

**Determinants of Digital Financial Inclusion for Micro and Small Enterprises to improve
their Performance: The Case of Adama City**



Asegid Teresa Seboka

A Thesis Submitted to the department of Technology and Innovation Management,

School of Humanities and Social Science

Presented in Partial Fulfillment of the Requirement for the Degree of Master's in Technology
and Innovation Management

Office of Graduate Studies

Adama Science and Technology University

June, 2024

Adama, Ethiopia

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Declaration

I hereby declare that this Master Thesis entitled “**Determinants of Digital Financial Inclusion for Micro and Small Enterprises to Improve their Performance: The Case of Adama City**” is my original work. That is, it has not been submitted for the award of any academic degree, diploma or certificate in any other university. All sources of materials that are used for this thesis have been duly acknowledged through citation

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Recommendation

I/we, the advisor(s) of this thesis, hereby certify that I/we have read the revised version of the thesis entitled “**Determinants of Digital Financial Inclusion for Micro and Small Enterprises to Improve their Performance: The Case of Adama City**” prepared under my/our guidance by Asegid Teresa Seboka submitted in partial fulfillment of the requirements for the degree of Master’s of Science in Technology and Innovation Management. Therefore, I/we recommend the submission of revised version of the thesis to the department following the applicable procedures.

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We, the undersigned, members of the Board of Examiners of the thesis by Asegid Teresa Seboka have read and evaluated the thesis entitled “**Determinants of Digital Financial Inclusion for Micro and Small Enterprises to Improve their Performance: The Case of Adama City**” and examined the candidate during open defense. This is, therefore, to certify that the thesis is accepted for partial fulfillment of the requirement of the degree of Master of Science in Technology and Innovation Management.

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DEDICATION

This MSc thesis work is dedicated to my lonely little daughter Ardi Asegid, to remind her, that to achieve the life objectives in this digital era, next to believing in creator, ‘Knowledge’ (education) is the only way. Learn and be educated, this is my message.

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List of Abbreviations/ Acronyms

API - Application Programming Interfaces

DFI – Digital Financial Inclusion

DFS – Digital Financial Service

EPRDF – Ethiopian People Revolutionary Democratic Front

FI – Financial Institution

GDP – Gross Domestic Product

MSE – Micro and Small Sized Enterprises

MFI – Micro Finance Institution

MOUDH – Ministry of Urban Development and Housing

MSME – Micro, Small and Medium Enterprise

MoFED – Ministry of Finance and Economic Development

SDPRP – Sustainable Development and Poverty Reduction Program

UN – United Nation

WBG – World Bank Group

EFU – Existing Financial Usage

Abstract

Digital financial inclusion involves offering digital financial services to the financially excluded and underserved populations, through a mobile phone or other digital devices to increase access to digital financial services. The development of digital products and services will likely to support greater financial inclusion, especially for lower income communities and small firms such as Micro and Small Sized Enterprises (MSEs). Therefore, the aim of this study is to examine the determinant factors affecting Digital Financial Inclusion for MSE. A mixed research approach and an exploratory research design as well as a multinomial logistic regression model are applied. In addition, one-time cross-sectional view and distinguished data are used, based on their sources: namely supply-side and demand-side. Both primary and secondary data collected are processed and analyzed using application software, narrative discussion and thematic analysis. The finding of the study indicates: In one hand, financial usage regularity, third party delegation and SIM card issue have a positive effect on the existing financial usage and digital usage frequency, digital usage interest, Tele birr usage, actors' digital know how and zero balance account have a negative effect on existing financial usage. In the other hand, the qualitative analysis of the study reveals that, unless the usage of 'digital way alone' and its frequency, the magnitude of 'both digital and analogue' and also the usage regularity issues are promising. The study suggests for concerned body to come up with a digital legal framework as a solution to maintain the work process of digital financial service between financial service providers and MSE sectors.

Key Words: Financial Inclusion, Digital Financial Service, Micro and Small Sized Enterprises, Financial Access, Financial Usage.

CHAPTER ONE: INTRODUCTION

1.1.Back Ground of the Study

Financial inclusion means that individuals and businesses have access to useful and affordable financial products and services that meet their needs – transactions, payments, savings, credit and insurance – delivered in a responsible and sustainable way (World Bank Group, 2020). Being able to have an access to a transaction account is a first step toward broader financial inclusion since a transaction account allows people to store money, and also send and receive payments. Financial access facilitates day-to-day living, and helps families and businesses plan for everything from long-term goals to unexpected emergencies. As accountholders, people are more likely to use other financial services, such as credit and insurance, to start and expand businesses, invest in education or health, to manage risk and weather financial shocks, which can improve the overall quality of their lives. Different scholars across the world argue that access to finance enables low-income people to save and borrow and allows them to invest, to take the competition advantage of economic opportunity.

However, Approximately 1.7 billion adults worldwide do not have a bank account, meaning they do not have an account through a financial institution or a mobile money provider. Of those adults who do not have a bank account, only 3% stated that they do not need one, and two-thirds of adults without an account cite a lack of money as a key reason, which implies that financial services aren't yet affordable or designed to fit low-income users. Other barriers to account-opening include distance from a financial service provider, lack of necessary documentation papers and lack of trust in financial service providers (Demirguc-Kunt et al. 2018).

Differently, since Africa has been lagging behind other continents, less than one out of the four adult have access to an account at a formal financial institution. Furthermore, Ethiopia's formal financial inclusion, has lower level than its East African neighbors, which is less than half of the adult population (46%) have an account at a financial institution (Nigham Shahid, et al, 2023).

The enlargement of access to financial services will mobilize greater household savings, marshal (Idle) capital for investment, expand the class of entrepreneurs, and enable more people to invest in themselves and their families by forming Micro and Small Sized Enterprises (MSEs), an enterprise which play a multifaceted role such as boosting

competition, innovation, as well as the development of human capital and the creation of a financial wealth. The objective of development of MSEs with access to finance is the predominant factor that influences the economy through ensuring rapid economic growth, creating job opportunities in urban and rural areas and ensuring equitable growth which helps to improve the income of the people thereby reduce poverty. However, in Ethiopia one of the emerging economic institutions that have a problem of financial inclusion is MSE. In this case, one of the leading factors contributing to the unimpressive growth and performance of the enterprises are limited access to finance and the usage (Oshora, et al, 2021). Digital Financial Inclusion is the deployment of the cost-saving digital means, therefore, it is necessary to ensure economic growth performance and it refers to all initiatives that make formal financial services available, accessible, and affordable to all segments of the population, and it involves offering digital financial services via digital channels to all individuals, households, firms and governments, thereby, contributing to poverty reduction and increase in financial intermediation.

Digital financial services may be provided by digital access providers like banks, non-bank financial institutions, financial-technology companies (Fintech) through digital components like:

- Digital devices (a smart phone, a laptop or a computer),
- Retail agents (agents are able to transmit and receive financial transaction details which enables customers to convert cash into electronically stored value and to transform stored electronic value back into cash),
- A digital transactional platform (a bank application, a digital software, an internet website), and
- Customers (mainly individuals, corporations and governments).

1.2. Statement of the Problem

Digital financial inclusion is a means to reach currently financially excluded and underserved populations with a range of formal financial services suited to their needs that are responsibly delivered at a cost affordable to customers and sustainable for providers.

Based on the MSE development framework and implementation strategy providing effective supports at different levels expanding, strengthening and monitoring the enterprises should be the main targets by governments. Adequate digital finance service, market linkages/ networks

and creating conducive financial climate to innovative digital financial inclusion in terms of financial access and usage for MSEs, are the main activities to be carried out in order to enhance their competitiveness. However, most Ethiopians save at informal institutions like, ‘Ekub and Edir’ and have low access to credit and insurance products through formal institutions, the development of digital products are likely to support greater financial inclusion, especially for lower income communities and micro-entrepreneurs. The availability of diverse digital payment use-cases and relevant credit, insurance and savings products that are tailored to the needs of different financially excluded segments of the population will be crucial to sustain the uptake. Thus, improving and expanding access to digital financial services remains one of policy challenges, mainly for the small firms such as MSEs who are primarily excluded from the formal financial institution due to lack of collateral requirements, affordable digital infrastructure, financial and digital literacy, necessary rules and regulations concerning digital financial services and trust in financial service providers, which implies that in Ethiopia digital financial service for MSEs is not focused and also generally aren’t yet affordable or designed to fit low-income users. Additionally, in Ethiopia, there is a practical digital Knowledge gap in the prior research. Furthermore, previous theoretical literature focused primarily on traditional financial system, and very little practical research has been done on the digital approach. (James R. Kanagwa, 2016; Nigham Shahid, 2023; Ousman Mohammed Yimam, 2023)

Therefore, in line with the above context, the aim of the paper is to examine the magnitude and opportunities, in terms of both access and usage of digital financial services, as well as the challenge for MSEs in relation with these services. To achieve the objective of the study by closing the knowledge gap shown in the literature.

1.3.Objectives of the Study

1.3.1. General Objective

The main objective of the current study is to assess the determining factors of Digital Financial Inclusion on Micro and Small Sized Enterprises (MSEs) in Adama city.

1.3.2. Specific Objectives also intend:

- **First**, to analyze the magnitude of the digital financial usage, the regularity and frequency of the current financial and digital usage of MSEs to be assessed.
- **Second**, to know the intense of the opportunity, the degree of interest of MSEs to use digital financial products and services should be examined.

- **Third**, to investigate the challenges with digital financial usage of MSEs, Constraints of usage in relation to infrastructure, financial and digital literacy and legal basis to be assessed.

1.3.3. The Research Questions

- What are the factors determining digital financial inclusion of MSEs?
- What opportunities of digital financial inclusions are there for MSEs?
- What are the challenges for MSEs to digital financial services?

1.4. Significance of the Study

Despite the enormous importance of the MSE sector to the national economy concerning job creation and the alleviation of poverty, many of the MSEs are unable to realize their full potential due to the existence of different factors that inhibit their growth and performance regarding to their digital financial inclusiveness. Therefore, the result of the current study will have the following significance;

- By assessing the determinant factors that affect the digital financial inclusion of MSEs, the study will suggest a policy recommendation helps improving MSE's access to finance which is important in promoting firm performance and productivity in the country.
- The study will investigate the challenges those lead MSEs to limited access to finance and create the financial usage gap in both the demand and supply side, which assists concerned body to come up with the necessary policy settlements.
- Furthermore, the outcome of this study will serve as a source of additional information, and as far as the researcher would not assess all dimensions of the case, it can motivate other researchers who are eager to deal with this area to conduct further studies.

1.5.Scope of the Study

The issue of financial inclusion (Today digital financial Inclusion) and MSE development agenda is more comprehensive because, it is carried out in international, national, regional and local level with primary focus on economic growth as a core element. However, this research was focused mainly on functional MSEs in relation to their financial usage and financial institutions regarding to the access and MSE regulatory body in relation with rules and regulations as well as the registry which is on the secondary document, in Adama city.

1.6.Organization of the Study

This study is structured in the following order: Section 2 represents the systematic literature review where most relevant previous works and secondary documents are discussed with a special focus on determinants of digital financial inclusion, followed by Section 3 with the research methodology where the research methods and data collection procedures are discussed. Section 4 presents the result of the study both quantitatively and qualitatively and the conclusion. Finally, section 5 is followed with demonstrating work plan and budget used to conduct this research.

CHAPTER TWO: LITERATURE REVIEW

2.1. Theoretical perspective

2.1.1. Theory of Financial Growth

Presently, literature on financial inclusion highlights the disadvantages for financially excluded individuals and businesses, particularly for poor adults, females, and micro, small and medium-sized enterprises in many developing countries. (Koonson et al, 2021 Oshora, 2021). In this globalized era, many policymakers, economists, and financial analysts in many countries have considered financial inclusion as fundamental to economic empowerment and the best solution to reduce poverty and attain sustainable goals (Emara and Said, 2021)

The effect of demand following or supply leading on growth by creative environment and financial development is promoted by theories of finance growth. Low growth is due to income inequality as well as the lack of financial services access perceived by theories of financial growth. Therefore, safe, easy, and affordable access to financial sources is known as the precondition for fast-tracking growth and income inequalities for generating equal opportunities which support better economic as well as social integration among economies to enhance the development of the financial sector to protect them against economic shocks (Aduda & Kalunda, 2012). The role of the financial system in economic growth has still disagreed on theoretical grounds. Some economists suggested that the financial system plays a vital role in economic growth while others say it doesn't have a significant effect. According to the demand succeeding approach, it is argued that the financial system does not support economic growth, it responds to real sector progress while the supply-leading exponents contrast the former view. Schumpeter and his successors, Goldsmith, 1959, Levine and Zervos (1996) suggest that efficient financial systems and affordable financial services positively influence economic growth. It is also suggested that the supply-leading theory supports the involvement of the financial market to enhance the demand for financial services from an existing promising economy. Additionally, (Schumpeter's (1911), Ross Levine (1993)) view is supported by Goldsmith (1969), the financial system has a positive impact on economic growth. It further suggests that financial market factors such as interest rates enhanced demand for financial products and services which further increase competition among banks and other financial institutions. It also enhances saving and investment which will support economic growth. However, some theories reveal that there is a positive association between access to financial services and overall growth (Sharma, 2016).

