DFS more risker than conventional banking and exposed to cyber attach, SIM swap, Identity theft, providers lack security requirements, level of awareness about fin-tech and DFS to protect the digital environment from malicious attacks and lack of national ID.

Accordingly, 45.4% of the respondents agree on the impact of risk on the supply of DFS and development of fin-techs, 45.4% of the respondents moderately agree while 8.3% and 3.9% of the respondent disagree and strongly agree respectively on the impact of risk on the supply of DFS and development of fin-techs.

The impact was also evaluated, the regression results showed a positive relationship between Risk implications that impact the supply of DFS and development of Fintech s results .023 unit increase in the role and impact of DFS and fin-techs to accelerate the financial inclusion of the country. However, looking at their significant level, .728 were found the less significant level to impact the supply of DFS and development of Fintech s has a significant effect on the role and impact of DFS and Fintech s for financial inclusion.

Thus, the DFS was found at the infant stage, providers were not yet influenced by the risk related to digital technologies. On the other hand, it may be the respondents believes that the technology implementation was not exposed to risk

Table 4.3-1 Summary of Hypothesis result

Hypothesis	Regression Coefficient (Test)	result
H1: Contribution Government in the development and expansion of Fintech s and DFS has a significant effect on the role of DFS and Fintech to accelerate financial inclusion;	Beta =.185 Sig.=.031	H1 is supported
H2: Eminent Challenges in the development and expansion of Fintech s and DFS has a significant effect on the role of DFS and Fintech to accelerate financial inclusion;	Beta =.269 Sig.=.000	H2 is supported
H3: Potentials for expansion of Fintech s and DFS has a significant effect on the role of DFS and Fintech to accelerate the financial inclusion ;	Beta =.370 Sig.=.000	H3 is supported
H4: New innovative financial service to enhance the delivery of DFS and development of Fintech s has a significant effect on the role of DFS and Fintech to accelerate the financial inclusion ;	Beta =.049 Sig.=.530	H4 is rejected
H5: Pros and cons of the regulatory framework towards the provision of Fintech s and DFS has a significant effect on the role of DFS and Fintech to accelerate the financial inclusion ;	Beta = -.336 Sig.=.000	*H5 is not supported*
H6: Risk implications that impact the supply of DFS and development of Fintech s have a significant effect on the role of DFS and Fintech to accelerate financial inclusion ;	Beta =.023 Sig.=.728	H6:Rejected

Chapter 5: Summary of Findings, Conclusions, and Recommendations

5. Summary of Findings, Conclusions, and Recommendations

5.1. Summary of Findings

Financial inclusion is an important international financial policy objective and the financial regulatory principle. It is one of the key enablers to meet some of the Sustainable Development Goals, Eliminating extreme poverty (SDG 1), Reducing hunger and promoting food security (SDG 2), Achieving good health and well-being (SDG 3), Fostering quality education (SDG 4) and Promoting gender equality (SDG 5). (Leora Klapper, 2016). To meet the stated objectives, a traditional way of financial service delivery may not be sufficient to reach all groups of society. Rather it needs partnering with non-financial players that diversify and invest in technology. So, governments have been exploring ways to encourage their populations to use DFSs. Such as payment systems, credit, insurance, and investment service at affordable prices particularly to the financially excluded.

Considering global facts, this research project initiated with the general objective of finding "The role of DFS and Fintech s to accelerate the financial inclusion of the country". To meet this objective, a review of international institutions report, related research on Fintech s and DFS, countries experience, transaction information from NBE, and finally, in-depth analysis descriptive and inferential statistical analysis of the respondent responses based on survey questionnaire was done. So, as discussed hereinabove in detail, the DFS and fin-techs have not yet registered a significant effect in accelerating the financial inclusion of the country as compared to neighbouring and Sub-Saharan countries. Thus, it indicates a lot of work to be done on the ecosystem, particularly on the supplier and the regulatory side.

Based on the discussion on the results the following major findings were exhibited.

a. 80% of the respondent agree on the role of DFS and Fintech s accelerating the financial inclusion of Ethiopia, and 25.4% of the dependent variable can be explained by the independent variables.

b. There are also visible challenges in the development of Fintech s and the expansion of DFS. Financial service providers did not partner with relevant stakeholders to reach the bottom of the pyramid, such as PSNP beneficiaries, women, immigrants, and others
c. The result shows than there are potentials DFS expansion and development of fin-techs in Ethiopia, that will have an impact on the financial inclusion of the country
d. The innovativeness of DFS and Fintech was not that much as observed from the response found in the survey. Moreover, the innovative product that influences the financial inclusion of the country is less. Despite the global facts, the DFS and Fintech s development in Ethiopia was not found innovative to fill gaps of consumer demand or services that were not customer-centric.
e. The regulatory framework for DFS and the development of Fintech s needs improvement to be more accommodative and its impact on the financial inclusion of the country was found minimal.
f. The implication of risk in the development of DFS and the development of Fintech was found indifferent and has minimal impact on the creation of a financially included society.

5.2.Conclusion and Recommendation

DFS is the financial infrastructure or "handrails" linking consumers to providers of critical services in, among other sectors, health, education, energy, water, and agriculture. It addresses the bottom of the pyramid. Consequently, the researcher concludes and recommends, as per the discussion and facts mentioned above and believes, to change the financial inclusion of the country.

