ST. MARY'S UNIVERSITY

SCHOOL OF GRADUATE STUDIES

CHALLENGES IN IMPLEMENTING MOBILE WALLET SERVICE AT WEGAGEN BANK S.C.

BY: DELINA SILESHI

JUNE, 2024

ADDIS ABABA, ETHIOPIA

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A THESIS SUBMITTED TO ST. MARY'S UNIVERSITY, SCHOOL OF GRADUATE STUDIES IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTERS OF ART PROJECT MANAGMENT

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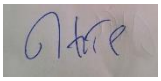
Prof. Hailemelekot  **15/07/24**

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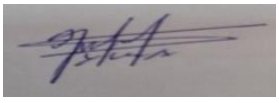
Yilikal Wasie (Asst. Prof.)  15/07/24

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Table of Contents

Acronyms

SET **……**Security of electronic transactions

NFC…… Near field communication

ATM……Automated Teller Machine

ICT……. Information and communication technology

IT……. Information Technology

RFID……Developed Radio Frequency Identification

POS……...Point of sale

QR……Quick Response

USSD……Unstructured Supplementary Service Data

OTP……...One-Time Password

MITM……Man in the middle attack

WHC……. Wegagen Hello Cash

GSMA……...Global System for Mobile communications Association

PIN……Personal Identification number

IMF……..... International monetary fund

UN……. United Nations

US……...United States

NSO……National Statistical office

NBE……National Bank of Ethiopia

HQ……...Head Quarter

SPSS……. Statistical Package for Social Science

SMS……. Short message service

SC……. Share Company

List of tables

ABSTRACT

This thesis delves into Wegagen Bank S.C.'s challenges in rolling out the Hello Cash mobile wallet service in rural Ethiopia. The objective is to understand the factors hindering the use of wegagen hello cash and to propose solutions to overcome these challenges. The methodology involves a mixed-methods approach, quantitative and qualitative approaches. The findings reveal that digital literacy levels significantly impact the acceptance and understanding of mobile wallet technologies. Higher literacy levels are associated with a better comprehension of mobile wallets' benefits and functionalities, to implement targeted educational programs to improve digital literacy, particularly in rural areas where literacy rates are lower and the study identifies technological barriers, such as limited access to smartphones and poor internet connectivity. Based on these findings, the study recommends the development and execution of educational initiatives to enhance digital literacy, including tutorials, and user guides tailored for rural users. Furthermore, mobile wallet interfaces should be designed to be intuitive and user-friendly to accommodate users with varying literacy levels. These measures aim to facilitate the implementation of wegagen hello cash mobile wallet service and promote financial inclusion in rural Ethiopia.

Key words: - Mobile Wallet, Wegagen Bank, Rural Ethiopia, Digital Literacy, Technological Barriers, Financial Inclusion, Smartphone Access

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background of the study

As technology continues to evolve, it incorporates into our lives, compelling us to participate in it on a regular basis. Various business firms are already integrating mobile devices and technology systems to make life easier and more efficient. Multiple avenues such as desktop, computer, tablet, laptop and mobile phones have affected the lives of billions of people around the globe tremendously. The number of mobile phones in use surpasses every other technical device that can be used to market, sell, produce, or deliver products and services to consumers. This has opened lucrative opportunities to both merchants and service providers (Iman, 2018).

Banks are not just part of our lives, but have a significant role in our daily lives. Banks always try to adopt latest technologies to enhance customer experience. (shettar, 2019). The banking industry was encountering a rapidly developing technological environment, where innovation was one of the most critical factors in creating a sustainable growth (Capgemini & Efma, 2016). Online banking was beneficial for customers as they can accesses service 24*7 hour, retrieve any information and make a certain number of transactions easily (Sharma, H. 2011).