Therefore, the financial system development is a major reflection of increasing growth in other sectors of the economy. There is no universal definition of financial inclusion. As per the literature, there are many different views on what it means. Financial inclusion is a process of ensuring access to appropriate financial services to all financially deprived individuals and businesses at an affordable price fairly and transparently by institutional players (Demirguc-Kunt et al., 2014; Krisztina Szegedi, 2020; Oshora et al., 2021). Timely and easy availability of financial services to financially disadvantaged individuals and businesses when needed is the best way to enhance financial inclusion. It is the absence of prices or non-prices hurdles in the access and use of financial services (Shahid Manzoor Shah and Amjad Ali, 2022). Additionally, it added its aim to boost financial services, which involves improving the level of financial inclusion for all individuals at reasonable prices. To provide full access and making available of modern financial services such as saving and credit, insurance, and payments along with efficient knowledge and support, to help customers for making effective decision for the use of available financial services (Demirguc-Kunt et al., 2017). It refers to the access to financial services for enterprises, households, and financially deprived individuals (Beck, 2016).

2.2. Empirical Evidence

Financial inclusion is a building block for both poverty reduction and opportunities for economic growth, with access to digital financial services critical for joining the new digital economy. It facilitates day-to-day living, and helps families and businesses plan for everything from long-term goals to unexpected emergencies. Recently, financial inclusion has received much attention from policy makers and academics for four reasons. First, it is considered to be a major strategy used to achieve the United Nations' sustainable development goals (Sahay et al., 2015; Demirguc-Kunt et al., 2017). Second, it helps to improve the level of social inclusion in many societies (Bold, et al., 2012). Third, it can help in reducing poverty levels to a desired minimum (Chibba, 2009; Naime and Gaysset, 2018), and lastly, financial inclusion brings other socio-economic benefits (Sarma and Pais, 2011; Kpodar and Andrianaivo, 2011). Financial inclusion impacts macroeconomic performance through various channels: for instance, access to savings instruments helps households smooth consumption in case of unforeseen shocks; and access to credit enables corporates to improve productivity and competitiveness, and promotes entrepreneurship for individuals. Demirguc-Kunt et al. (2017), discusses benefit of financial inclusion on the reduction of poverty and inequality. Sahay and Cihak (2020) finds that higher financial inclusion in payments is associated with

reduction in inequality, particularly for those at the low end of the income distribution and when female financial inclusion is high. Sahay et al. (2015) find that, for a country with low levels of financial inclusion (25%), improving to the 75% would lead to a 2-3 percentage point increase in GDP growth on average. Loukoianova et al. (2018) find that a one percent increase in their financial inclusion index (equivalent to an increase from the fourth to the third quartile) is associated with a 0.2 percent cumulative increase in per capita income growth over a five-year period for low income developing countries

Since 2010, countries have made commitments to financial inclusion, and some of them have launched and others developed a national strategy. And because a transaction account serves as a gateway to other financial services great strides have been made toward financial inclusion and 1.2 billion adults worldwide have gotten access to an account between 2011 and 2017. As a result, as of 2017 69% of the world's adults had an account Rathnija Arandara and Shanuki Gunasekera, (2020). Additionally, when countries institute a national financial inclusion strategy by taking a strategic approach, which bring together financial regulators, telecommunications, competition and education ministries, they increased the pace and impact of reforms.

Moving from access to usage of accounts is the next step for countries. Therefore, countries relied on reforms, private sector innovation, and a push to open low-cost accounts, including mobile and digitally-enabled payments. However, close to one-third of adults were still unbanked, according to the latest Global Findex data (2021), about half of unbanked people included women poor households in rural areas or out of the workforce.

2.3. MSEs and Financial Inclusion

MSEs are often described as the 'engine of growth' for emerging economies from the perspective of employment and innovation. MSEs are also defined, as the workhorse of economic growth since they drive employment through job creation, and their contribution has reached up to 50% of GDP in some countries. The UN estimates that MSMEs constitute up to 90% of global businesses and account for 60% to 70% of global employment. Research studies in recent years have helped gather more data on this 'engine.' A number of studies have analyzed access to finance issues pertaining to MSEs, and concluded that difficulties in access to finance are the widely accepted constraint for this segment globally. Furthermore, there are several determining factors stated in literature, which affect access to and usage of financial inclusion in relation to MSE over all activities. Oshora et. al, (2021) revealed that;

in one hand, supply-side factors, demand-side factors, market opportunity, and collateral requirements have a positive effect on the firm's access to finance, and on the other hand, institutional framework factors, and the costs of borrowing negatively affect the firm's access to finance and this study suggests concerned bodies sustain rapid and inclusive economic growth and hence to eradicate extreme poverty and hunger, the policymakers must build an efficient, strong, and well-functioning financial market system that provides affordable and sustainable financial service to SMEs.. According to Mohamed Samy et.al, 2021, a number of financial inclusion determinants designed to attract SMEs, including supply-side determinants such as access to financial services and marketing awareness campaigns, which act as tools to segment financial services and market their benefits to SMEs, and demand-side determinants, which involve the use of financial services, and the study suggested three main pillars determining financial inclusion. They are integrated marketing tools, which increase SMEs' awareness of and access to the most sophisticated banking services, usage of banking services, and assessment of the macroeconomic risks that would prevent SMEs from gaining access to financial services.

To make progress in this area, there is increasing recognition that Digital Financial Service (DFS) has the potential to increase and accelerate MSE financial inclusion. DFS is considered as an important means to accelerating the pace of their financial inclusion. In general, a significant portion of MSE financial inclusion research is concentrated on MSE access to credit financial services, available research shows, financial institutions (FIs) are often reluctant to lend to MSEs due to challenges pertaining to lack of financial and/or credit history information and inadequate or inappropriate collateral (Nitin Madan, 2020).

Digital financial inclusion involves the deployment of the cost-saving digital means to reach currently financially excluded and underserved populations with a range of formal financial services suited to their needs that are responsibly delivered at a cost affordable to customers and sustainable for providers. For instance, with the additional reinforcement caused by COVID-19 crisis the need for digital financial inclusion have increased, and including those involving the use of mobile phones, have launched in many countries, with some reaching significant scale, and increasing the financial access of low-income families and small enterprises might also contribute to a more inclusive financial recovery (Lee-Ying Tay et, al, 2022) As a result, millions of formerly excluded and underserved poor customers are moving from exclusively cash-based transactions to formal financial services using a mobile phone or other digital technology to access these services.

2.4. MSEs and Financial Inclusion in Ethiopia

Ethiopia is one of East African poor country with a population of above 100 million (CSA, 2017). The problem of unemployment, poverty and food insecurity has been long lived in the country (Werotaw, 2010, Solomon, 2004, ILO, 2003). For the last two decades Imperial and Military regime, the country focused in developing a sort of policy tools and agendas in reducing the problem of unemployment and for maintaining national economic growth and development. Moreover, during the period adopting and the development of MSEs as a policy tool of reducing unemployment has under estimated and insignificant (Marc Labonte, 2016). With the emergence and the rise of Ethiopian People's Revolutionary Democratic Front (EPRDF) led government since 1990, the new development policy was constructed. Accordingly, the country was begun implementation of the integrated development plans in 2002, with the first Sustainable Development and Poverty Reduction Program (SDPRP). During this era, developing of MSEs as one of the policy tools for improving the income of the poor and reduction of unemployment were one of the main agenda and the policy inclusive. As a result, the country begun to register better economic performance with an average GDP growth of 6.7% per year and an average annual per capita income growth rate of 3.65%. Beside the second and third years of SDPRP period double digit economic growth were registered with annual rate of 11.9% and 10.6% respectively (MoFED, 2002).

Regarding the definition of Micro and Small Enterprises in Ethiopia, MSE defined as enterprise with a total asset of less than 20,000 Birr (\$1200) and Small Enterprise with a total asset of 500,000 Birr (\$30,000) or less, but the newly established definition according to the ministry of Urban Development and Housing, Small & Micro Enterprises Development Strategy of Ethiopia which is based on capital and labor (MoUDH, 2012).

Table 1 - The Revised Work Definition of Micro and Small Enterprises

Level of enterprise	Sector	Head count staff	Total asset ETB
Micro enterprise	Industry	≤ 5	≤ 100,000
	Service	≤ 5	≤ 50,000
Small enterprise	Industry	6- 30	101,000-1,5000,000
	Service	6- 30	50,0001-500,000

Source MoUDH, (2012), Policy & Strategy, Second Edition

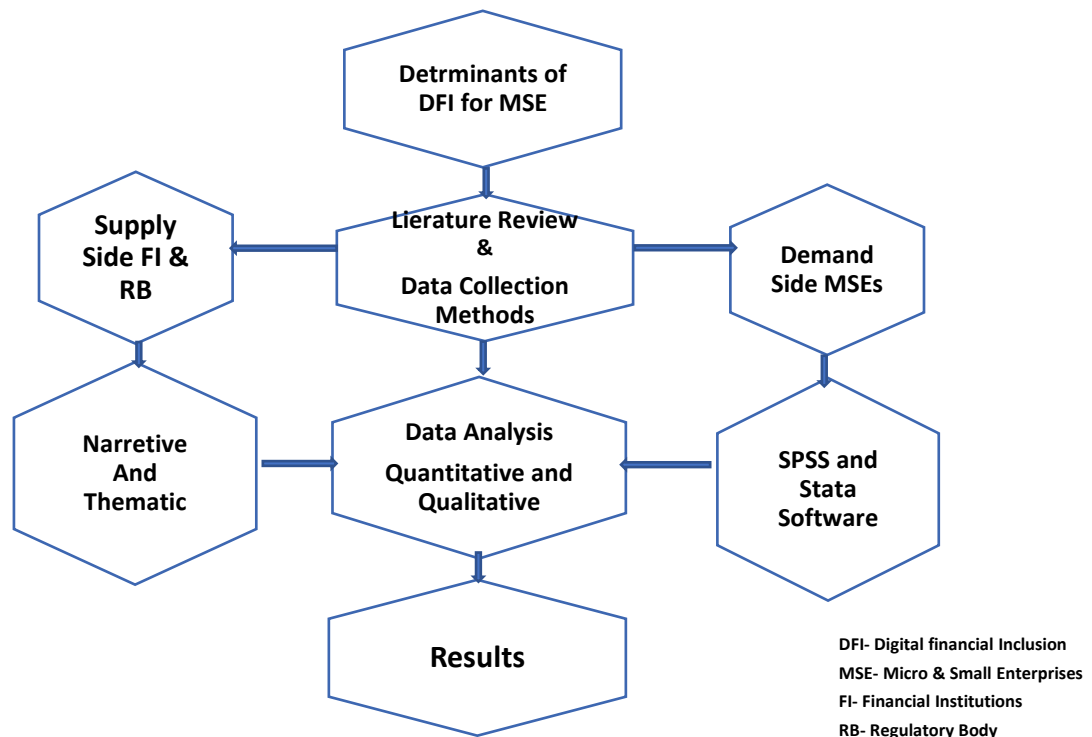
However, even though MSE sector accounts about 65%, the growth and its expansion to achieve in improving the problem of unemployment and income, and also reduction of poverty is below the expected and approached down. Similarly, the development policy of the

country in supporting and providing incentives for MSE like Credit access, work premises fallen in question, instead, lack of credit and the demanding of collateral for loan delivery were the major constraints and challenges (Habtamu Gebeyehu, 2020).

2.5. Operational Definitions

2. **Financial inclusion** means that individuals and businesses have access to useful and affordable financial products and services such as; transactions, payments, savings, credit and insurance – delivered in a responsible and sustainable way that meet their needs. And, it is the process of ensuring individuals especially poor people has an access to basic financial services in the formal financial sector which can improve the overall quality of their lives (Universal Financial Access WBG, 2020).
3. **Digital Financial Inclusion** involves offering digital financial services to the financially excluded and underserved populations, using a mobile phone or other digital devices to increase access to digital financial services (Stijn Claessens and Liliana Rojas-Suarez, 2016). According to World Bank definition, “Digital financial inclusion can be defined as digital access to and use of formal financial services by excluded and underserved populations. Such services should be suited to the customers’ needs and delivered responsibly, at a cost both affordable to customers and sustainable for providers’. (World Bank, 2015)
4. **Micro and Small Enterprises (MSEs)** are an economic-firms often described as the ‘engine of growth’ for emerging economies from the perspective of employment and innovation. MSEs are also defined, as the workhorse of economic growth since they drive employment through job creation.
5. **Digital financial services (DFS)** are financial services which rely on digital technologies for their delivery and use by consumers.
6. **Fintech** refers to digital technologies that have the potential to transform the provision of financial services spurring the development of new – or modify existing business models, applications, processes, and products. In practice, the term “fintech” is also broadly used to denote the ongoing wave of new DFS. Examples of these technologies include web, mobile, cloud services, machine learning, digital ID, and Application Programming Interfaces (APIs).
7. **Analogue Financial Usage:** in this study analogue financial usage is used to refer the way of using financial activity in traditional system without any digital component.