1. The government should give due attention to the DFS development, including a non-financial service and technology providers like fin-techs, by providing regulatory sandbox by financial regulatory authorities. Instead to pass the approval process the normal process;
2. To unleash the full range and potential of new forms of digital finance, the government establish an association that shall be monitored by the regulatory body. As it is important for regulatory oversight and knowledge transfer; a much wider variety of players than banks would likely be involved. These may include telecom companies, payment providers, Fintech s,
3. The government should give focus on customer awareness, protections, and establishment of digital ID to enhance the DFS consumption to increase the financially included society;

4. The conventional financial service providers should establish a strategic partnership with technology service providers, to leverage the digital experience to gain market access in the payments space and then leverage their experience in product diversification on payments like e-commerce, credit payment, and collection and Insurance on different users for health, agriculture and others
5. The government should establish a unified database to be allowed access for DFS providers for payments, credit processing, and product development.
6. The financial and technology payment/service providers should have provided DFSs that meet the customer expectations or value prepositions to enhance or accelerate the financial inclusion of the country.

5.3. Suggestion for future research;

This research is open for subsequent review and leaves room for future research in impacts/roles of DFS and Fintech s for financial inclusion of Ethiopia. There is an opportunity for the researcher to deal further in this study variables in-depth or Use as a reference for subsequent research by enhancing the current or adding additional variables, or in-depth review of the current variables to evaluate the impact more accurately or differently. This study focused on the supplier side, and involve all types of financial service providers and other relevant stakeholders and the researcher would recommend a similar study on both sides of demand and supply to be conducted at a large scale. These would give more diversity in sample size and more informed results. Moreover, the research project was passing an extended time to get similar research in the same title which had been done from the supplier side, and the researcher believes that if the recommendations owned by the respective owner (Government, Financial Institutions, Fintech s, and other relevant stakeholders), it would bring changes in the ecosystems and enhance the financial inclusion of the country.

REFERENCES

(AFI SPECIAL REPORT) Smits3, R. A. (2018). *FINTECH FOR FINANCIAL INCLUSION: A FRAMEWORK FOR DIGITAL FINANCIAL TRANSFORMATION, AFI SPECIAL REPOR.* Published online: Institute of Applied Informatics at University of Leipzig 2018.

(CAFI), C. A. (2018). *Growing with Pain: Digital Financial Inclusion in China.* Beijing: CAFI.

(EEA), Ethiopian Economics Association. (October 2017). Financial Inclusion in Ethiopia: Using LSMS (Ethiopia Socioeconomic Survey) Data. In G. D. Yemataw2, *Ethiopian Journal of Economics* (p. 28). Addis Ababa, Ethiopia: Ethiopian Economics Association.

<isahin@iastate.edu>, I. S. (2006). DETAILED REVIEW OF ROGERS' DIFFUSION OF INNOVATIONS THEORY AND EDUCATIONAL TECHNOLOGY-RELATED STUDIES BASED ON ROGERS' THEORY . *The Turkish Online Journal of Educational Technology*, 10.

Aardhra. V.1, S. M. (2016). The role that financial innovations play in the modern financial system. *JARIIE*, 6.

AFI Alliance for Financial Inclusion. (2016, August). DFSS. *BASIC TERMINOLOGY*.

Agency, C. S. (2013). *Population Projections for Ethiopia 2007-2037.* Addis Ababa: Central Statistical Agency.

Agriculture, M. o. (Annual Report for EFY 2011 (2018/ 2019)). *RPSNP – Annual Report EFY 2011.* Addis Ababa : Ministry of Agriculture .

Alexande, D. W. (2019). *Digital Finance for the real economy.* CGAP.

Alexander, P. K. (, 18-20 July 2017Financial). THE ROLE OF FINTECH AND DFSS. *United Nations Conference on Trade in Development (UNCTAD)* (p. 4). Geneva: University of Zurich, Law FacultyUniversity of Cambridge, Centre for Risk StudiesThe.

Alliance for Financial Inclusion (AFI)., B. F. (2010). *Financial inclusion measurement for regulators: Survey design and implementatio.* Bangkok 10110, Thailand: Alliance for Financial Inclusion (AFI).

ALTERNATIVE DELIVERY CHANNELS AND TECHNOLOGY Handbook, I. A. (2015). *ALTERNATIVE DELIVERY CHANNELS AND TECHNOLOGY Handbook.* Sub-Saharan Africa: IFC, Sub-Saharan Africa.

Arjunwadkar, P. Y. (2018). *FinTech The Technology Driving Disruption in the Financial Services Industry.* US: Taylor & Francis Group, LLC.

Arner, D. W., & Zetzsche, R. P. (2018). *FINTECH FOR FINANCIAL INCLUSION .* Alliance for Financial INCLUSION .

ASIAN DEVELOPMENT BANK, O. W. (2017). *ACCELERATING FINANCIAL INCLUSION IN SOUTH-EAST ASIA WITH DIGITAL FINANCE.* Manila: ASIAN DEVELOPMENT.

Badruddin, A. (2018). Conceptualization of the Effectiveness of Fintech in Financial Inclusion. *International Journal of Engineering Technology Science and Research*, 8.

Bank, A. D. (2016). Financial inclusion in the digital economy. *Mandaluyong City, Philippines: Asian Development Bank, 2016.* (p. 72). Mandaluyong City, Philippines: Asian Development Bank.

Bank, A. D. (2016). Financial inclusion in the digital economy. *The Conference on Financial Inclusion in the Digital* (p. 74). Manila: Asian Development Bank.

Bank, I. B. (2012). *Maximizing Mobile .* 1818 H Street NW, Washington DC 20433 : The World Bank.

Bank, W. (2018, october 02). *worldbank.org*. Retrieved from www.worldbank.org: https://www.worldbank.org/en/topic/financialinclusion/overview

Bank, W. (2019). *Ethiopia Digital Foundations Project (P171034).* Addis Ababa: World Bank .

Bank, W. (2019). *Ethiopia Digital Foundations Project (P171034).* Addis Ababa: World Bank .

Brooks, D. G. (2017). The digital revolution in financial inclusion international development in the fintech era. *New Political Economy*, 15.