As the internet and mobile devices have been increasingly prevalent, various investing and monetary payment techniques emerged. However, generally, banks have been using both traditional and digital systems through the years. Traditional banking, at its foundation, employs bank branches for the purpose of conducting all interactions with people. Customers spend energy and time standing in long queues at banks. Digital banking was established as a cutting-edge, practical, and reliable way of financial transactions without interacting in person with consumers by limiting the way they function and saving customer ‘s time that was valuable by the use of easy and speedy electronic devices. There are numerous types of digital banking available right now, including, online banking, internet banking electronic banking, and mobile wallets (Alkhowaiter, 2020).

Mobile payments are a broad umbrella term used for all kinds of smartphone-enabled payment solutions such as mobile banking, mobile wallets, NFC (near field communication) enabled payment solutions, etc. All payment solutions on a mobile device come under the purview of

mobile payments. Thus, mobile wallets can store a variety of data, such as credit card details, passport information, etc., thereby supplementing a conventional wallet (Ajimon G., 2021).

The procedures and processes of integrating digital products in banks boost the speed and accuracy of electronic activities in a society while also contributing to cost reduction, which helps increase the banking sector's productivity. These digital banking integrate into numerous facets of everyday life was a perfect illustration of how technology is transforming our society. This study seeks to evaluate the key difficulties with execution of hello cash mobile banking in Wegagen Bank S.C.

The emergence of mobile devices and sophisticated technical platforms has caused a paradigm shift in banking operations and has expedited the shift to digital solutions. In an increasingly digital environment, banking services have recognized this shift and are attempting to adapt by implementing mobile wallets to meet the evolving needs of their clients. (Kapoor 2018).

1.2 Statement of the Problem

The rapid advancement of technology has fundamentally altered the landscape of financial services, introducing digital solutions such as mobile wallets that promise greater convenience and accessibility. However, the implementation of these technologies, particularly in rural areas, presents significant challenges that hinder their adoption and effectiveness (Sapona, 2016).

Despite the growing popularity of mobile wallets globally, various barriers persist that prevent their widespread use in regions like rural Ethiopia. According to a World Bank study in 2022, while mobile wallet ownership in Ethiopia has increased from 20% in 2017 to 40% in 2022, the adoption rate remains limited due to significant challenges (World Bank, 2022). These challenges include limited access to smartphones and internet connectivity, high levels of digital illiteracy, and financial constraints.

In the current technology transformation environment, the banks battle for recruiting competent talent with conventional sector rivals as well as a new wave of competition from technology giants and start-ups (Dang, 2020). User onboarding and education, from lack of awareness, many people seem to avoid the use of digital banking service which results in low rate of onboarding customers into using mobile wallet.

One of the major barriers was the lack of digital capabilities and resources among the rural population. Many rural residents lack the necessary skills, knowledge, and tools to effectively use mobile wallet technologies. This digital illiteracy was compounded by language barriers, as many users are unable to understand the commonly used languages in mobile wallet interfaces (Sonono,2017). Moreover, the cost of smartphones was prohibitive for many low-income individuals, further restricting access to mobile wallet platforms (Beck et al., 2007).

Financial inclusion, defined as making formal financial services available, accessible, and affordable to all segments of the population, was critical for economic resilience and sustainable growth (Tiriki & Faye, 2013). However, the high cost of establishing banking infrastructure in rural areas limits financial inclusion efforts, leaving many potential users isolated from the financial system (David, 2016). The gap between registration and active usage of mobile wallets was evident at Wegagen Bank, where despite an increase in registrations; the actual usage rate remains low, leading to fewer transactions and lower revenue (Buckley, 2016).

Therefore, this study seeked to address the implementation challenges of the Hello Cash Mobile Wallet service at Wegagen Bank S.C., focusing on the barriers to adoption in rural areas, the impact of literacy levels, and strategies to enhance accessibility for illiterate users. By understanding these challenges, the study aims to propose solutions that can improve the adoption and effectiveness of mobile wallet services, contributing to financial inclusion and economic growth in Ethiopia.