2.6. Conceptual Framework of the Study



CHAPTER THREE: RESEARCH METHODOLOGY

3.1. About The Study Area

The study area Adama City is one of agglomerating urban centers in the Oromia regional state. Adama City is situated in East Shewa and central Ethiopia. As far as vicinal location is concerned, it is located in southeast of Addis Ababa at a distance of 84.7 kilometers via express road that leads from Addis Ababa to the sea port of Djibouti. Adama is mainly governed by the city administration, with a population estimation of 875,178 as of 2023 (Adama City Socio-Economic Profile, 2023), where the service, trade and industry sectors available in. However, the livelihoods of the majority of the population are in poverty and with income inequality. Moreover, an alarming rate of unemployment and food insecurity, are other factors affecting the livelihoods of the society.

The city administration being setting major goals and working towards the implementation of those goals with focusing on food security, employment and family prosperity, Micro and small sized enterprises development is one of a policy tool used to achieving those goals. In line with this context there are MSEs constructed and engaged in practical work through close control of concerned regulatory body in the city. However, the status of the financial inclusion (Condition) of those MSEs is vague, therefore, investigating the magnitude and opportunity as well as the challenges of MSEs on financial inclusion specially, on innovative and digital platforms and infrastructure will be important, and this paper is aimed to examine the magnitude and opportunities, in terms of both access and usage of digital financial services, as well as the challenges for MSEs with these services.

3.2. Research Design

A research design is a strategy for answering any research question using available data. Creating a research design means making decisions about: the overall research objectives and approach; whether the study will rely on primary research or secondary research; information about the sampling methods or criteria for selecting subjects; the data collection methods; the procedures the study will follow to collect data; and finally, the data analysis methods to be employed in the study.

Thus, this study followed a mixed research design where the qualitative and quantitative methods of data analysis are employed. Furthermore, the study used an exploratory research design to identify determinant factors that influence digital financial inclusion among MSEs in Ethiopia.

The target population of the study includes 2045 MSEs in Adama. Furthermore, governmental and non-governmental banks and MSE's regulatory body are included as sources of data for the qualitatively analysis of the study.

The sampling technique for this study is, based on Miaoulis and Michener (1976): criteria to determine the sample size, given 0.5 for the level of precision (sampling error), 95% confidence or risk level and 0.5 for the degree of variability. The sample size became:

$$n_o = \frac{z^2 pq}{e^2} = \frac{(1.96)^2 (.5)(.5)}{(.05)^2} = 385$$

Even though, previous researches are unavailable to determine the variability of an estimate over all possible samples, in this case the population is small and known, we can use the adjusted formula, because a given sample size provides proportionately more information.

$$n = \frac{n_o}{1 + \frac{(n_o - 1)}{N}} = \frac{385}{1 + \frac{(385 - 1)}{2045}} = 324$$

3.3. Model Specification and Description of Variables

To measure the magnitude of digital financial inclusion effectively, both the supply and demand-side surveys should carefully be conceptualized and clear information should be captured, to do this there were an estimated equations where both the digital access to finance and the usage should be reflected as functions of variables. However in this study, because of data constraint from digital service providers, the supply side section follows a qualitative approach, thus narrative and thematic data analysis method is used to analyze the digital financial access.

3.3.1. Demand-side surveys

In order to effectively measure the magnitude of financial inclusion, it is important to collect measures of financial inclusion from the perspective of users of financial services – also known as demand-side data (Leora Klapper and Dorothe Singer, 2017). Therefore, demand-side surveys have carefully conducted and sufficient sample size have to drawn from an appropriate frame with random selection of respondents. The sampling unit, survey instrument and implementation of the survey design have also carefully focused. In addition, to measure financial inclusion, it is necessary to gather other data such as age, gender and education of the respondent (MSE actor) that enables segmentation fair, therefore, the demographic variables were included.

Actual usage of financial services/ products: (Regularity, Frequency and financial and digital literacy): Concerning with more than basic adoption of banking services, usage focuses more on the permanence and depth of financial service / product used. In other words, determining usage requires more details about the regularity, frequency and financial and digital knowhow. Usage also involves measuring what combination of financial products is used by any one person or household, in this case the digital usage by micro and small sized enterprises (MSEs) have made to involve.

The demand side section used a quantitative/ descriptive data analysis approach in detailed manner to analyze the digital financial usage by MSE's, and including demography of the MSE actor, the data gathered from MSEs through structured questionnaire should be summarized and analyzed to find the variables which the respondents are selected in order to maximize their utility. Therefore, the decision of the i^{th} respondent can ultimately be modeled through maximizing the expected business performance by selecting the j^{th} financial service among j discrete financial services as shown in the equation (Greene (2003)).

$$\text{Max}_i = E(U_{ij}) = f_j(X_i) + \varepsilon_{ij} \quad ; j = 0 \dots J$$

Thus, assuming the above utility maximizing model, the equation of MSE decision for financial technology usage is given as:

$$\text{EFU} = f(R, F, \text{FDL}, \text{IS}, \text{LB and UI}) \text{ ----- (1)}$$

UDF = Usage of digital financial inclusion

R = Regularity

F = Frequency

FDL = Financial and digital literacy

IS = Infrastructure

LB = Legal Basis

UI = User Interest

The model equation is:

$$\text{UDF}_t = \beta_0 + \beta_1 R_t + \beta_2 F_t + \beta_3 \text{FDL}_t + \beta_4 \text{IS}_t + \beta_5 \text{UI}_t + \varepsilon_t \text{ ----- (2)}$$

Whereas; β_0 is the intercept and β_i ($i = 1, 2, 3, 4, 5$) represents the coefficient for each of the independent variables (all measured by proxy questions ranked by liker scale).

Both primary and secondary data were used for making the analysis. Primary data were collected through questionnaires. The survey was collected between March and April, 2024.

The questionnaire had close-ended types of questions that are relevant to the subject of the study and measured by using 5-point Liker scale format, in such ways that the respondent could fill it easily (questionnaire can be found in Appendix A). SPSS 25, 2017 and Stata 18, 2023 Statistical software are used to analyze the data. Finally, the researcher also conducted key informant interview, with selected stakeholders through judgmental sampling, such as selected potential MSEs, financial institution representatives, regulatory body officials and used a sort of secondary source of data which was obtained through review and selected materials such as organization records to know requirements for starting a financial usage by MSEs, policies, regulations, and procedures in doing the business, and related literature reviews to learn overall MSE financial activities in Ethiopia.

For the empirical model's specification and estimation, a multinomial logistic model is employed. A multinomial logistic model (MNL) employed. A Multinomial logistic model is one of the foremost models for analyzing the determinant factors of economic units' decision-making including use of digital technologies. Since most of the time users of technologies choose two or more types of financial technologies, in this case the traditional binary logistic model is not the right model. Thus, the dependent variable of this study (existing financial usage) did not assume one category it had more than one category which motivated the adoption of the multinomial logistic regression approach. The multinomial logistic regression uses the maximum likelihood estimation just like the logistic regression to evaluate the probability of a categorical membership (Greene, 2003). A multinomial logistic regression (MNL) model is always used for a categorical dependent variable with outcomes that have no natural ordering. The actual values taken by the dependent variable are irrelevant. The MNL model is also known as the polytomous logistic regression model. Since, the objective is to investigate the determinant factors that influence MSEs to choose among the different financial products or services, therefore, the model equation adopted in this study is:

$$P_y (Y_i = j/x_i) = \frac{\exp(x'\beta_j)}{1 + \sum_{j=1}^J \exp(x'\beta_j)} \quad \text{for } j = 0, 2, \dots, J$$

Therefore,

$$EFU = \frac{\exp(x'\beta_j)}{1 + \sum_{j=1}^J \exp(x'\beta_j)} \quad \text{for } j = 0, 2, \dots, J$$

Where, EFU Existing Financial Usage of MSE, X' belongs predictors and β_j coefficients

3.4. Data Collection Methods

In this study major data collection tools including secondary data (Document) analysis, key informant interview, conducting survey, focus group discussion and observation were used.

Document Analysis: Reviewing related documents, policies, rules and regulations, strategies and documents such as

- Adama city Job Creation and Skill Office plan and report as well as MSEs registry documents
- Financial institutions plan and report as well as other allowed documents
- MSEs business activity document and other related documents are seen

Key Informant Interview: will be conducted with selected stakeholders such as selected potential MSEs (10), financial institution representatives (positioned) (2), regulatory body officials and focal persons (2) were interviewed.

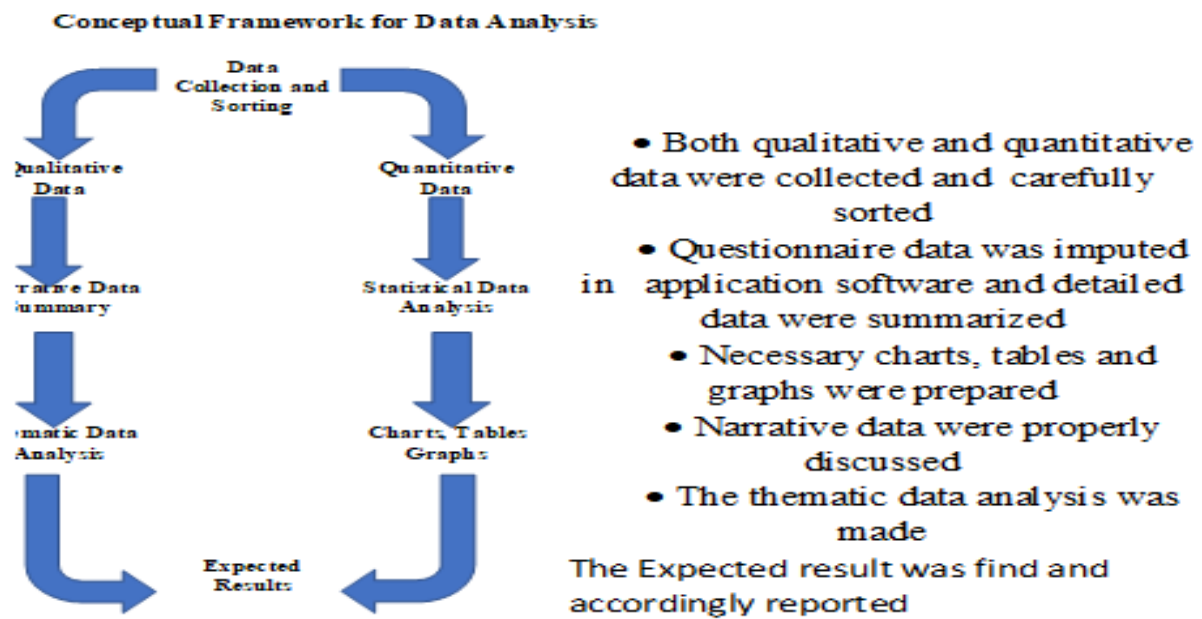
Survey Questionnaire: both qualitative and quantitative data in detail have collected using structured questionnaire (233)

Focus Group Discussion: were held with selected participants MSE actors through concerned regulatory body (10).

3.5. Data Analysis Conceptual Framework

The collected data using questionnaire were imputed in to application of Statistical package of Social Science (SPSS 25) and Stata 18 and detailed summaries is made to make it ready for results, discussion, analysis and interpretation. Processed data were presented by using appropriate charts, tables and Graphs. Qualitative data were analyzed by using narrative discussion and thematic analysis.

Figure 1- Shows Conceptual Framework for Data Analysis



Source: Own work

3.6. Ethical Consideration

According to Lewis and Hill (2001), 'Ethics refers to be the appropriateness of your behavior in relation to the right of those works, or are affected by it'. The researcher takes in to account the dignity and safety of the research participants have enough time to fill and return the questionnaires in order to enhance the validity of the information and for not infringe their precious work time. The respondents not be enforced to participate in the study rather, the researcher convince them by explaining the general objectives and confidentiality of the information, the area and time taken to finish the questionnaire. In addition, the researcher respects the work of previous investigation and cited appropriately those works that has been taken as a basis. The researcher has never exposed the specific raw data of specific tax payer for anyone else and strictly confidential. In this study participants will be informed in advance on the importance and objectives of the study and accordingly, they will be requested to be participants of the study. Besides, participants will be given enough time to provide their responses. Confidentiality of any information will be mentioned and used only for research purpose. Data not fabricated to support particular conclusions. Furthermore, all previous works used will be acknowledged properly.

CHAPTER FOUR: RESULTS AND DISCUSION

4.1. Data Analysis

4.1.1. Descriptive Data Analysis

In this section, a descriptive analysis on status of digital financial inclusion of micro and small enterprises (MSEs) is provided. Therefore, the data collected through a questionnaire distributed to respondents were analyzed and discussed. Generally, among 324 questionnaires distributed to respondents, 269 papers were collected, the rest 55 respondents did not return the questionnaire and from those 269 returned questionnaires, 36 papers are considered filled as incomplete and excluded, therefore, the data considered as filled and returned are from 233 respondents.