Carol Coye Benson, C. N. (2016). *The DFSs Ecosystem.* I n t e r n a t i o n a l T e l e c o m m u n i c a t i o n U n i o n.

Caruana, J. (2016). Financial inclusion and the fintech revolution: implications for supervision and oversight. *Third GPFI-FSI Conference on Standard-Setting Bodies and Innovative Financial Inclusion – "New frontiers in the supervision and oversight of DFSs* (p. 4). Basel, 26 October 2016.

CGAP.-Stefan Staschen, P. M. (2018). *Basic Regulatory Enablers for DFSs,Focus Note 109.* Washington,D C: CGAP.

Courbe, J. (2016). *Financial Services Technology 2020 and Beyond.* PwC.

Demirguc-Kunt, A., Klapper, L., Singer, D., Ansar, S., & Hess, J. (2018-04-19). *Global Findex Database 2017 : Measuring Financial Inclusion and the Fintech Revolution.* World Bank.

Denyes, L., Lesher, N., Martinez, M., McNutt, H., & Nakhai, M. (2018). *DFSS FOR AGRICULTURE.* IFC and the Mastercard Foundation's Partnership for Financial Inclusion.

Digital Finance for Development, J. G. (2013, Jan). *Digital Finance for Development -A HANDBOOK FOR USAID STAFF.* USAID's.

Dong He, R. L.-G. (2017, June). *Fintech and Financial Services.* IMF.

EY Global Financial Services Institute, R. P. (2015). Building consumer demand for DFSs – the new regulatory frontier. *The Journal of Financial Perspectives: FinTech*, 36.

Field, A. (2006). Discovering statistics using SPSS. London: University of Oxford.

Financial Inclusion in the age of Fintech (A Multiple case study of fintech companies role for financial inclusion in india, O. v. (2018, June). *Financial Inclusion in the age of Fintech (A Multiple case study of fintech companies role for financial inclusion in india.* univeristy of Gothenburg School of business econsomics and law.

Fintech and Financial Services, D. H.-G. (2017, June). *Fintech and Financial Services.* IMF.

G20 2019 Japan Krish Chetty, J. J. (2019). Review of Fintech Strategies for Financial Inclusion in Sub-Saharan Africa. *G20 Insights*, 14.

Gada, D. (2018, March 05). *Five ways fintech is disrupting the financial services industry.* Retrieved from www.finextra.com: https://www.finextra.com/blogposting/15105/five-ways-fintech-is-disrupting-the-financial-services-industry

Galdava, S. R. (n.d.). *Role_of_DFS_in_Accelerating_USAID_Education_Goals.pdf.* Washington, DC:: U.S. Agency for International Development.

Gayatri Murthy, M. F.-V. (2019). *FINTECHS AND FINANCIAL INCLUSION.* Washington DC 20433: CGAP.

GSMA. (2017). *2017 STATE OF THE INDUSTRY REPORT ON MOBILE MONEY.* London EC4N 8AF,United Kingdom: GSMA .

GSMA. (2018). *2018 State of the Industry Report on Mobile Money.* GSMA.

Haider, H. (22 June 2018). *Innovative financial technologies to support livelihoods and economic outcomes .* Brighton, UK: Institute of Development Studies: K4D Helpdesk Report. Brighton, UK: Institute of Development Studies.

http://blog.leanmonitor.com/early-adopters-allies-launching-product/. (2019, September 9). *phweb.bumc.bu.edu/otlt/MPH-Modules/SB/BehavioralChangeTheories/BehavioralChangeTheories4.html*. Retrieved from phweb.bumc.bu.edu/otlt/MPH-Modules/SB/BehavioralChangeTheories/BehavioralChangeTheories4.html: http://blog.leanmonitor.com/early-adopters-allies-launching-product/

IFC, A. L. (2015). *ALTERNATIVE DELIVERY CHANNELS AND TECHNOLOGY Handbook .* Sub-Saharan Africa: IFC, Sub-Saharan Africa.

IFC, a. m. (Note 34 | March 2017). *How Fintech is Reaching the Poor in Africa and Asia: A Start-Up Perspective.* IFC, a member of the World Bank Group.

Innovative financial technologies to support livelihoods and economic outcomes, H. H. (22 June 2018). *Innovative financial technologies to support livelihoods and economic outcomes.*