1.3 Research Questions

The study seeks to address the following research questions:

a. What barriers impede the adoption of mobile wallet solutions among rural populations?
b. How do literacy levels shape the implementation and adoption of mobile wallet solutions?
c. In what ways can Wegagen Bank S.C. implement and adopt mobile wallet services to be more accessible to illiterate users in rural areas?

1.4 Objectives of the Study

1.4.1 General objective

The primary objective of this study was to evaluate the implementation challenges encountered by Wegagen Bank in deploying the Hello Cash Mobile Wallet service.

1.4.2 Specific objectives

a. Investigating barriers impede the mobile wallet solutions among rural populations when implementing Wegagen Hello Cash Mobile Wallet.

b. Analyzing how literacy levels shape the implementation and adoption of mobile wallet solutions.

c. Assessing the ways Wegagen Bank S.C. can implement and adopt mobile wallet services to be more accessible to illiterate users in rural areas.

1.5 Significance of the Study

This study's significance lies in its focused exploration of the challenges confronting the implementation of Wegagen Bank's Hello Cash Mobile Wallet in Ethiopia's rural areas. By honing in on these obstacles, the research aimed to unearth insights crucial for refining future strategies and initiatives aimed at enhancing the efficacy and accessibility of mobile banking services helping economic growth by increasing access to financial services, making transactions easier and quicker, and boosting financial system performance.

By dissecting the specific hurdles faced by rural populations, the study offers a nuanced understanding that can inform tailored solutions addressing issues such as digital literacy, infrastructure constraints, and cultural considerations.

1.6 Scope of the Study

This research examines the issues faced in implementing Wegagen Bank's Hello Cash Mobile Wallet in Ethiopia, with a particular emphasis on rural areas. The study was concentrated on agents and the main headquarters of Wegagen Bank situated in Addis Ababa. The choice of Addis Ababa was strategic, as it allowed access to critical information from the Hello Cash department, which is based at the bank's HQ main office. The study utilizes data exclusively provided by Wegagen Bank.

1.7 Limitation of the Study

There was a chance that the scope of this study on Wegagen Bank S.C.'s implementation of mobile wallet services were limited because of demographic and geographic restrictions. Because of the study's emphasis on rural locations, the researcher might not have adequately captured the variety of experiences and difficulties that users in metropolitan or semi-urban settings confront. Lastly, the capacity to offer a thorough examination of the implementation issues may be hampered by restricted access to Wegagen Bank S.C.'s internal reports and full financial data.

1.8 Organization of the Study

The study report was organized into five chapters. Chapter Two furnishes a comprehensive review of pertinent literature, offering insights into the broader landscape of mobile wallet adoption and implementation challenges within the banking sector. Chapter Three delineates the research methodology employed in this study, elucidating the approach utilized to gather data and analyze identified challenges. Chapter Four presents the study's findings, expounding upon the obstacles Wegagen Bank S.C. encountered in implementing its mobile wallet service. Finally, Chapter Five concludes the study by synthesizing key findings, discussing their implications, and proffering recommendations for ameliorating identified challenges and enhancing the implementation of mobile wallet services at Wegagen Bank S.C.

CHAPTER 2

2.0 REVIEW OF RELATED LITERATURE

2.1 Introduction

This chapter provides an in-depth exploration of both theoretical and empirical aspects relevant to the study. The theoretical framework encompasses definitions, channels, risks, and the development of mobile banking in Ethiopia. Moreover, it integrates empirical findings from research conducted in various countries, offering a comprehensive understanding of the subject matter.

2.2 Theoretical review

2.2.1 Definition of Mobile Wallet

Mobile wallet or mobile payment is formally defined as the use mobile devices to initiate, authorize and confirm the exchange of financial value in trade for any payment for goods and services (Pan et al., 2018).