In this study the survey respondents are the MSE's actors, 233 respondents are participated in the survey representing MSEs they belong, and in this statistical description including the demography of the MSE respondent there are about 20 variables are discussed through summary of four main categories, namely: Respondents demography, Financial and digital literacy of respondents, the Financial and digital magnitude of MSEs and Digital usage interest and Constraints.

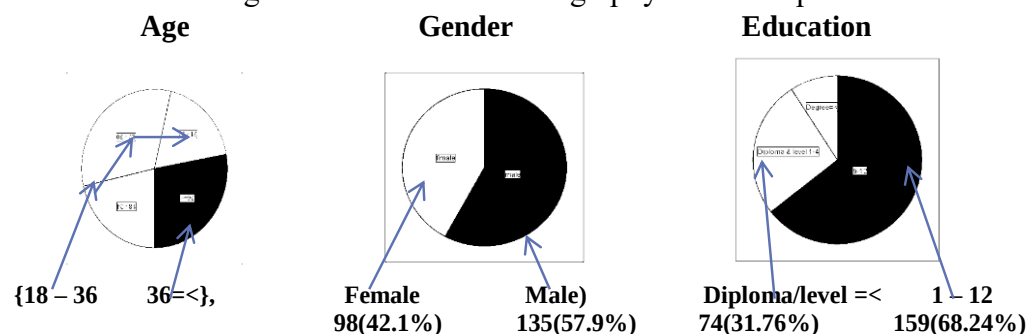
Respondents Demography: here three demographic variables **age**, **gender** and **education** of MSE's actor (Respondent) described, 168 (72.1%) respondents age shows from 18 to 35, this indicate MSE actors participated in this survey are youths. In the case of gender issue male actors are greater by 37(15.8%) than female respondents, which is 135(57.9%) and 98(42.1%) respectively. The significant number of respondents 159(68.24%) educational background is in primary and secondary level (from grade 1 to 12), which shows the majority of the respondents participated in the survey are not graduated at least diploma/level.

Table 2 - The demographic Detail of Respondents

	Detail	No of Respondents	Percent ile %
Age	18-35	168	72.1
	36 and above	65	27.9
Gender	Male	135	57.9
	Female	98	42.1
Education	1-12	159	68.24
	Diploma and above	74	31.76

Source: own summary competition, 2024

Figure 2 - Shows the Demography of the Respondents



Source: Depending on Descriptive Result Owen Modification

Table 3 - Financial and Digital Literacy of Respondents

	Variables	Code	No of Respondent	Percentile (%)
1	Financial Knowhow	V201	200	85.8
2	Digital Knowhow	V202	187	80.3

Source: own summary competition, 2024

Financial and Digital Literacy of the Respondents; from the response provided 200(85.8%) and 187(80.3%) respondents have financial and digital knowhow respectively, therefore, this data shows most of the respondents are familiar with the current issue and they can provide relatively considerable answers to the questions which help to achieve the objective of the study. However, since the MSE actors are mostly more than one member in a single enterprise, and the above result is not belongs to all members but, it indicates only one member's financial and digital knowhow who participated in providing returns to the survey questionnaire.

Table 4 - Summary of Questionnaire Response from MSEs

Variable	Response (Level of agreement)of the Dependent Variable (%)				
	In traditional way	In digital way	Both Way	Cash	Missed
V304- Existing Fin. Usage	<i>In what ways or systems an enterprise is doing its financial service activities?</i>				
	35.6	7.3	37.8	19.3	0
	Response (Level of agreement)of the Independent Variables (%)				
	Yes	No	Not think of it	No answer	missed
V305-Digital usage regularity	<i>In the past 12 months, did you ever use a MOBILE PHONE or the INTERNET to make payments, buy things, or to send or receive money using your enterprise account?</i>				
	52.4	27.9	0.4	19.3	0
V306- account checking	<i>In the past 12 months, have you checked your account balance using a mobile phone or the Internet? (If respondent mentions "text messages", coded as Yes)</i>				
	51.1	29.6	1.3	18.0	0
V307- Financial Usage regularity	<i>In the past 12 months, has money ever been DEPOSITED into or TAKEN OUT of your enterprise account(s)? This includes cash or electronic deposits, or any time money is put into your enterprise account(s) by yourself, or another person or institution</i>				
	60.9	33.9	2.1	3.0	0
V308 Fin. Usage frequency	<i>In a typical month, is money DEPOSITED into or TAKEN OUT of your enterprise account(s) two or more times per month?</i>				
	10.3	35.2	16.7	34.8	0
V309. Tele birr Usage	<i>Did your enterprise ever used a Tele -birr or CBE-birr to make payments, buy things, or to send or receive money?</i>				
	51.5	30.9	1.3	16.3	0
V310- Digital Usage interest	<i>Are You interested, if your enterprise is doing its financial service activities using digital way/system?</i>				
	92.3	4.3	0	3.4	0
V311- Digital Access agent	<i>The reason why you, do NOT have a digital (mobile money) account, Because no mobile money agents or too far away?</i>				
	6.4	63.2	5.2	24.9	0.4
V312- Digital mistrustfulness	<i>The reason why you, do NOT have a digital (mobile money) account, Because digital system mostly not trusted</i>				
	22.3	31.3	5.6	40.8	0
V313- Actor's knowhow deficiency	<i>The reason why you, do NOT have a digital (mobile money) account, Because you don't have the necessary experience or 'Know how'</i>				
	33.5	43.8	2.1	20.6	0
V314- Zero Balance account	<i>The reason why you, do NOT have a digital (mobile money) account, Because you don't have enough money to use a mobile money account</i>				
	33.5	46.8	3.9	15.9	0
V315- 3rd party delegation	<i>The reason why you, do NOT have a digital (mobile money) account, Because you use an agent or someone else to make payments for you</i>				
	3.4	51.1	3.4	39.1	3.0
V316- SIM card	<i>The reason why you, do NOT have a digital (mobile money) account, Because you do not have a SIM card and mobile phone</i>				
	40.3	41.6	2.1	15.9	0
V317- ATM Receipt transparency	<i>The reason why you, do NOT have a digital (mobile money) account, Because ATM slip is not trustful or transparent</i>				
	32.6	18.5	9.4	38.2	1.3
V318- Digital legal basis	<i>The reason why you, do NOT have a digital (mobile money) account, Because there is no legal ground to use digital financial service for MSEs</i>				
	81.1	9.0	1.3	8.6	0

Source: own summary competition, 2024

Magnitude of Digital Financial Inclusion of MSEs

To assess the existing financial and digital activities of MSEs, including the proxy question of the dependent variable, about six questions are raised and responded accordingly. In the case of general financial and digital usage 83(35.6%) and 88(37.8%) MSEs found using only analogue and both (analogue and digital system) respectively, but only 17(7.3%) MSEs use digital way and 24(10.3%) of them use this way frequently, the other 45 MSEs use in cash. Here, 92.7% of MSEs use the way rather than digital system. This result shows among of population data used for this study (2045 MSEs) only 149 of them are using digital financial system alone. In the contrary, in the case of regularity issue, 122(52.4%) and 142(60.9%) respondents respectively returned 'yes' to indicate they are using digital financial usage regularly, 119(51.1%) of them check their accounts with text messaging and 120(51.5%) MSEs use Tele birr. Here the result shows, unless usage of 'digital way alone' (7.3%) and its frequency (10.3%), the magnitude of 'both digital and analogue' and also the regularity issues are promising.

Digital Usage Interest as existing Opportunity and its Challenges

To identify the current opportunities and challenges in line with digital financial usage, including question used to test the MSE's interest to use digital financial system, there are about nine issues have got response from respondents. Therefore, 215(92.3%) MSEs returned 'yes', and indicated they have an interest to use digital financial system for their financial activities, the response indicates availability of the digital demand in user side (MSEs). Hence, this may be taken as digital market opportunity. But, even though MSEs are shown their interest to use digital way, they also raised challenges which all are in need of critical solutions. To summarize those challenging issues the researcher categorized those issues into three major variables: (Infrastructure, Financial and Digital Literacy and Legal Basis Constraints): thus, cases included are: Access of digital agents, Zero balance account, SIM card and mobile phone issue, actor's digital knowhow, Third party delegation, Digital mistrustfulness, ATM receipt transparency and Digital rules and regulations are raised for respondents. Therefore, among of those cases raised, regardless of legal basis related questions (Digital rules and regulations and ATM receipt transparency) all other cases are agreed up on as 'they are not challenges' on the financial activities of MSE. Nevertheless, Cases like digital usage rules and regulations and ATM receipt transparency are accepted as

major digital usage constraints or challenges by MSE respondents 189(81.1%) and 76(32.6%), respectively.

4.1.2. Qualitative Data Analysis

The supply side (Data from Financial Institutions) and regulatory body survey data were gathered through conducting a survey with financial institutions and regulatory bodies focal persons in Adama city, using a survey questionnaire package prepared for key informant interview purpose to assess the magnitude, opportunities and challenges concerning the digital financial inclusion of MSEs (The survey questionnaire package is available in the appendix III). From those financial institutions Sinke bank and Commercial bank of Ethiopia, as well as from regulatory bodies Job creation and Skill office of Adama and its branch in Goro Wereda were effectively participated.

Supply Side Survey Result

Supply-side surveys typically capture information, such as number of accounts and product/service specifications, from financial service providers and their physical outreach on the number of branches, agents, ATMs, e-money, m-banking, etc. However in this case, both banks have limitations to provide accurate data specially, in written form, about the digital banking products and services currently they are providing, this study forced to limit its primary data source on demand side survey only (MSE), and the reason why they are limited to give information was all about the security and privacy cases.

As per theoretical and empirical literature, the supply side of financial inclusion comprises of dimension of “access”. Access to financial services presents the possibilities for consumers to use them, and it is one of the crucial dimensions for measuring supply side financial inclusion. Access to financial services can be defined along several dimensions, including geographic access (i.e. proximity to a financial service provider) and socio-economic access (i.e. absence of prohibitive fees and documentation requirements) Beck, 2016. Further, studies used the variables of land mass, adult population, geographic outreach, and demographic outreach in terms of supply of financial services, and results of the studies suggested that population indicators contain more information in explaining the access dimension of the supply side of financial inclusion to geographic (area) indicators. For instance, findings of Fareeha Adil and Abdul Jalil, 2020 suggests that the greater the size, geographic outreach, and demographic outreach of the banks, the greater the contribution to the financial inclusion.

Furthermore, the supply side of financial inclusion is not only dependent on a single financial market issues such as governance of financial institutions and financial stability but also on broader issues beyond the financial market, such as governance and macro factors like GDP, inflation, and the net interest margin (Fareeha Adil and Abdul Jalil, 2020).

Survey Respond from Regulatory Bodies

In this study, another survey interview was conducted with two focal persons from concerned regulatory body of Adama city (Job Creation and Skill office and its branch found in Goro wereda), to assess the magnitude, opportunities and challenges concerning the digital financial inclusion of MSE. Therefore, based on the interview questions prepared before and focusing on the major duties of the office which was currently observed through documents reviewed for secondary data, several questions were raised, specially, on settlement of the legal ground for digital financial usage, which may support MSEs for easily lead their financial activity in relation with financial institutions.

Generally, from the interview constructive idea was found. First, the office believes that MSEs as a backbone of the economic growth through minimizing unemployment, increasing income of the society and also revenue of the city, encourage creativity and skill development etc. Second, essential data were found in relation to number of MSEs: regardless of the medium enterprises data, the number of MSEs increased from 2045 as of 2023(socio economic profile of the city, OPDA, 2023) to 4461 (from document review). Third, in the case of challenges, mainly issues about traditional financial system have been raised. The major constraints raised are collateral requirements, religious belief (loan with no interest), risk aversion culture, lack of administrative supports and policy issues. Nevertheless, all focal persons did say nothing about the major issue which is related with legal basis of digital financial inclusion.

Survey Response from MSE Group Discussion

The group discussion was held with ten MSE actors selected with judgmental approach, and those MSEs are expected as more competitors and have best experience in the area. Using a survey questionnaire prepared for MSE group discussion, to assess the magnitude, opportunities and challenges concerning the digital financial inclusion of MSEs, mainly focusing on the financial and digital knowhow of the MSE actors and the legal basis for MSEs to operate their financial activities in digital way (The survey questionnaire is available in the appendix – III. B). Therefore, a big debate was taken place on the discussion regarding

the usage of personal mobile banking of the MSE actor for the enterprise financial transaction purpose. This means the mobile telephone line or SIM card is registered by the personal name of the MSE actor which means private owned SIM card but, it's used as MSE's mobile banking. Finally it's concluded that in legal eye, most enterprises are using traditional financial system, rather than the digital way which is used by the MSE actors privately. Furthermore, additional issue which is highly raised was about the legal basis of 'how the enterprise is using its digital financial transaction'. In this case, in one hand, without any written agreement between members of the enterprises or on the article of memorandum of the MSEs, in the other hand, with no official letter written from the concerned regulatory body, using any kind of digital financial system for MSE financial transaction purpose was seen as illegal. (The discussion minuet (document) available in appendix V)

4.1.2. Econometric Analysis of the Result

4.1.2.1. Empirical Results based on MNL Model

Table 5 below shows an estimate of the multinomial logistic model for existing financial usage. Four financial usage- Analogue, Digital, Both Analogue and Digital, and cash users- have been modeled. The estimates are generally robust as shown by the values of the likelihood ratio statistics, all statistically significant at one probability level as reported at the bottom part of the table.