Brighton, UK: Institute of Development Studies: K4D Helpdesk Report. Brighton, UK: Institute of Development Studies.
International Financial cooperation, B. I. (2017). Measuring financial inclusion: a multidimensional index1. *Bank Al-Maghrib–CEMLA –IFC SatelliteSeminaronFinancialInclusion* (p. 56). Marrakech, Morocco: BIS, the IFC.
Jeremiah Grossman, a. P. (2013, Jan). *Digital Finance for Development -A HANDBOOK FOR USAID STAFF.* USAID's.
Joanna Błach, M. W.-K. (2014). INNOVATIONS IN LIQUIDITY MANAGEMENT – THE POTENTIAL OF CORPORATE TREASURY. *Economics & Managment* , 16.
Khraisha1, T. (2018). financial innovation . *springer Open* , 27.
Le Thanh Tam, L. N. (January 2018). Fintech for Promoting Financial Inclusion in Vietnam Fact Findings and Policy Implications. *Business & Social Sciences Journal (BSSJ)*, 9.
Leora Klapper, M. E.-Z. (2016). *Achieving the Sustainable Development Goals: The Role of Financial Inclusion.* Washington, DC 20006: www.cgap.org.
Liudmila Zavolokina*, M. D. (2016). The FinTech phenomenon: antecedents of financial innovation perceived by the popular press. *springeropen*, 16.
McKinsey & Company, J. G. (2018, December). *Synergy and disruption: Ten trends shaping fintech.* McKinsey & Company. Retrieved from www.mckinsey.com/clientservice/financial_services
McKinsey Global Institute (MGI). (SEPTEMBER 2016). *digital finance for all: powering inclusive growth in emerging economies.*
Mehrotra, A. (2019). Financial Inclusion Through FinTech – A Case of lost focus. *2019 International Conference on Automation, Computational and Technology Management (ICACTM)*, (p. 5). Dubai, UAE.
Mehrotra, A. (2019). Financial Inclusion Through FinTech – A Case of Lost Focus. *International Conference on Automation, Computational and Technology Management (ICACTM)* (p. 5). Dubai, UAE: Amity University, Dubai.
NBE. (2012). *Financial Inclusion stratgy of Ethiopia.* Addis Ababa: NBE , World Bank.
NBE. (2017/18). *Annual Report.* Addis ABaba , ethiopia: NBE.
Nicoletti, B. (2017). *The Future of FinTech.* Rome, Italy: This Palgrave Macmillan imprint is published by Springer Nature.
Nicoletti, B. (2017). *The Future of FinTech.* Rome, Italy: Palgrave Studies in Financial Services Technology.
Nicoletti, B. (2017). *The Future of FinTech.* Rome, Italy: Palgrave Studies in Financial Services Technology.
Nisha. (2018). Technology and Financial Inclusion: An Agenda for Holistic Growth. *Technology and Financial Inclusion:*, 5.
OECD. (2018). Financial Consumer Protection Approaches in the Digital Age. (p. 32). OECD.
Ostling, v. T. (2018, June). *Financial Inclusion in the age of Fintech (A Multiple case study of fintech companies role for financial inclusion in india.* univeristy of Gothenburg School of business econsomics and law.
Ozili, P. K. (2017, December 28). Impact of digital finance on financial inclusion and stability. *Impact of digital finance on financial inclusion and stability*, p. 329.
Ravikumar, T. (2019). Digital Financial Inclusion: A Payoff of Financial Technology and Digital Finance Uprising in India. *INTERNATIONAL JOURNAL OF SCIENTIFIC & TECHNOLOGY RESEARCH VOLUME 8, ISSUE 11, NOVEMBER 2019*, 6.
Resources, M. o. (2016/17). *Ministry of Agriculture and Natural Resources Rural Job Opportunity Creation and Food Security Sector.* Addis Ababa : Ministry of Agriculture and Natural Resources.
Shofawati, A. (2019). The Role of Digital Finance to Strengthen Financial Inclusion and the Growth of SME in Indonesia. *The 2nd International Conference on Islamic Economics, Business, and Philanthropy (ICIEBP) Theme: "Sustainability and Socio Economic Growth"*, (p. 19).

Silva, L. A. (2018). Financial inclusion in the age of fintech: a paradigm shift1. *Fourth FSI-GPFI conference on standard-setting bodies and innovative financial inclusion: implications of fintech and other regulatory and supervisory developments* (p. 4). Switzerland: Basel.

SORIANO, M. A. (2017, 12). *Factors driving financial inclusion and financial performance in Fintech new ventures*. Retrieved from https://ink.library.smu.edu.sg/etd_coll/145: https://ink.library.smu.edu.sg/etd_coll/145

Stella, D. T. (2019, February 07). DIGITAL FINANCE AND ITS IMPACT ON FINANCIAL INCLUSION. *DIGITAL FINANCE AND ITS IMPACT ON FINANCIAL INCLUSION*, p. 8.

Svetlana Saksonova1, I. K.-M. (2017). Fintech as Financial Innovation – The Possibilities and Problems of Implementation . *European Research Studies Journal* , 13.

World Bank. (2018-05-15). *WP-PUBLIC-DIGITAL-Ethiopia-Economic-Update-The-Inescapable-Manufacturing-Services-Nexus.* World Bank, Washington, DC.

World Bank, A. D.-K. (2018). *The Global Finex database.* Washington, DC 20433, USA: World bank .

World Bank, H. N. (2017). *DISTRIBUTED LEDGER TECHNOLOGY (DLT) AND BLOCKCHAIN (FinTech Note | No. 1).* Washington, DC 20433, USA: World Bank.

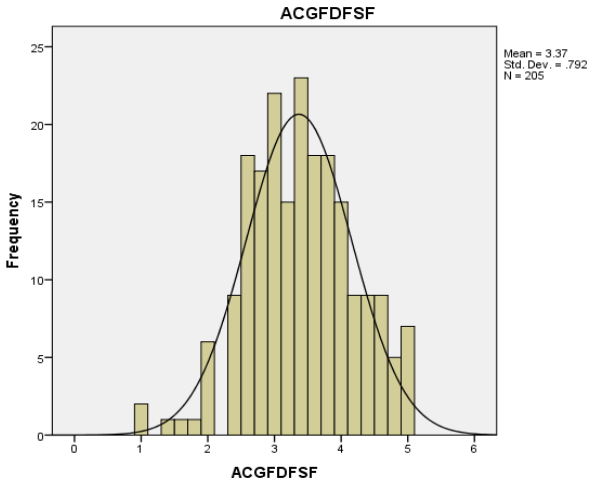
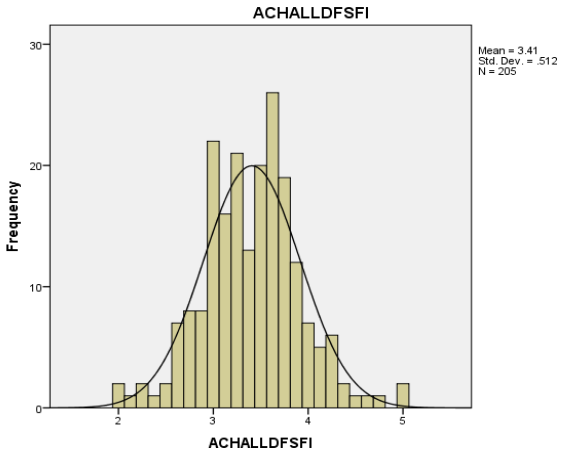
Zwedu, G. A. (2014, November). *Financial inclusion, regulation and inclusive growth in Ethiopia.* London SE1 8NJ: Overseas Development Institute 2014.