Mobile wallet technology continues to spread across the globe, with mobile wallets and digital currency poised to overtake debit and credit cards (Reuters, 2018). Mobile wallets can promote and encourage the provision of payment services, especially person-to-person transfers, but also government-to-person transfers, online and offline purchases of goods and services (i.e., persontobusiness transfers), and the payment of bills and fees (Bezhovski, 2016).

A mobile wallet can be stored on a secure chip in a mobile phone, as in the case of NFC mobile contactless payments, or on remotely located servers, also known as the ―cloud. In a cloud based digital wallet, a consumer can access his payment credentials in a number of ways, including via an app on the phone, a phone number and PIN, or a physical card (Aaron ,2012).

A mobile wallet is a ground-breaking payment option accessible in mobile applications that could potentially and effectively displace physical wallet. A mobile wallet is a much-advanced versatile application that includes elements of mobile transactions, as well as other items that one may find

in a wallet, such as membership cards, loyalty cards, and travel cards, while also storing personal and sensitive information such as passports, credit card information, PIN codes, online shopping accounts, booking details, and insurance policies that can be encrypted or password-protected (Shin, 2009).

Dharmendra (2018) explains mobile wallet as a virtual wallet in your smartphone, in which your virtual money is stored to make money transactions and payments. It has the combination of software and hardware on certain devices so it can replace the use of traditional credit/debit cards with mobile phones via information added to your mobile wallet. You can pay money using Smartphone apps, text messages, social media or websites.

Poonam et al. (2016) in their research paper ―Mobile Wallet: An upcoming mode of business transaction‖ determined that ease of transaction, secured profile, and convenience in handling application put forth the benefits of wallet money and concluded that business sectors such as banking, food and beverage, retail, and so on, are making use of wallet money and mobile payment instruments such as contactless and remote payment in the customers-business and customers-customers areas.

Mobile wallets are one of the most recent inventions with the potential to transform the way customers make purchases and improve what they purchase. The mobile wallet, one of the recent innovations, is an application on a mobile device allowing individuals to store and use payment and loyalty cards, pay their bills, make peer-to-peer-payments, issue cheques, store e-receipts, and use coupons directly from the application (Kumar et al. 2017).

While mobile payments at the point of sale are still not widely available, a number of programs and initiatives are providing consumers the opportunity to make payments with their mobile phones and digital wallets. These services help consumers build awareness and experience in using mobile phones to make payments in stores, provide valuable feedback to the providers and should eventually boost adoption when open mobile wallets become more readily available (Elisa.T, 2012).

2.2.2 Defining mobile wallet in context of digital wallet and digital banking

Understanding mobile wallets within the broader framework of digital wallets and digital banking is critical. It provides a comprehensive view of how these technologies interrelate and their roles in the financial ecosystem. By defining the terms and their interconnections, the dissertation can focus on specific challenges, benefits, and implications of mobile wallet adoption, particularly in the context of digital financial services.

According to International Journal of Recent Technology and Engineering (2019), Digital wallet is used to load money from users 'accounts. It is required for purchase of goods and online shopping.

According to Ritika et al. (2020), Now-a-days after the demonetization happened, wallets are taking pace, means it is the one which holds cards and cash in it. Digital wallets helped in most of the different needs that is from purchasing a candy or to transfer money from one account to another with the help of digital wallets one can save lot of time that is if a person needs cash so for that he or she needs to stand in a long queues of bank or say ATM but with the help of digital wallets it can be done in a few seconds that is by tapping on a wallet app with the help of mobile application and the payment is made.

Digital banking refers to employing technology to conduct banking transactions, including online banking, electronic banking, and mobile banking. Contrary to traditional banking, digital banks aim at developing adaptable digital products and services to meet the needs of digital customers. (Sardana et al., 2018).

Digital banking refers to the use of technology to conduct banking transactions smoothly. It includes commonly used terms such as electronic banking, internet banking, and online banking. (Wassan Abdullah, 2020).