The factors that affect existing financial technologies usage in Adama City were identified using a multinomial logistic model (MNL) with cash usage as the base outcome for the model results reported in the table. As we can see from the estimation results, some basic factors affect the choice of financial technology usage in the city. Following that, the multinomial logistic model reported that some basic explanatory variables determined the probability of using financial technologies. For the first model, analog usage, the results from the multinomial logistic regression indicated that gender of the respondents, digital usage regularity(digur), third parties' delegation (thirdbd), etc. were the significant factors influencing MSEs to use analog system of financial service taking cash usage as a reference category.

Based on this result, male respondents have higher probability of using analog than female counterparts. Gender disparities in financial technology adoption hold significance because they highlight disparities in financial access and empowerment, as indicated in the vast literature. Understanding these differences can help bridge the gender gap in financial

services, promote economic growth, and ensure that financial technology products and policies are inclusive and equitable.

This result yields practical implications that can assist financial service providers and relevant stakeholders in better understanding financial technology provision, accessibility, focusing on addressing gender disparities should be one among other concerns. Such practice not only promotes financial inclusion but also contributes to broader economic growth with an emphasis on ensuring equal opportunities for all genders.

Again, on the same model, digital usage regularity was positively and significantly linked to analog financial system usage. A closer look at the digital usage regularity reveals that, this variable is positively linked to analog preference. This implies that the probability of using analog system is positively linked to digital usage regularity indicating that as respondents frequently use digital technologies, they prefer to return back to analog type due to the poor digital infrastructural development in the financial system. Again, the probability of using analog system is positively influenced by existence of third-party delegation in operation. As MSEs use third-party delegation in financial activities, analog system is preferred to other methods as the result indicates.

Table 5: multinomial logistic regression results, (Dependent variable: existing financial usage).

Variables	Analog	Digital	Both Users
Age (25-30)	-0.153 (0.543)	1.017 (1.548)	0.399 (1.115)
Age (31-35)	0.791(0.784)	1.110(1.718)	0.962(1.178)
Age (above 36)	0.586(0.685)	3.507**(1.656)	1.524(1.228)
Gender(1=Male)	1.064**(0.488)	1.988*(1.044)	1.358(0.930)
Educ. (9-12)	0.644(0.712)	-0.384(1.562)	1.735(1.567)
Educ. (Diploma/level1-4)	0.279(0.772)	-1.947(1.746)	0.569(1.647)
Educ. (Degree and above)	19.31(5,378)	20.47(5,378)	21.87(5,378)
Digknow	-0.820(0.570)	-17.35(3,263)	-1.803(2.542)
Finknow	0.352(0.438)	-0.231(1.407)	-2.602(2.347)
digur	1.148*(0.665)	-0.984(2.456)	-0.360(1.650)
2.textur	0.477(1.120)	-1.683(3.446)	-6.809**(2.719)
3.textur	-0.270(1.523)	-30.29(829,870)	
4.textur	-1.449(2.114)	-14.59(3,569)	-21.96(2,163)
finur	0.230(0.338)	0.668(1.452)	2.699**(1.215)
diguf	-0.0824(0.272)	-0.193(0.459)	0.432(0.401)
teleBirr1(Yes)	1.508(0.946)	20.82(3,594)	4.144*** (1.608)
teleBirr2(No)	-0.214(0.779)	18.90(3,594)	1.790(1.985)
teleBirr3(Not think of it)	21.34(13,190)	27.28(24,404)	5.832(17,218)
digui	-0.160	-17.20	-0.722
	(0.377)	(3,840)	(0.813)
digtr	-0.262	-0.247	0.409
	(0.195)	(0.469)	(0.405)
actordk	-0.274	0.283	-0.0964
	(0.262)	(0.583)	(0.498)
zeroba	-0.134	0.154	1.760**
	(0.329)	(0.939)	(0.810)
thirdbd	0.486*	0.370	0.0312
	(0.273)	(0.467)	(0.407)
simmob	0.335	0.313	-0.279
	(0.304)	(0.578)	(0.483)
Constant	-3.502*	10.75	-9.431**
	(2.038)	(6,284)	(4.695)
Observations	233	233	233
LR chi2(78) = 309.00 Prob > chi2 = 0.0000 Pseudo R2 = 0.5330			

Note: *** p<0.01, ** p<0.05, * p<0.1 Standard errors in parentheses

Source: Own competition, 2024

As long as the second model (digital financial technology usage) is concerned, some core variables like gender, age above 36 and tele Birr usage positively and significantly influence the use of digital financial technologies. Keeping other variables constant, the probability of digital financial technology adoption is positively connected to gender implying that the male respondents have higher probability of using digital technologies. The analysis suggests that men's control power of financial assets finances positively and significantly influenced the probability of using digital financial services available in the system.

Similarly, in this study older individuals get the probability of using digital technologies increased. Here as special case, age was found to have a positive effect on the adoption of digital financial system, implying that older respondents are more likely to adopt digital financial system. This finding is in agreement with the works of Alnemer, (2022). Based on our data, the age profile shows that majority of the respondents (32.19 %) were belonging to the age group of 25–30 years. On the other hand, 27.90 % of the respondents fell in the age group of above 36 years of age whereas 21% were between the age 18-24 years of age.

Education level is also positively and statistically associated to digital financial technologies. Similar, a significant association has been found between education (degree and above) and digital financial technologies. The educational profile indicates that the majority of the respondents had achieved education level of grades 9-12(57.51%). Analysis of educational profile shows that adoption rate of digital financial technologies will be higher in case of people who have received first degree and above level of education.

Finally, to this model, tele Birr usage was positively and significantly associated with digital financial technology adoption. This implies that the probability of using digital financial technologies increases as the access to tele Birr technology is improved.

In the last model, both analog and digital financial technology usage, some variables like text messaging, finur, tele Birr are significantly connected to the probability of using both methods. Other results can be interpreted in a similar way as above.

From the result on the table 5, it is shown that the dependent variable of this study, (existing financial usage), assume more than one category: Analogue, Digital, Both Analogue and Digital, and cash which have been modeled and motivates the adoption of the multinomial logistic regression approach, Therefore, based on the multinomial logistic regression outcome (result) three model equations are stated namely: Analogue , Digital and Both analogue and Digital modeled and the fourth category ‘cash’ is considered as base outcome. Depending on the general Model stated by Greene, 2003 and multinomial logistic regression result provided on table below the three categorical model equation of the dependent variable of the study as follows: (detail information is found in the appendix IV)

Discussion

Mainly, this study aimed at examining the determinant factors that affect the digital financial inclusion among MSEs in Ethiopia, and to achieve the major objective of the study assessing the magnitude, opportunities and challenges concerning the digital financial inclusion of MSEs is the focus area. Therefore to do this, focusing more on demand side survey, both the supply and demand-side data are collected.

While a basic estimate of outreach is helpful (Fareeha Adil and Abdul Jalil, 2020), it is more appropriate to consider the data on use of formal digital financial services, not the mere access to finance (Kumar, et al, 2018). Because, a clear picture of financial inclusion requires input from customers: particularly, whether the digital financial inclusion is equitably and affordably distributed across the population. Since, demand-side approaches are based on samples of MSEs, and collected demographic information about the respondent (MSE actors), the data sets may be disaggregated by digital usage regularity, digital transaction frequency, financial and digital literacy, available digital infrastructure and legal basis of digital usage to ultimately help determine the magnitude of the existing digital financial usage, the demanding opportunity and the challenges regarding the transaction activities of MSEs, in line with the research questions and stated objectives of this study, three major methods: descriptive method using SPSS 25 software, qualitative data analysis using the scheduled survey tool and econometric data analysis using Stata 18 software, are used simultaneously to triangulate the identified results which help us to conceptualize clear and accurate information of the issue.

Therefore, to answer the first research question of the study, the magnitude of the digital financial inclusion of the MSE: Here the descriptive statistics shows 92.7% of MSEs, use the way rather than typical digital system alone., The econometric result also indicates the significant number of MSEs use only analogue usage and both digital and analogue usage in mix. This means, categories rather than digital alone like analogue usage and both digital and analogue have used by other variables such as, Mobile text balance checking, financial usage regularity, Tele birr usage, Zero balance account and third party delegation indicated as significantly used services. Here, as special case the qualitative survey result through key informant survey and on MSE's group discussion also shows almost all MSEs are using analogue system and in addition an investigation is found that, regardless of the enterprise's transaction account, most enterprises use the actors private digital account in illegal basis, this case indicates that the necessity of a corrective action by concerned body is mandatory.

Third, in relation to the 2nd and 3rd research questions, to assess an opportunity of digital financial usage and to investigate the challenges on this usage: from descriptive statistics result 92.3% of MSEs demanding to use a digital financial product and service. Therefore, this implies that there is a significant amount of market demand is available as opportunity. In terms of digital financial inclusion challenges, issues such as lack of digital infrastructure, financial and digital literacy, digital legal basis and ATM receipt transparency are variables raised as constraints of financial inclusion for MSEs, but among of the above variables digital usage legal basis and ATM receipt transparency only are investigated as a major challenges.

CHAPTER FIVE: CONCLUSION AND RECOMMENDATION

5.1. Conclusion

Depending on the above results and detail information, in one hand, the result of multinomial logistic regression analysis shows, gender (Male) of the respondents, financial usage regularity, third party delegation and SIM card issue have a positive effect on the existing financial usage and statistically significant at a one percent level. The other way of the result indicates that digital usage frequency, digital usage interest, Tele birr usage, actors' digital know how and zero balance account have a negative effect on existing financial usage and statistically significant at a one percent level. Therefore, based on the findings it can be concluded that variables which are shown in the results above have a high impact on determining the enterprise's digital financial usage. In the other hand, the qualitative analysis of the study reveals that, regardless of the usage of 'digital way alone' (7.3%) and its frequency (10.3%), the magnitude of 'both digital and analogue' and also the regularity issues are promising. However, in this descriptive result and on focal group discussion, cases like digital usage rules and regulations for MSEs and ATM receipt transparency are accepted as major digital usage constraints or challenges by MSEs 189(81.1%) and 76(32.6%), respectively.

5.2. Policy recommendation and further work implication

First, to support MSEs lead their digital financial activities in relation with financial institutions through digital products and services, to settle the digital legal frame work specially for MSEs financial usage should be critical.

Second, the outcome of this study may serve as a source of additional information, and as far as the researcher would not assess all dimensions of the case, other researchers who are eager to deal with this issue are advised to conduct further studies.

Own Contribution

Financial and Digital Usage terminologies abbreviation, like “Fintech”.

1 - **Digur** - Digital Usage Regularity

2 - **Diguf** – Digital Usage Frequency

3 - **Finur** – Financial Usage Regularity

4 - **Textur** – Text Usage Regularity

5 - **Thirdbd** – Third Body Delegation

6 - **Zeroba** – Zero Balance Account

7 - **Digmis** – Digital Mistrustfulness

8 - **Digleg** – Digital Legal Basis

Limitation of the Study

Since, financial institutions didn't provide the necessary data, and demand side data often focuses on financial usage of MSEs, rather than financial service provided. Measuring usage of financial services using demand side data only have limitations: such as, difficulties to measure regularity and frequency of digital financial accesses, because demand side data alone may lead to an overestimation of the actual financial usage. In other way for financial institutions, without information about the demographics of the customers, it is difficult to understand the segments of the population being served and not being served, and also develop appropriate regulation to release specific barriers to access that are relevant to these populations, the variety of institutions, diverse array of products and services as well as different internal reporting systems, make it particularly difficult to aggregate data to derive a clear picture of the depth of the digital financial system. In addition, ability to use formal financial services, (i.e. minimal barriers to opening a digital account, digital physical proximity, affordability): These components are concerned primarily with the ability to use available digital financial services and products from formal institutions. Understanding levels of access may therefore require insight and analysis of potential barriers to opening and using a digital transaction account for any purpose, such as cost and physical proximity of bank service points (branches, digital agents, ATMs, e-money, m-banking, etc). A very basic proxy for access can be derived through counting the number of open digital accounts of MSEs across financial institutions and estimating the proportion of the population with a concerned account, because data on access can usually be obtained through information provided by financial institutions.