Appendix 1: Assumptions Test Results

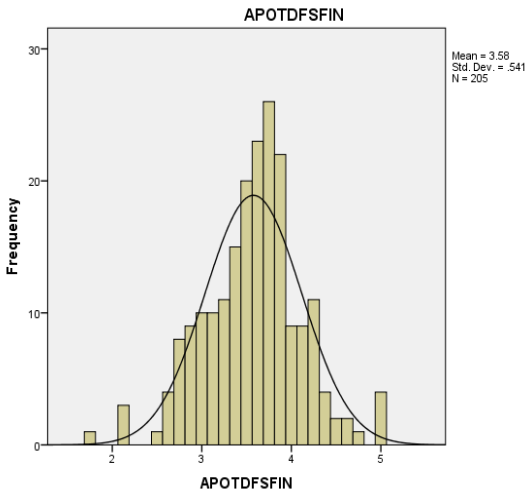
a) Normality test

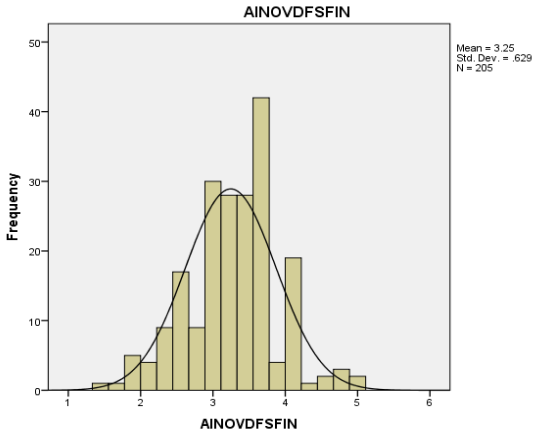
This assumption test whether the data is well modelled by normal distribution or not. This test of normal distribution could be checked by the graphical (histogram and dot plot) method of tests. Data normality test is the first step that must be done before the data is processed based on the models of research, especially if the purpose of the research is inferential. The normality test is intended to determine the distribution of the data in the variable that will be used in research. Data were good and decent used in research is normally distributed data. Normality was assessed by checking the skewness and kurtosis values. It was seen that the skewness and kurtosis values of all variables, were between -1 and +1 indicated that the variables did not deviate from the normality assumption.

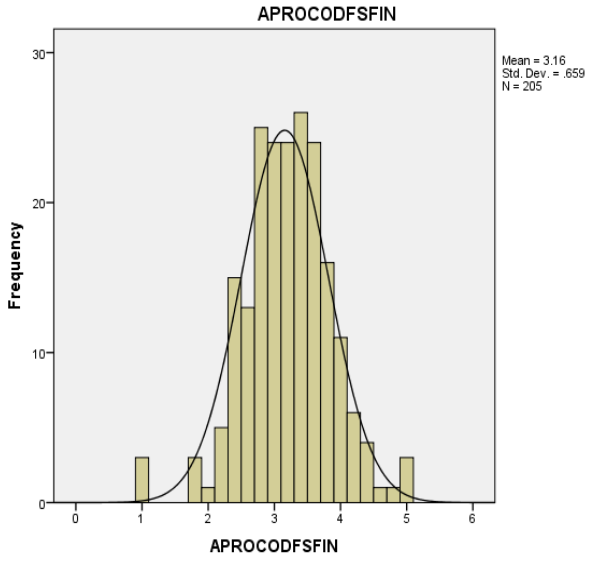
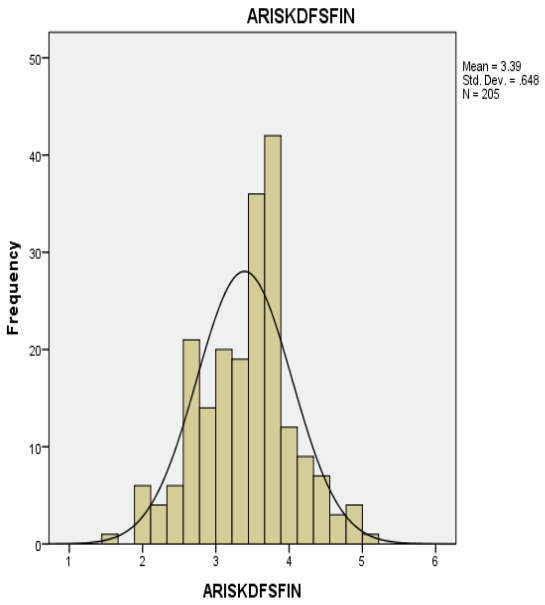
As described in Annex (Normality Test) all independent variables are a kind of histogram for residuals, the option normal overlays a normal distribution to compare, here residuals are symmetrical, bell-shaped, and seem to follow a normal distribution.