It is essential to recognize that although all mobile wallets are digital wallets, not all electronic wallets are mobile wallets. In terms of terminology, mobile wallet is a branch of digital wallets.

2.2.3 Evolution of Mobile Wallet

The evolution of information technology is changing the future of banking services, marketing and business tactics (Beza, 2010). People all across the world prefer a simpler and more rapid means for transmitting payments via both to and from one another, and this swiftly growing information and communication technology (ICT) system provides exactly. As a result, we can undoubtedly state that ICT assists in effective and successful electronic cash transactions, in addition to enabling providers of mobile networks in expanding their services in accordance with each country's regulations and objectives.

The 25 years history of m-payment began with the first payment transaction using a mobile device in 1997 in Finland, Coca Cola experimented with vending machines that accepted SMS payments (Dahlberg et al., 2015). The origins of mobile payment can be traced back to 1997 when Coca Cola served cokes that can be purchased via text messages, to their consumers in Helsinki through vending machines. Coca Cola set up a vending machine so that people could send a text message to select and purchase their drink. Exxon Mobile at that time developed Radio Frequency Identification, also known as RFID, as a keychain that allows prompt payment at the pump making it the first wireless payment method at the point in time.

The volume of digital transaction has witnessed exponential growth in volume and value whether it is digital wallet, interbank transfer or transaction by debit or credit card. At merchant places the number of card transaction at point of sale (POS) terminal have witnessed a huge serge which reflects that people have started making payment by debit card instead of withdrawing cash from ATM to make payment (Dezan.S, 2017).

2.2.4 Types of Mobile Wallets

According to Guo (2016), digital wallets are categorized into five types as follows:

2.2.4.1 Open Wallets

Open wallets are able to be widely utilized to purchase goods and services and carry out additional financial transactions including transferring money and cash withdrawals. An open wallet is used by a bank or a third party. Open wallets enable clients to make use of this cashes in cell phone wallets to pay for transactions or withdraw cash from the accounts they have opened. PayPal,

Apple Pay, Google Pay, Venmo, and other third-party electronic money wallets are examples of open mobile wallets, which allow users to pay for in-store and online transactions while also withdrawing funds in cash. Open wallets are the most versatile sort of wallet, allowing users to move payments or withdraw cash from their account at ATMs.

2.2.4.2 Semi-open Wallets

They can be used to buy items and services at merchants‘ POS, but unable to allow consumers to withdraw cash. This occurs when merchants have contract with certain company in which withdrawal of cash is not possible or can get it back but you can spend the money what you have loaded.

2.2.4.3 Closed Wallets

A closed wallet is a software program designed only for usage with one brand or retailer. Customers can use closed wallets issued by private firms or merchants to make direct purchases from the issuing entity. For example, Walmart Pay and Amazon Pay are solely designed to facilitate purchases from a single provider. A closed wallet does not allow cash withdrawal or reimbursement. Users cannot utilize the funds to pay for purchases with other merchants or third-party service providers. Closed wallets include gift cards, and store-specific wallets.

2.2.4.4 Semi-closed Wallets

Semi-closed wallets can be used to purchase items and services and conduct financial transactions at a limited number of merchants or venues. It enables users to utilize the funds in their wallet to pay for transactions with various merchants, as long as a contract exists between the retailer and the mobile wallet provider. Semi-closed wallets refer to venues that have signed arrangements with an issuer to take these payment instruments. This type of wallet allows users to withdraw monies into their bank accounts. However, semi-closed wallets do not allow users to withdraw money in cash. Users can send payments to others over the same payment site. Semiclosed wallets include Stripe, Square, and Paytm (pay through mobile).

2.2.5 Mobile Payment Technology

According to the existing studies on mobile payment, mobile payment‘s fast, convenient, and useful services are the main factors contributing to the wide acceptance of the technology (Singh, 2020).