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Work Plan and Budget

Work Plan

The research work is expected to be completed based on the following Schedule

No	Activities	Feb.	March	April	May	June	July
1	Proposal Completion	✓					
2	Data Collection		✓	✓			
3	Data Analysis				✓		
4	Submission					✓	
5	Presentation of Final Result					✓	

Budget Breakdown

No	Item	Unit	Unit Cost	Quantity	Total
1	For pilot survey work	-	-	-	6,000
2	Printing & Laminating Proposal	No	500	3	1,500
3	Questionnaire paper printing	“	15	350	5,250
4	Total transport cost	-	-	-	10,000
5	Thesis Paper with cover page	No	1,200	6	7,200
6	Telephone & Internet cost	-	-	-	10,000
7	Others	-	-	-	10,000
	Total	-	-	-	49,950

Appendices

Appendix I

Appendix I - A. MSE Questionnaire (English version)

Dear Respondents

These questionnaires were developed to collect data for research entitled “**Determinants of Digital Financial Inclusion for MSEs in Ethiopia**” To assess the Magnitude, Opportunities and Challenges in the case of Adama City. The study is aimed at scientifically articulating the reality on the ground concerning the digital financial inclusion on MSEs, thereby suggests relevant policy intervention to concerned bodies. Thus, your sincere cooperation and transparency play an important role in conducting this study and the data to be collected through these questionnaires will not be used for any other purposes.

Part I: Survey General Information

Name of Sub City	
Name of Woreda	
Name of the MSE	
MSE type (Sector)	
Year of Establishment	
Respondent Code (Filled by the Enumerator)	
Name of Enumerator	Asegid Teresa Seboka

Part II: Background Information of the Respondents (MSE Actor)

S/N	Socio-demographic Characteristics	Response Categories
1	Age in Year	
2	Gender	
3	Educational Level	
4	Responsibility In the Enterprise	
5	Year of Experience in the place	
6	Bank Account (Transaction Account)	
7	ATM	
8	Mobile Banking	
9	e-birr (tele-birr, CBE-birr, ...)	

10. If you were to open an account at a bank or another type of formal financial institution, do you think you could use it by yourself, without the help of another person? Yes 1 No 2 (Don't Know) 3 (Refused) 4

Part III: Questions on Magnitude of Financial Services and Service Types

1. In which year your enterprise get license from the concerned body?
 1. Before five years ago
 2. Before three years ago
 3. Before one year ago
 4. In this year
2. What is the source of the initial capital of your enterprise?
 1. Share of members
 2. Family Support
 3. Loan from financial institutes
 4. Other
3. When be your enterprise get a bank account?
 5. Before five years ago
 6. Before three years ago
 7. Before one year ago
 8. In this year
4. In what ways or systems an enterprise is doing its financial service activities?
 1. In traditional way
 2. In digital way
 3. Both
 4. Don't Know
5. In the past 12 months, did you ever use a MOBILE PHONE or the INTERNET to make payments, buy things, or to send or receive money using your enterprise account? 1 2 3 4
6. In the past 12 months, have you checked your account balance using a mobile phone or the Internet? (If respondent mentions "text messages", coded as Yes) 1 2 3 4
7. In the past 12 months, has money ever been DEPOSITED into or TAKEN OUT of your enterprise account(s)? This includes cash or electronic deposits, or any time money is put into your enterprise account(s) by yourself, or another person or institution. 1 2 3 4
8. In a typical month, is money DEPOSITED into or TAKEN OUT of your enterprise account(s) two or more times per month? 1 2 3 4
9. Did your enterprise ever used a tele-birr or CBE-birr to make payments, buy things, or to send or receive money? 1 2 3 4

10. Are You interested, if your enterprise is doing its financial service activities using digital way/system? 1 2 3 4
11. If the MSE do not use digital (mobile money) transaction Please tell me whether each of the following is a reason why you, do NOT have a digital (mobile money) account. Is it...? Yes (DK) (Refused) No
- A. Because mobile money agents are too far away 1 2 3 4
 - B. Because digital system mostly not trusted 1 2 3 4
 - C. Because you don't have the necessary experience or 'Know how' 1 2 3 4
 - D. Because you don't have enough money to use a mobile money account 1 2 3 4
 - E. Because you use an agent or someone else to make payments for you 1 2 3 4
 - F. Because you do not have a SIM card and mobile phone 1 2 3 4
 - G. Because ATM slip is not trustful or transparent 1 2 3 4
 - H. Because there is no legal ground to use digital financial service for MSEs 1 2 3 4

Appendix I - B. MSE Questionnaire (Afan Oromo Version)

Gaaffilee Qorannoo

Kabajamaa Deebii Kenna

Gaaffileen qorannoon kun kan qophaa'aniif mataa duree “**Determinants of Digital Financial Inclusion for Micro and Small Sized Enterprises in Ethiopia, The case of Adma City**” jedhu irratti qorannoo gaggeeffamuuf ragaa walitti qabuuf yaadameeti. Qorannoon kun rakkoolee 'Adeemsa Hammata Finaansii Digitaala' dhaabbilee faayinaansii fi Intarpiraayzoota Maaykiro fi Xixiiqqaa (IMX) jidduu jiran wajjin kan walqabatan dhugaa lafarratti jiru karaa saaynsaawaa ta'een qorachuu irratti kan kaayyeeffate yoo ta'u, qoranniichii ulfaatinni rakkooleen kun hangam akka ta'e fi mala furmaata wajjin agarsiisuu danda'a jedhame eggama. Kanaafuu, qorannoo kana gaggeessuu keessatti tumsii keessan gahee olaanaa waan qabuuf odeeffannoo karaa sirriidhaa jeettanii itti amantaniin akka nuuf kennitan gaafachaa, yaadonni isin nuuf keennitan hundi kaayyoo biraatiif kan hin ollee ta'usaa isiniif mirkaneessina.

Kabajaa Guddaa Wajjin

Kutaa Tokkoo: Odeeffannoo Waligalaa

Maqaa Kutaa magaalaa	
Maqaa Aanaa	
Maqaa Waldichaa	
Gosa Hojii	
Bara itti Dhaabbate	
Kodii Deebii Kenna (Ragaa sassaabaatiin guutama)	
Maqaa Ragaa sassaabaa (Enumerator)	Assagid Tarreessaa Sabbooqa

Kutaa Lama: Odeeffannoo Seen-Dubee Deebii Kenna (MSE Actor's Profile)

Lak	Akaakuu Seen-Dubee	Response Categories
1	Umrii	
2	Korniyaa	
3	Sdarkaa Barumsaa	
4	Gahee Hojii	
5	Muxannoo Hojii kanarratti	
6	Akkaawntii Baankii	
7	ATM	
8	Mobile Banking	
9	e-birr (tele-birr, CBE-birr, ...)	

10. Yeroo jalqabaatiif heerregaa baankii ennaa banattu, deeggarsaa nama biraa malee, kophaa keeti banattee? 1. Eeyyeen 2. Lakkii 3. Hin yaadadhu 4. Deebii hin qabu

Kutaa Sadii: Gaaffilee Ulfaatina Hammata Faayinaansii Digitaalaa Walqabatan

1. Waldaan keessan Bara kam qama seerummaa argate?
 1. Waggaa shan dura
 2. Waggaa sadii dura
 3. Waggaa tokkoo dura
 4. Bara kana
2. Maddii kaappitaala ka'umsa waldichaa maalii?
 1. Miseensoonni walitti buusaniiti
 2. Deeggarsaa maatiiirraa
 3. Liqii baankiirra
 4. Kan biro
3. Heerragaa baankiin kan baname yoom?
 1. Waggaa shan dura
 2. Waggaa sadii dura
 3. Waggaa tokkoo dura
 4. Bara kana
4. Waldaan keessan adeemsaa kamiin heerregaa baankiisaa sochosaa jira?
 1. Adeemsa duriitiin (Traditionally)
 2. Adeemsa Dijitaalaatiin
 3. Adeemsoota lamaanuu ni fayyadama
 4. Adeemsoota lamaanu hin fayyadamu
5. Ji'oottan 12 darban keessatti Moobaayil- Baankiing ykn Intarnet-Baanking waldichaa fayyadamtanii beektuu?
 1. Eeyyeen 2. Lakkii 3. Hin yaadadhu 4. Deebii hin qabu
6. Ji'oottan 12 darban keessatti Moobaayil- Baankiing ykn Intarnet-Baanking waldichaa fayyadamtanii heerrega waldichaa 'cheek' gotanii beektuu? (Deebiin kenname miseejii barreefamaan yoo ta'es, Eeyyeen jechuudha)
 1. Eeyyeen 2. Lakkii 3. Hin yaadadhu 4. Deebii hin qabu
7. Ji'oottan 12 darban keessatti karaa hundaan akkaawntii baankii waldiichaan maallaqni galii ykn bahii ta'eera? Kun qarshii dheedhiin, elektronikiin, akkawntichaatti galii yoo ta'eedha.

1. Eeyyeen 2. Lakkii 3. Hin yaadadhu 4. Deebii hin qabu
8. Ji'a tokkoo keessatti si'aa lama ykn sadii karaa hundaan akkaawntii baankii wal-diichaan maallaqni galii ykn bahii ta'eera?
 1. Eeyyeen 2. Lakkii 3. Hin yaadadhu 4. Deebii hin qabu
9. Waldaan keessan adeemsa Tele-Birrii fayyadamee beekaa?
 1. Eeyyeen 2. Lakkii 3. Hin yaadadhu 4. Deebii hin qabu
10. Waldaan keessan adeemsa digitaala akka fayyadamu yoo haalli mijate fedhii qabdu?
 1. Eeyyeen 2. Lakkii 3. Hin yaadadhu 4. Deebii hin qabu
11. Waldaan (Entarpiraayziin) keessan adeemsa dijitaalaa (ATM, Mobaayil-Baanking, Interneet-Baanking) akka fayyadamu osoo fedhii qabdan kan hin fayyadamne yoo ta'e, maaliif fayyadamu hin dandeenyee? Ykn, Sababni akka hin fayyadamne taasissee maalii? Sababnisaa:
 - A. Bakka bu'oonni (Agents) moobaayil baankii hin jiranii ykn fagoo waan ta'aniif?
 1. Eeyyeen 2. Lakkii 3. Hin yaadadhu 4. Deebii hin qabu
 - B. Adeemsi moobaayil-Baankingii fi inarneet-baankingii shakkiisisaa waan ta'eef?
 1. Eeyyeen 2. Lakkii 3. Hin yaadadhu 4. Deebii hin qabu
 - C. Sochosaan IMX waa'ee adeemsaa dijitaalaa muxannoo ykn beekumsaa hin qabu?
 1. Eeyyeen 2. Lakkii 3. Hin yaadadhu 4. Deebii hin qabu
 - D. Waldichi baankii keessatti maallaqa hin qabu ykn akkaawntiin isa duwwaadha?
 1. Eeyyeen 2. Lakkii 3. Hin yaadadhu 4. Deebii hin qabu
 - E. Bakka bu'oota ykn qaama tokkoo (wayii) akka isiniif hojjatan waligatanii ta'inna?
 1. Eeyyeen 2. Lakkii 3. Hin yaadadhu 4. Deebii hin qabu
 - F. Silkii moobaayilaa (Mobile phone) hin qabdanii?
 1. Eeyyeen 2. Lakkii 3. Hin yaadadhu 4. Deebii hin qabu
 - G. Waldaan adeemsa-ATM fayyadamuuf haalli ragaan heerregaa /Islippii/ jiru ifaa miti?
 1. Eeyyeen 2. Lakkii 3. Hin yaadadhu 4. Deebii hin qabu
 - H. Waldaan adeemsa digitaala akka fayyadamu kan dandeessisu bu'uurri seera hin jiru?
 1. Eeyyeen 2. Lakkii 3. Hin yaadadhu 4. Deebii hin qabu

Guyyaa Ragaan itti Kenname _____

Appendix I - C. MSE Questionnaire (Amharic version)

የጥናት ጥያቄዎች

የተከበሩ መልስ ሰጪ

ጥናቱ የሚካሄደው 'Determinants of Digital financial Inclusion for micro and small sized Enterprises in Ethiopia, the case of Adam city' በሚል ርዕስ ላይ መረጃ /data/ ለመሰብሰብ ታስቦ ሲሆን፤ የጥናቱ ዓላማ በኢንተርፕራይዞችና በፋይናንስ ተቋማት መካከል ያለውን የዲጂታል ፋይናንስ ማዕቀፍ /ግንኙነት/ መሰረት ባደረጉ ችግሮች ዙሪያ ትኩረት ያደረገ ነው።

በዚህም መሰረት ጥናቱ ችግሮችን በመለየት የፖሊሲ ሐሳቦችን ለሚመለከታቸው ባለድርሻ አካላት ያስቀምጣል ተብሎ ይጠበቃል። የሰጣችሁን መልስ ለዚህ ጥናት ግብአት ብቻ የሚውል መሆኑን አረጋግጣለሁ።