Contribution of Government for development and expansion of Fintechs and DFS	Eminent challenges for the development of Fintech and DFS
	

Potentials of DFS And fin-tech to enhance financial inclusion	New innovative financial service to enhance the DFS and fin-techs





Pro and cons of the regulatory framework for the development and expansion of Fin-techs and DFS	Risk implications that impact the supply of DFS and development of Fin-techs
	

b) Linearity

The linearity test aims to determine the relationship between independent variables and the dependent variable is linear or not. The linearity test is a requirement in the correlation and linear regression analysis. Good research in the regression model there should be a linear relationship between the free variable and dependent variable.

c) Multicollinearity Test

A multicollinearity test is done to avoid habits in the decision-making process regarding the partial effect of independent variables on the dependent variable. A good regression model should not correlate with the independent variables or not happen multicollinearity. It is a statistical phenomenon in which two or more independent variables in a multiple regression model are highly correlated. According to (Greene, 2000), multicollinearity is a high degree of correlation among several independent variables. This test depends on two results: Value Tolerance and VIF. In social sciences research, a VIF value is below 10, and tolerance above 0.02 is considered to be acceptable (Field, 2009).

If the VIF value lies between 1-10, then there is no multicollinearity. If the VIF <1 or> 10, then there is multicollinearity. The other method is by computing tolerance values and Variance Inflation Factor (VIF) for each independent variable.

Table 5.3-1 Multicollinearity test using Tolerance Values and Variance Inflation

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	2.075	.361		5.749	.000		
	ACGFDFSF	.135	.062	.185	2.168	.031	.515	1.942
	ACHALLDFSFI	.303	.071	.269	4.297	.000	.959	1.043
	APOTDFSFIN	.395	.089	.370	4.410	.000	.534	1.872
	AINOVDFSFIN	.045	.072	.049	.629	.530	.610	1.640
	APROCODFSFIN	-.294	.078	-.336	-3.786	.000	.479	2.087
	ARISKDFSFIN	.020	.058	.023	.348	.728	.872	1.147

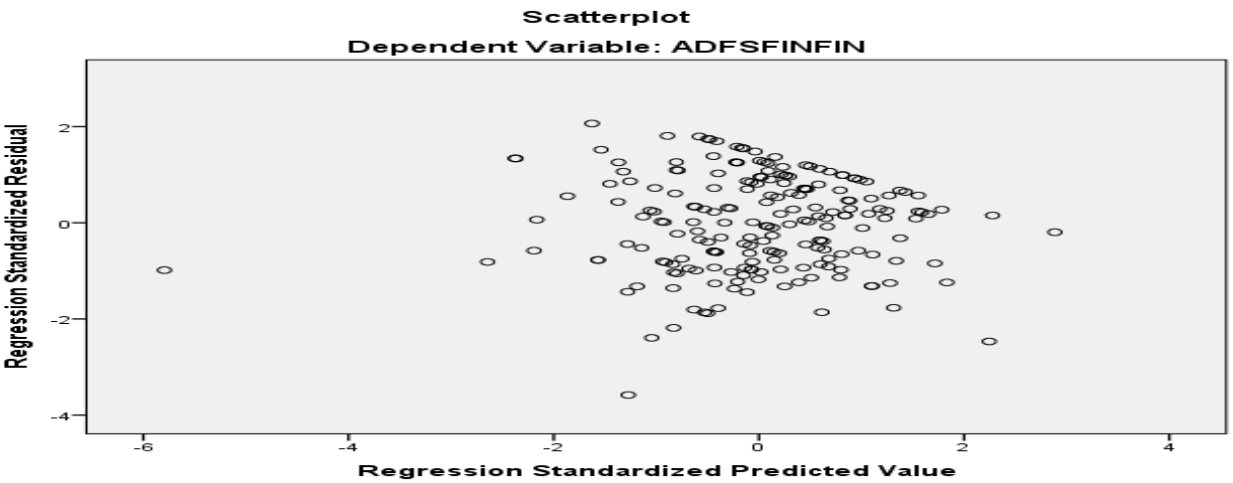
Source own survey, 2019

Displays in above Table 5.3-1 Multicollinearity test using Tolerance Values and Variance Inflation the multicollinearity test by computing tolerance values and Variance Inflation Factor (VIF) for each independent variable. In this case, all the tolerance values are greater than 0.10 and VIF is less than 10. Hence, the researcher assumed Multicollinearity was not a problem.

d) Homoscedasticity

This assumption requires even distribution of residual terms or homogeneity of error terms throughout the data. Homoscedasticity can be checked by visual examination of a plot of the standardized residuals by the regression standardized predicted value (Osborn & Waters, 2002). Homoscedasticity refers to the assumption that the variation in the residuals (or amount of error in the model) is similar at each point across the model. In other words, the spread of the residuals should be fairly constant at each point of the predictor variables (or across the linear model). Just as for the assessment of linearity, a commonly used graphical method is used (Figure).

Figure 0-1 Scatter Plot of Homoscedasticity:



As can be seen in the figure, variation in the residuals (or amount of error in the model) is roughly similar at each point of the model because as the predicted values increase (along X-axis), the variation in the residuals become roughly similar and hence this assumption is satisfied.

e) Independent of Residuals

This is the same as saying that the observations (individual data points) to be independent of one another (uncorrelated). The Durbin-Watson statistic is used to test for the independence of residuals. The value of the Durbin-Watson statistic ranges from 0 to 4. As a general rule, the residuals are independent (not correlated) if the Durbin-Watson value is approximately closer to 2, and values below 1 and above 3 are causes for concern and may render the analysis invalid.

Table 5.3-2 Independent Residual Assumption

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
	.504[a]	.254	.231	.505	1.891

a. Predictors: (Constant), ARISKDFSFIN, ACHALLDFSFI, ACGFDFSF, AINOVDFSFIN, APOTDFSFIN, APROCODFSFIN

b. Dependent Variable: ADFSFINFIN

Source: Own Survey, 2019

As shown in the above Table 5.3-2 Independent Residual Assumption, the Durbin-Watson statistics showed that this assumption had been met, since the obtained value was close to 2(Durbin-Watson = 1.891). Hence, the researcher assumed independence of residuals assumption is satisfied.

f) No Influential Cases are Biasing the Model

Significant outliers and influential data points can place undue influence on the model, making it less representative of the data as a whole. To identify any particular influential data points, Cook's

Distance statistic for each participant would be measured. Any values over 1 are likely to be significant outliers, which may place undue influence on the model.