Payment through a mobile application is also known as mobile payment. Here is the type of mobile payment based on technology according to (Stiphout, 2017):

1. Proximity Payments also called Contactless Payments or Close Payments. We can use Near Field Communications (NFC) technology and QR Codes (Quick Response Code). NFC needs the contactless reader to communication between devices. QR Code does not require a reader but needs a smartphone camera to scan the QR Code for communicating between devices;

2. Remote Payments, also known as Distant Payments, for example, SMS Banking and USSD (Unstructured Supplementary Service Data). The SMS format sent, and the USSD instruction (e.g., * 141 * 28 #) from the smartphone will be processed on the server

There are various technologies and applications that enable consumers to pay with their mobile phone that provide secure and efficient multi-factor authentication (Chandra et al., 2010) here are most common used ones:

2.2.5.1 QR payment

Most popular mobile payment method among all kinds of mobile payment methods is QR payment (Quick Respond). The corresponding code is generated wirelessly and is used to make payments. Initially, the use of QR code scanning was used mainly concerned South Korea and Japan (Vazquez et al., 2012). Moreover, the use of QR-codes has increased enormously in other Asian markets, such as China (Ye et al., 2021), and India (Pal et al., 2021). QR code was initially created by a Japanese firm named Denso Wave in 1994 to enhance auto-tracking. But it eventually became a popular tool for the retail industry to lighten the burden of cashiers by encoding the information on prices of goods into these codes (Sang, 2013). A significant benefit of payment via QR code is the ability to decrease transaction costs, in terms of time and money. Through the use of mobile payment, the customer receives possession of a mobile device with an integrated camera, which eliminates the need for cash exchange and may be completed in just a few moments. When

compared to usual cash payments, QR codes provide an additional interactive experience and quicker assistance.

When a customer scans a QR code at the cash register, an authorization is given to the retailer to draw the amount from the customer‘s bank account; customers are not charged fees by the financial institution for these transactions (Boden, 2015). A QR code is a two-dimensional, matrix populated, square-shaped, and machine-readable optical label used to store information about the item based on their allocation capacity (Shaik, 2021).

The QR code is rapidly being adopted in mobile payments because of its speed in terms of decoding, convenience, ease of use, security and privacy, cost-effectiveness, traceability, ample data storage, robustness against damages/error correction capability, flexibility, easy readability, the fact that it is easy to generate and manage, its user-friendly nature, its versatility, and its accuracy. (Kosim,, N, 2021).

2.2.5.2 Personal Identification Number (PIN)

A PIN in mobile money is a numeric password that can authenticate subscribers in an electronic transaction. Is common method of authentication and access control. The PINs used in mobile money authentications are often four or five digits (Ali, G.; Dida, M.A.; Sam, A.E., 2020). The PIN value as a method of verification depends entirely on its confidentiality from the time it gets generated until it is entered into the system for use. Many systems and applications adopt the PIN-entry method due to its convenience, efficiency, reliability, better dependability, and customer satisfaction in mobile transactions (Binbeshr et al. 2021). Using PIN alone for authentication is risky and vulnerable to shoulder-surfing attacks, replay attacks, PIN leakage, guessing attacks, eavesdropping, phishing attacks, spoofing, MITM attacks, and malware attacks (AbouSteit et al., 2020).

2.2.5.3 Fingerprint scanning

Fingerprint scanning also known as biometric authentication is a biometric technology in mobile phones only recently started to gain popularity among smartphone producers (Goode, 2014). In case of forgotten fingerprint, it can retrieve its access by using an alternative authentication method such as PIN or password. This is mainly thanks to Apple, who made fingerprint scan available to all of their customers by installing their Touch ID technology in mobile devices. Fingerprint technology is widely used because of its convenience, higher security, better efficiency, stability,

higher system reliability, distinctiveness, greater robustness, better anticounterfeiting performance, ease of use, the small size of fingerprint templates, and its small amount of power consumption. (Faridah, Y.et al., 2016) (Fingerprints.BiometricTechnologies 2021). Fingerprint recognition is commonly used for authentication on computerized systems. (Sharma, 2018)