ከትልቅ ምስጋና ጋር

ክፍል አንድ:- አጠቃላይ መረጃ

የክ/ከተማው ስም -----

የወረዳው ስም -----

ማህበሩ የሚሰራው ስራ ዓይነት -----

የተመሰረተበት ዓመት -----

የመልስ ሰጪው ከድ (በመረጃ ሰብሳቢው የሚሞላ) -----

የመረጃ ሰብሳቢው ስም:- አሰግድ ተፊሳ

ክፍል ሁለት:- የመልስ ሰጪው (የማህበሩ አንቀሳቃሽ) መረጃ

1. ዕድሜ -----
2. ፆታ -----
3. የት/ደረጃ -----
4. የስራ ድርሻ -----
5. የስራ ልምድ -----
6. የባንክ አካውንት (አለ ፤ የለኝም) ከስር በማስመር የሚመስ
7. ATM (አለኝ ፤ የለኝም)
8. የሞባይል ባንኪንግ (አለኝ ፤ የለኝም)
9. ቴሌ ብር ,CBE birr (አለኝ ፤ የለኝም)
10. ለመጀመሪያ ጊዜ የሂሳብ አካውንት ስትከፍት/ች/ ከሌላ ሰው እርዳታ ውጭ በራስህ/ሽ/ ብቻ ነው የከፈትኩ(ሽው)

1. አዎ 2. አይደለም 3. አላሰብኩበትም 4. መልስ የለኝም

ክፍል ሦስት፡- የዲጂታል ፋይናንስ ማዕቀፍ ክብደት ምዘና ጋር የተያያዙ ጥያቄዎች

1. ማህበሩ ህጋዊነት ያገኘው መቼ ነው?
 1. ከአምስት ዓመት በፊት
 2. ከሦስት አመት በፊት
 3. በዚህ ዓመት
2. የማህበሩ የመነሻ ካፒታል ምንጭ ምንድነው?
 1. የአባላት መዋጮ
 2. የቤተሰብ ዕርዳታ(ስጦታ)
 3. ከባንክ የተገኘ ብድር
 4. ሌላ
3. የማህበሩ የባንክ ሂሳብ የተከፈተው መቼ ነው?
 1. ከአምስት ዓመት በፊት
 2. ከሦስት ዓመት በፊት
 3. ከአንድ ዓመት በፊት
 4. በዚህ ዓመት
4. ማህበሩ በየትኛው የሂሳብ ዘዴ (አካሄድ) የባንክ ሂሳቡን ያንቀሳቅሳል
 1. ድሮ በተለመደው (ዲጂታል) ባልሆነው
 2. ዲጂታል በሆነው አካሄድ
 3. በሁለቱም አካሄድ ያንቀሳቅሳል
 4. በሁለቱም አካሄድ አያንቀሳቅስም
5. ላለፉት 12 ወራት ማህበሩ የሞባይል ባንኪንግ ወይም የኢንተርኔት ባንኪንግ ወይም ሁለቱንም አይነት ተጠቅሞ ያውቃል?
 1. አዎ 2. አያውቅም 3. አላሰብኩበትም 4. መልስ የለኝም
6. ባለፉት 12 ወራት ውስጥ ማህበሩ በሞባይል ባንኪንግ ወይም በኢንተርኔት ባንኪንግ ሂሳቡን አረጋግጦ (ቼክ) አድረጎ ያውቃል?(የመልዕክት መልስን ይጨምራል)
 1. አዎ 2. አይደለም 3. አላሰብኩበትም 4. መልስ የለኝም

7. ላለፉት 12 ወራት በየትኛውም መልኩ ወደ ማህበሩ አካውንት ገቢ የሆነ ወይም ከማህበሩ አካውንት ወጪ የሆነ በዲጂታል አካሄድ በማህበሩ የታወቀ ገንዘብ አለ? ይህ በጥሬ ገንዘብ ፣ በኤሌክትሮኒክስ ወይም በዲጂታል ገቢ የሆነ ማለት ነው፡
1. አዎ 2. አይደለም 3. አላሰብኩበትም 4. መልስ የለኝም
8. በአንድ ወር ጊዜ ውስጥ ሁለት ወይም ሦስት ጊዜ ያህል በዲጂታል ዘዴ ወደ ማህበሩ አካውንት ገቢ የሆነ ወይም ከማህበሩ አካውንት ወጪ የሆነ ገንዘብ አለ?
1. አዎ 2. አይደለም 3. አላሰብኩበትም 4. መልስ የለኝም
9. ማህበሩ የቴሌ ብር ዘዴ (አካሄድ) ይጠቀማል?
1. አዎ 2. አይደለም 3. አላሰብኩበትም 4. መልስ የለኝም
10. ለማህበሩ የሚመች የዲጂታል ዘዴ (አካሄድ) ከተመቻች ማህበሩ እንዲጠቀም ፍላጎት አሎት?
1. አዎ 2. አይደለም 3. አላሰብኩበትም 4. መልስ የለኝም
11. ማህበሩ የዲጂታል ዘዴ (ኤቲኤም ፣ ሞባይል ባንኪንግ፣ ኢንተርኔት ባንኪንግ) እንዲጠቀም ፍላጎት እያሎት እንዳይጠቀም ያገዱት ምክንያቶች
- A. የዲጂታል ባንኪንግ ወኪሎች ስለሌሉ ወይም እሩቅ ስለሆኑ
1. አዎ 2. አይደለም 3. አላሰብኩበትም 4. መልስ የለኝም
- B. የሞባይል ባንኪንግ እና የኢንተርኔት ባንኪንግ ዘዴ አጠራጣሪ ስለሆነ
1. አዎ 2. አይደለም 3. አላሰብኩበትም 4. መልስ የለኝም
- C. የማህበሩ አንቀሳቃሾች የዲጂታል ባንኪንግ ልምድ ወይም ግንዛቤ ስለሌላቸው
1. አዎ 2. አይደለም 3. አላሰብኩበትም 4. መልስ የለኝም
- D. የማህበሩ አካውንት ውስጥ ገንዘብ ስለሌለ (አካውንቱ ባዶ ስለሆነ)
1. አዎ 2. አይደለም 3. አላሰብኩበትም 4. መልስ የለኝም
- E. ወኪሎች ወይም የሆነ አካል የማህበሩን አካውንት እንዲያንቀሳቅሱ ስለተስማሙት
1. አዎ 2. አይደለም 3. አላሰብኩበትም 4. መልስ የለኝም
- F. ማህበሩ የራሱ የሞባይል ቀፎ እና መስመር ስለሌለው
1. አዎ 2. አይደለም 3. አላሰብኩበትም 4. መልስ የለኝም
- G. ኤቲኤም ሲተቀሙ ከማሽኑ የሚወጣው የሂሳብ መረጃ (ስኒፕ) ግልፅ ባለመሆኑ
1. አዎ 2. አይደለም 3. አላሰብኩበትም 4. መልስ የለኝም

H. ማህበሩ የዲጂታል ባንኪንግ እንዲጠቀም የሚያስችለው የህግ መሰረት ስለሌለው

1. አዎ
2. አይደለም
3. አላስብኩበትም
4. መልስ የለኝም¹

Appendix II- Descriptive Report for all Variables

		Value	Count	Percent
V101				
Standard Attributes	Position	1		
	Label	Resp. Age		
	Type	Numeric		
	Format	F8		
	Measurement	Ordinal		
	Role	Input		
Valid Values	1	18-24	50	21.5%
	2	25-30	75	32.2%
	3	31-35	43	18.5%
	4	36=<	65	27.9%

V102

		Value	Count	Percent
Standard Attributes	Position	2		
	Label	Respondent Gender		
	Type	Numeric		
	Format	F8		
	Measurement	Ordinal		
	Role	Input		
Valid Values	1	Male	135	57.9%
	2	Female	98	42.1%

V103

		Value	Count	Percent
Standard Attributes	Position	3		
	Label	Respondent Education		
	Type	Numeric		
	Format	F8		
	Measurement	Ordinal		
	Role	Input		
Valid Values	1	1-8	25	10.7%
	2	9-12	134	57.5%
	3	Diploma & level 1-4	55	23.6%
	4	Degree=<	19	8.2%

V201

		Value	Count	Percent
Standard Attributes	Position	4		
	Label	Resp. Digital Knowhow		
	Type	Numeric		

	Format	F8		
	Measurement	Ordinal		
	Role	Input		
Valid Values	1	Yes	187	80.3%
	2	No	46	19.7%

V202

		Value	Count	Percent
Standard Attributes	Position	5		
	Label	Resp. Financial Knowhow		
	Type	Numeric		
	Format	F8		
	Measurement	Ordinal		
	Role	Input		
Valid Values	0	Missed	0	0.0%
	1	Yes	200	85.8%
	2	No	24	10.3%
	3	not think over it	6	2.6%
	4	no answer	3	1.3%

V304

		Value	Count	Percent
Standard Attributes	Position	6		
	Label	Existing MSE fin. usage		
	Type	Numeric		
	Format	F8		
	Measurement	Ordinal		
	Role	Input		
Valid Values	1	Analogue	83	35.6%
	2	Digital	17	7.3%
	3	Both	88	37.8%
	4	none of them	45	19.3%

V305

		Value	Count	Percent
Standard Attributes	Position	7		
	Label	Digital Regularity		
	Type	Numeric		
	Format	F8		
	Measurement	Ordinal		
	Role	Input		
Valid Values	0	Missed	0	0.0%
	1	Yes	122	52.4%

2	No	65	27.9%
3	not think over it	1	0.4%
4	no answer	45	19.3%

V306

		Value	Count	Percent
Standard Attributes	Position	8		
	Label	Acct check Regularity		
	Type	Numeric		
	Format	F8		
	Measurement	Ordinal		
	Role	Input		
Valid Values	0	Missed	0	0.0%
	1	Yes	119	51.1%
	2	No	69	29.6%
	3	not think over it	3	1.3%
	4	no answer	42	18.0%

V307

		Value	Count	Percent
Standard Attributes	Position	9		
	Label	Fin. usage Regularity		
	Type	Numeric		
	Format	F8		
	Measurement	Ordinal		
	Role	Input		
Valid Values	0	Missed	0	0.0%
	1	Yes	142	60.9%
	2	No	79	33.9%
	3	not think over it	5	2.1%
	4	no answer	7	3.0%

V308

		Value	Count	Percent
Standard Attributes	Position	10		
	Label	Fin. usage Frequency		
	Type	Numeric		
	Format	F8		
	Measurement	Ordinal		
	Role	Input		
Valid Values	0	Missed	0	0.0%
	1	Yes	24	10.3%
	2	No	89	38.2%
	3	not think over it	39	16.7%

4	no answer	81	34.8%
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V309

		Value	Count	Percent
Standard Attributes	Position	11		
	Label	Tele birr usage		
	Type	Numeric		
	Format	F8		
	Measurement	Ordinal		
	Role	Input		
Valid Values	0	Missed	0	0.0%
	1	Yes	120	51.5%
	2	No	72	30.9%
	3	not think over it	3	1.3%
	4	no answer	38	16.3%

V310

		Value	Count	Percent
Standard Attributes	Position	12		
	Label	Dig. usage Interest		
	Type	Numeric		
	Format	F8		
	Measurement	Ordinal		
	Role	Input		
Valid Values	0	Missed	0	0.0%
	1	Yes	215	92.3%
	2	No	10	4.3%
	3	not think over it	0	0.0%
	4	no answer	8	3.4%

V311

		Value	Count	Percent
Standard Attributes	Position	13		
	Label	Access IS (Agent) constraint		
	Type	Numeric		
	Format	F8		
	Measurement	Ordinal		
	Role	Input		
Valid Values	0	Missed	1	0.4%
	1	Yes	15	6.4%
	2	No	147	63.1%
	3	not think over it	12	5.2%
	4	no answer	58	24.9%

V212

		Value	Count	Percent
Standard Attributes	Position	14		
	Label	LB (dig. trustfulness) constraint		
	Type	Numeric		
	Format	F8		
	Measurement	Ordinal		
	Role	Input		
Valid Values	0	Missed	0	0.0%
	1	Yes	52	22.3%
	2	No	73	31.3%
	3	not think over it	13	5.6%
	4	no answer	95	40.8%

V313

		Value	Count	Percent
Standard Attributes	Position	15		
	Label	FDL Actor's knowhow constraint		
	Type	Numeric		
	Format	F8		
	Measurement	Ordinal		
	Role	Input		
Valid Values	0	missed	0	0.0%
	1	yes	78	33.5%
	2	no	102	43.8%
	3	not think over it	5	2.1%
	4	no answer	48	20.6%

V314

		Value	Count	Percent
Standard Attributes	Position	16		
	Label	FDL Zero acct const.		
	Type	Numeric		
	Format	F8		
	Measurement	Ordinal		
	Role	Input		
Valid Values	0	missed	0	0.0%
	1	yes	78	33.5%
	2	no	109	46.8%
	3	not think over it	9	3.9%
	4	no answer	37	15.9%

V315

		Value	Count	Percent
Standard Attributes	Position	17		
	Label	FDL 3rd party delegation		
	Type	Numeric		
	Format	F8		
	Measurement	Ordinal		
	Role	Input		
Valid Values	0	missed	7	3.0%
	1	yes	8	3.4%
	2	no	119	51.1%
	3	not think over it	8	3.4%
	4	no answer	91	39.1%