Table 5.3-3 Cook's Distance

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	2.58	5.10	4.26	.290	205
Std. Predicted Value	-5.795	2.884	.000	1.000	205
Standard Error of Predicted Value	.043	.234	.088	.030	205
Adjusted Predicted Value	2.72	5.11	4.26	.289	205
Residual	-1.809	1.043	.000	.498	205
Std. Residual	-3.582	2.065	.000	.985	205
Stud. Residual	-3.638	2.091	.001	1.003	205
Deleted Residual	-1.867	1.069	.001	.516	205
Stud. Deleted Residual	-3.757	2.109	.000	1.008	205
Mahal. Distance	.517	42.739	5.971	5.375	205
Cook's Distance	.000	.060	.005	.009	205
Centered Leverage Value	.003	.210	.029	.026	205

a. Dependent Variable: ADFSFINFIN

Source: Own Survey, 2019

The survey result indicates in Table 5.3-3 Cook's Distance, that Cook's Distance is between 0.00 and 0.46, suggesting that no influential cases are biasing the study model. In conclusion, the independent and dependent variables met almost all of the assumptions which indicate that the model the researcher got for a sample can be accurately applied to the population of interest. That means the coefficients and parameters of regression can be said unbiased (Field, 2006)

Appendix 2; Survey Questionnaires

ADDIS ABABA UNIVERSITY
COLLEGE OF BUSINESS AND ECONOMICS
DEPARTMENT OF MANAGEMENT

Dear Sir/ Madam:

My name is Tafesework Negussie. This survey is part of my research project which will be submitted as part of the fulfilment of a Master of Executive Management Degree from the College of Business and Economics. Addis Ababa University. I am conducting research on *The Role of DFSs and Fin-Techs for Financial Inclusion in Ethiopia* in partial fulfillment of the requirements of a Master's Degree in Executive Business Administration

The questionnaire is developed to collect data on the variables of the research from participants selected for the research. The outcomes of the research are important to understand the role and contribution of DFSs and fin- techs for financial inclusion.

Taking into consideration that, your response is very valuable to complete this study, you are kindly requested to participate in this survey which will not take you more than 20 minutes.

Please note that:

- ✓ Please kindly tick (√) or provide your answer where applicable.
- ✓ You don't need to write your name.
- ✓ The student/ researcher will get back to you within 3 days to collect the filled questionnaire
- ✓ The information and comments you provide are highly honored & kept confidential.

Best regards,

Tafesework Negussie

Tel. 0911 687685

Email. Tafeseworkh@gmail.com

Anonymity Guarantee

Your responses to the role of DFS and fin-techs for financial inclusion are anonymous. It is assured that the data furnished, and the identity of the respondents will be kept strictly confidential.

Thank you for your time!!!

Part I: Background information

- ✓ Indicate your response by putting (√) mark inside the box for the following background information.

a) Respondent Information

1. Current Position					
Executive Office		Manager		Others (if others, please write below)	
Director		Officers/Experts			
2. Years of work /professional Experience					
Below 5 years		6- 10 years		Above 10 years	
3. Educational background /level:					
Certificate		First degree		Above second degree	
Diploma		Second Degree			

b) Organization information

4. Type of industry/ organization you are working in :					
Bank		Fin-Techs (technology Service provider)		Ministry of Innovation and Technology	
Insurance		Payment service provider		Agricultural Transformation Agency	
Microfinance institution		National Bank of Ethiopia		Ethio Telecom	
If Other, please specify ----------					
5. Ownership of organization					
Government		Private		Non-Government organization	
6. Customer base					
Un-banked6-10 years		Under-banked		Banked	
7. Experience in DFSs delivery or Fintech development					
Below 5 years		6- 10 years		Above 10 years	
8. Strategy for DFS expansion and/or Fintech Development is developed by your organization					
Yes		Under Progress		Not at all	

9. DFSs and channel (s) provided/supported by your organization (it is possible to select more than one channel)					
9.1 Channel type		DFS			
Mobile banking		Fund transfer Person to person		Insurance	

Internet banking		Fund transfer Business to business		Savings	
Point of sale (POS) terminal		Fund transfer Business to government		Credit /lending	
Automated teller machine (ATM)		Fund transfer Government to business		Cash withdrawal	
Mobile money (wallet)		Payment to merchants		Credit scoring /Data analysis	
Agent outlet		Bill payment (such as utility payment)		International remittance	
Merchants		Airtime top-up		E-commerce	
Other				Other	

If your choice is others, please list channel and service types below:

Part II: DFS, Fin-Techs, and Financial Inclusion

Please indicate the extent of your agreement or disagreement with the following statements indicating (1) strongly disagree, (2) Disagree,(3) moderately agree, (4) Agree, and (5) strongly agree. Please put the right mark (√) over your choice.