V316

		Value	Count	Percent
Standard Attributes	Position	18		
	Label	SIM card (mobile phone) const.		
	Type	Numeric		
	Format	F8		
	Measurement	Ordinal		
	Role	Input		
Valid Values	0	missed	0	0.0%
	1	yes	94	40.3%
	2	no	97	41.6%
	3	not think over it	5	2.1%
	4	no answer	37	15.9%

V317

		Value	Count	Percent
Standard Attributes	Position	19		
	Label	LB ATM slip const.		
	Type	Numeric		
	Format	F8		
	Measurement	Ordinal		
	Role	Input		
Valid Values	0	missed	3	1.3%
	1	yes	76	32.6%
	2	no	43	18.5%
	3	not think over it	22	9.4%
	4	no answer	89	38.2%

V318

		Value	Count	Percent
Standard Attributes	Position	20		
	Label	Dig. Legal Basis const.		
	Type	Numeric		
	Format	F8		
	Measurement	Ordinal		
	Role	Input		
Valid Values	0	missed	0	0.0%
	1	yes	189	81.1%
	2	no	21	9.0%
	3	not think over it	3	1.3%
	4	no answer	20	8.6%

**Appendix III - Financial Institutions and Regulatory Body Survey Questionnaire
Package**

Appendix III - A

**Survey Questionnaire Package for Financial Institutions
about Determinants of Digital Financial Inclusion for
Micro and Small Sized Enterprises in Ethiopia: in the
Context of Adama City**

Asegid Teresa Seboka

April, 2024

Adama

General Overview

These questionnaires were developed to collect data for research entitled “**Determinants of Digital Financial Inclusion for Micro and Small Sized Enterprises (MSEs) in Ethiopia**”

To assess the Magnitude, Opportunities and Challenges in the case of Adama City. The study is aimed at scientifically articulating the reality on the ground concerning the digital financial inclusion on MSEs, thereby suggests relevant policy intervention to concerned bodies. Thus, as a stakeholder, your sincere cooperation and transparency play an important role in conducting this study and the data to be collected through these questionnaires will not be used for any other purposes.

Interview for Financial Institutions

1. How do you describe the opportunities for MSEs in terms of access to digital financial inclusion and the way they use existing chances. What opportunities are there? What favorable conditions are there inviting MSEs to use digital financial services/engage in financial inclusion?
2. Would you tell us any specific treats or risks that MSEs face in digital financial service usage? for example, are there issues related to safety, privacy, or lack of legal protection, rules and regulatory constraints?
3. Are there any government initiatives or programs that have been successful in supporting and promoting MSEs towards digital financial inclusion? How can these initiatives be expanded or replicated in other areas? How do MSE actors deal with regularly environment and comply with legal requirements regarding access to and usage of digital financial services?
4. Are there any specific government policies and interventions which threaten MSEs? What were the intentions or goals of the policies? (hint: Legal protection and supporting them towards digital financial inclusion)
5. What improvements would you like to suggest in order to make MSEs approach to digital financial inclusion?

Supply Side Function

Here, an ‘Access to digital financial inclusion’ is taken as a dependent variable of the supply side function, whereas bank branches, Agents, Mobile-Banking, Enternet-Banking and ATM are taken as independent variables for this specific issue. To analyze the magnitude of

financial inclusion through the role of supply side stakeholders, the following data are important. Therefore, I kindly, request you to provide me these data, according to the table below and additional information if any, in the case Adama city.

Accesses to digital financial inclusion (ADFI)	Description/Specification of the Item	Number of Item	Current Status of the Usage	Number of MSEs used the Item
Bank Branch				
Agents				
Mabile Banking				
Internet Banking				
ATM				

Financial Inclusion Status of MSEs

	Traditional/Original Transaction Account	Mobile Banking	Internet Banking	ATM	Other If Any
MSEs					

Here, MSEs means Micro and Small Sized Enterprises which are using the digital financial services offered by the suppliers (Financial Institutions).

Survey Respond from Financial Institutions

- The opportunity currently MSEs have in terms of accessing digital financial inclusion is at infant level, because the digital channel over bank providing currently limited to USSD only. The wide range of digital product like Internet banking, Online banking and Agent banking are under research or product investigation. Therefore, opportunities currently are not suitable to mention, because the condition going on currently is signal for future improvement on the area.
- About treats: that may include low protection and privacy among individuals if MSE is group based. Others are hackers and gamblers.
- Government initiatives like digital Ethiopia announced by prime minister office was part of initiative but, no as such important focus have given for it.
- No, as far as my knowledge, to become MSE they have to fulfill necessary requirements. The intension is to make the MSE legal Organ.
- The necessary improvements have two side both the MSE's and from banks:

- From MSE side: Mostly to adapt technology, ask for use of digital products and to be open for use of digital product.
- From bank side: arrange variety of digital products, create awareness make products easy to use and smart.

Appendix III-B

**Survey Questionnaire Package for Regulatory Body and
MSEs about Determinants of Digital Financial Inclusion
for Micro and Small Sized Enterprises in Ethiopia: in the
Context of Adama City**

Asegid Teresa Seboka

April, 2024

Adama

General Overview

These survey questionnaires were developed to collect data for research entitled **“Determinants of Digital Financial Inclusion for Micro and Small Sized Enterprises (MSEs) in Ethiopia”** To assess the Magnitude, Opportunities and Challenges in the case of Adama City. The study is aimed at scientifically articulating the reality on the ground concerning the digital financial inclusion on MSEs, thereby suggests relevant policy intervention to concerned bodies. Thus, as a stakeholder, your sincere cooperation and transparency play an important role in conducting this study and the data to be collected through these questionnaires will not be used for any other purposes.

Interview questions for Regulatory Body

1. Would you tell us the type of MSEs operating (working) in this city? Please describe them in terms of size (Capital and Their number of members), diversity, and types of activities they engaged in. Is the number of MSEs increasing /decreasing? Why increasing and decreasing?
2. What are the major contributions of the MSEs in the economy? are there any practices or initiatives with in the enterprises that promote economic sustainability and resource efficiency?
3. What challenges do you encounter in dealing with issue of the MSEs? Would you list some challenges (personal, cultural, environmental and institutional/policy related) that MSEs face in this City? How do these challenges impact to the overall economic activities? What do you suggest to manage these challenges?
4. How do you describe the opportunities for MSEs in terms of access to digital financial inclusion and the way they use existing chances. What opportunities are there? What favorable conditions are there inviting MSEs to use digital financial services/engage in financial inclusion?
5. Would you tell us any specific treats or risks that MSEs face in digital financial service usage? for example, are there issues related to safety, privacy, or lack of legal protection, rules and regulatory constraints?
6. Are there any government initiatives or programs that have been successful in supporting and promoting MSEs towards digital financial inclusion? How can these initiatives be expanded or replicated in other areas? How do MSE actors deal with

regularly environment and comply with legal requirements regarding access to and usage of digital financial services?

7. What improvements would you like to suggest in order to make MSEs approach to digital financial inclusion?

The Respond for Interview questions from Regulatory Body

1. Types of MSEs In this City

- Micro, small, and medium enterprises (MSMEs)

Describe them In terms of Size (Capital and Members)

- Micro The No. of Micro Enterprise was **2853** Members **14,265**

- Small The No. of Small Enterprise was **1608** Members **8040**

- MediumThe No. of Medium Enterprise was **527** Members **2635**

Is number of MSE's increase or decrease? Why Increase or decrease?

- Increase b/c no of unemployment increase and No of population of the city increase as well as Migration of unemployment from rural to urban.

2. What are they Major contribution of the MSE In economy?

They can help to stimulate growth and form the backbone of vibrant economy.

They minimize Unemployment

They Increase revenue of the city

They Encourage creativity skill development

3. What Challenges do you encounter in deal with issue of MSEs

Challenges: Institutional/Policy/: Loan (Collateral)

Religious Impact: No Interest Loan

Personal Challenge: Fear of challenge and hard work

Challenge of Production area or place, Market Accessibility,

4. Access to digital financial inclusion

Due to collateral usage of digital financial service is not as such.

5. Risk that MSE face in digital financial service usage.

- Increase an interest rate.

- Collateral problem

6. Government program in supporting and promoting MSEs towards digital financial inclusion?

- Using Machine Leis

- Using Municipality as collateral.

- Using NGO 's to solve Problem
7. What Improvements would you like to suggest in order MSEs approach to digital financial inclusion?
 - Policy should be amended and revised
 - Financial institution should be free from any politics and they have to obey rule and regulation of the National bank.

Interview Questions for MSE Actors on Focal Group Discussion

1. What is your business? How do you operate it?
2. How do you describe your experiences working with MSEs? What are some of the challenges you face on a daily basis?
3. How do you describe the impact of government policies on your enterprise activities? Are there any specific policies that have a significant effect, either positive or negative? Are there any specific resources and supports that you feel helped you to overcome existing barriers?
4. In what ways or systems your enterprise is doing its financial service activities?
5. How do you access to financial services, such as loan or other transaction services, for your enterprise? Are there any challenges or limitations in accessing these services?
6. How about the digital financial services, would you feel comfortable regarding to the usage for your enterprise?
7. Is there any legal basis constraint of using digital financial service for your MSE? Please describe.
8. Is there any training or support that have given to you to improve your financial inclusion know how?

Appendix – IV Econometrics Analysis

Multinomial Logistic Regression Model

$$P_y (Y_i = j/x_i) = \frac{\exp(x' \beta_j)}{1 + \sum_{k=0}^J \exp(x' \beta_k)} \quad \text{for } j = 0, 2, \dots, J$$

or

$$Pr (y_i = j) = \frac{e^{(x' \beta_j)}}{\sum_{j=0}^J e^{(x' \beta_j)}} \quad \text{for } j = 0, 1, \dots, J$$

Given from the MNL result Constant K is -3.502 = -3.5

A. Analogue Variable

$$P_y (Y_i = j/x_i) = \frac{\exp(x' \beta_j)}{1 + \sum_{k=0}^J \exp(x' \beta_k)}$$

1. Gender, coef. = 1.064 = 1.1 $x' = G$ (Where x' is Gender)

$$P_y(EFU) = \frac{\exp(1.1x')}{1 + \sum_{k=-3.5}^J \exp(1.1x')}$$

2. Digital Usage Regularity Coef. = 1.148 = 1.2 $x' = DUR$

$$P_y(EFU) = \frac{\exp(1.2DUR)}{1 + \sum_{k=-3.5}^J \exp(1.2DUR)}$$

3. Third Party Delegation Coef. = 0.486 - 0.5 $x' = TPD$

$$P_y(EFU) = \frac{\exp(0.5TPD)}{1 + \sum_{k=-3.5}^J \exp(0.5TPD)}$$

In general: A - Analogue $EFU = RG + DUR + TPD$

$$= \frac{\exp(1.1x')}{1 + \sum_{k=-3.5}^J \exp(1.1x')} + \frac{\exp(1.2DUR)}{1 + \sum_{k=-3.5}^J \exp(1.2DUR)} + \frac{\exp(0.5TPD)}{1 + \sum_{k=-3.5}^J \exp(0.5TPD)}$$

Where EFU – Existing Financial Usage

RG – Respondent Gender

DUR – Digital Usage Regularity

TPD – Third Party Delegation

B - Digital Way constant 10.8

1. Age (A) (above 36) coef. 3.507 = 3.5

$$Py(EFU) = \frac{\exp^{(3.5A)}}{1 + \sum_{k=10.8}^J \exp^{(3.5A)}}$$

2. Gender (G)(1=Male) coef. 1.988 = 2

$$Py(EFU) = \frac{\exp^{(2G)}}{1 + \sum_{k=10.8}^J \exp^{(2G)}}$$

Here, EFU = A + G

$= \frac{\exp^{(3.5A)}}{1 + \sum_{k=10.8}^J \exp^{(3.5A)}} + \frac{\exp^{(2G)}}{1 + \sum_{k=10.8}^J \exp^{(2G)}}$

C - Both (Analogue and Digital) constant = -9.431 = -9.4

1. Text Usage Regularity (TUR) coef. -6.809 = -6.8

$$Py(EFU) = \frac{\exp^{(-6.8TUR)}}{1 + \sum_{k=-9.4}^J \exp^{(-6.8TUR)}}$$

2. Financial Usage Regularity (FUR) coef. 2.699 = 2.7

$$= \frac{\exp^{(2.7FUR)}}{1 + \sum_{k=-9.4}^J \exp^{(2.7FUR)}}$$

3. Tele Birr Usage (TBU) coef. 4.144 = 4.1

$$= \frac{\exp^{(4.1TBU)}}{1 + \sum_{k=-9.4}^J \exp^{(4.1TBU)}}$$

$1 \frac{\exp^{(2.7FUR)}}{\sum_{k=-9.4}^J \exp^{(4.1TBU)}} \quad 1 + \sum_{k=-9.4}^J \frac{\exp^{(-6.8TUR)}}{\exp^{(2.7FUR)}} \quad 1 + \sum_{k=-9.4}^J \frac{\exp^{(4.1TBU)}}{\exp^{(-6.8TUR)}}$