No.	Description	Strongly Disagree	Disagree	Moderatel	Agree	Strongly
1	General questions					
1.1	DFSs play a role in accelerating a country's financial inclusion					
1.2	Fintechs play a role in accelerating financial inclusion					
2	Contribution of the government in the development of DFS and Fintech					
2.1	The government has recognized the contribution of DFSs to financial inclusion					
2.2	The government has recognized the contribution of Fintech s for financial inclusion					
2.3	The government has given the focus on the expansion of essential infrastructures					
2.4	The government realizes that the importance of the development of Fintech s in enhancing digital financial inclusiveness.					
2.5	The government takes responsibility for the development of new policies that adapt to new DFSs in the country.					
2.6	The government takes responsibilities for the development of new policies to adapt new Fintech s					

No.	Description	Strongly Disagree	Disagree	Moderatel	Agree	Strongly
2.7	The government collaborates with the relevant stakeholders to enhance DFSs					
2.8	The government collaborates with the relevant stakeholders to enhance the development of Fintech s.					
2.9	The government support digitalization of Government to People (G2P) payments such as salary, pension					
2.10	The government support digitalization of people to Government (p2G) payments such as utility bills					
3	Roles of DFSs and Fintech s for financial inclusion in Ethiopia					
3.1	The Roles of Digital financial services					
3.1.1	The contribution of DFS for financial inclusion is considerable.					
3.1.2	The DFSs are tools for financial institutions to reach financially excluded societies.					
3.1.3	The DFSs allows banks to increase customer than through traditional outlets					
3.1.4	The DFSs is accessible by 24/7 once it is adopted by users					
3.1.5	The DFSs increase presence for financial institutions					
3.1.6	The DFSs creates additional values on top of conventional services					
3.2	Roles of Fintech s for financial inclusion					
3.2.1	Fintech s have roles in the enhancement of financial inclusion					
3.2.2	The contribution of Fintech s for financial inclusion is important to build the digital economy					
3.2.3	A strategic partnership with Fintech s has become critical to enhance DFS options					
3.2.4	Innovative Fintech s development facilitate the financial service delivery					
3.2.5	Fintech s enhance the customer experience in financial institutions					

No.	Description	Strongly Disagree	Disagree	Moderatel	Agree	Strongly
3.2.6	Fintech s support DFS providers to be innovative					
4	Eminent challenges of DFS expansion and Fintech s developments in Ethiopia					
4.1	Financial institutions are not willing to partner with Fintech organizations					
4.2	It is not easy to access finance for Fintech companies development					
4.3	The digital finance ecosystems are not encouraging Fintech companies to introduce new services					
4.4	The digital ecosystem lacks clear regulatory requirements					
4.5	The DFSs in the country is not meeting the demands of customers					
4.6	The DFSs provide services that meet the socio-economic demands of society.					
4.7	Lack of resources hinders the accessibility of DFSs to wider geographic areas.					
4.8	Lack of infrastructure hinder the distribution of DFS to wider geographic areas					
5	Potentials for expansion and development of DFS and Fintech s in Ethiopia					
5.1	The current ecosystem supports the development of Fintech s and DFSs					
5.2	There is a demand for new DFSs and products					
5.3	Policy predictability of the government encourages investment in DFS					
5.4	The government is supporting the expansion of DFS					
5.5	The government is supporting the development of Fintech s					
5.6	The population size is a potential market for the development of Fintech s.					
5.7	The population size is a potential market for DFSs expansion.					
5.8	Financial institutions are willing to partner with Fintech s companies to add values to DFSs					
6	New innovative financial services enhance the delivery of DFS and Fintech s developments for financial inclusion					
6.1	DFSs provide by financial institutions are innovative.					

No.	Description	Strongly Disagree	Disagree	Moderatel	Agree	Strongly
6.2	The technology used by financial institutions allows to easily scale up DFSs without compromise the efficiency of the operations					
6.3	The regulatory body supports financial institutions to be innovative in DFS development.					
6.4	The regulatory body support the introduction of new technologies that helps to overcome the physical barriers of accessing financial services;					
6.5	Financial institutions are exposed to new and disruptive technologies.					
6.6	Financial institutions are willing to invest in marketing and sales activities of new technologies					
6.7	Fintech s business models developed in the country have helped to solve problems of the under banked society in a cost-efficient manner.					
6.8	Financial institution's business models implemented in the country have helped to solve the problem of the under banked society in a cost-efficient manner.					
6.9	The usage of financial service in the country has encouraged new innovative product development					
7	The pros and cons of the regulatory framework towards the provision of DFS and fintech.					
7.1	The regulatory body gives the required attention to the development of a new digital service.					
7.2	The current legal requirement promotes collaboration among DFSs providers					
7.3	The current legal requirement promotes collaboration among fintech.					
7.4	The regulatory body has a good graph of fintech development.					
7.5	The regulatory body realizes the advantages of DFS delivery.					
7.6	The bills (directives) issued by the regulatory are supportive of the development of fintech.					

No.	Description	Strongly Disagree	Disagree	Moderatel	Agree	Strongly
7.7	The bills (directives) issued by the regulatory are supportive of innovative DFSs					
7.8	The stringent KYC procedure set by the regulatory body are hinders the expansion of DFSs.					
7.9	Lack of national ID hinder the development of Fintechs					
7.10	Lack of national ID hinder the introduction of disruptive digital financial services					
8	Risk implications that impact the supply of DFSs and development of fintech					
8.1	DFSs are exposed to different kinds of risks					
8.2	Organizational data will be lost or exposed to external party while working with Fintechs					
8.3	DFS deployment is riskier than conventional financial services as it is exposed to cyber-attacks, SIM swap, identity theft, others, etc.					
8.4	DFS providers are not well equipped with the necessary security requirement					
8.5	Fintech s are not well equipped with the necessary security requirement					
8.6	There is a low level of awareness about DFS security requirements to protect the digital environment from malicious attacks					
8.7	There is a low level of awareness about Fintechs security requirements to protect the digital environment from malicious attacks					
8.8	Lack of national ID or signature is the major risk that hider innovation of DFS in the country					
8.9	Lack of national ID or signature is the major risk that hider the development of digital Fintech s in the country					

If you have any other comments or suggestions please use the back of the paper

Thank you!