2.2.5.4 One-Time Password (OTP)

A One-Time Password is a dynamic password that is effective only for a short period and valid for only one login session Locker security system using facial recognition (Anusha, 2017). OTP can be time-based, pattern-based, and random key-based and is delivered via SMS, OTP application, RSA token, and e-mail (AbouSteit, et al, 2020). This mechanism is a powerful form of authentication and offers more effective security to corporate networks, online applications, and other systems that contain sensitive data. This can prevent identity theft by making sure passwords cannot be used a second time. (Chang, 2014). The principle of OTP is to share a seed between a generator and a verifier where both can produce the same password. The generator is responsible for generating an appropriate OTP from the shared seed. The verifier is responsible for validating the OTP and storing the last valid OTP received and the current one. SMS-based OTP is among the most often used in multi-factor authentication for many different applications since it is affordable, rapid, effective, reliable, and handy. Using OTP aims to prevent fraudulent attacks such as phishing attacks, shoulder-surfing attacks, replay attacks, eavesdropping, spoofing attacks, brute-force attacks, MITM attacks, and identity theft and is also resilient to reverse engineering (Zadeh, 2019).(Iftikhar et.al, 2019).

2.2.6 Model Elements on adopting mobile wallet

Payment through e-wallet is considered as one of the most prominent transaction methods at present because an electronic transaction using a digital wallet has the advantage of ease, flexibility and protection (Uddin, et al., 2014). The cellular-based payment system is widely being used for transactions and payments are being done through using mobile applications because consumer considers this method to be beneficial (Gokilavani et al., 2018). According to Firehiwot and Lemma (2022) with the help of study adopted a research model by ÖRS (2018) have describe some of the model elements of wallets such as

2.2.6.1 Ease of Use

Ease of use is defined as the degree to which a person believes that using a particular system would be free from the difficulty that is, utilizing a specific technology (like mobile payment) would be free of physical and mental exertion (Davis, 1989; Abrahão et al., 2016).

2.2.6.2 Usefulness

Usefulness is ―the degree to which a person believes that using a particular system would enhance his or her job performance‖ (Davis, 1989). Perceived usefulness explains the user's recognition that the interactive mobile payment adoption will enhance their task performance in the purchase of goods and mobile cash (Cudjoe et al., 2015).

2.2.6.3 Relative Advantage

Relative advantage is to express to what extent the new technology or product is perceived as better than the existing product. In relative advantage, there are a number of sub-dimensions like the degree of economic profitability, low initial cost, a decrease in discomfort, savings in time and effort, and the immediacy of the reward (Dahlberg et al., 2015; Albuquerque et al., 2016).

2.2.6.4 Compatibility

Compatibility indicates the degree in which the technology service is perceived as consistent with socio-cultural values and beliefs; with the previous and present ideas; and with client needs of innovation (Rogers, 1995). Using mobile payment systems only require understanding operation procedures and application areas, and it does not change users‘ behavior with payment activities (Cudjoe, et al., 2015).

2.2.6.5 Trust

Due to the inherent nature of mobile payments, trust is believed to influence directly or indirectly the intention of adoption and acceptance of mobile payments because mobile services are exposed to various uncertainties and uncontrollable consequences (Aithal, 2016; Sarder, 2016). Loss and theft of mobile devices result in identity theft inconveniences such as frustration and unavailability of mobile payment services caused by network failure, and data pilfering attacks, to name just a few examples (Mallat & Kristiina, 2005).

2.2.6.6 Risk

Perceived risk in consumer adoption intention of financial technology has three important dimensions security, privacy, and monetary. Perceived financial risk refers to users‘ perception about the possible monetary loss caused by the usage of mobile payment (Featherman & Pavlou, 2003; Abrahão et al., 2016). The transfer of money between accounts in mobile payment may raise great concern about financial information, such as accounts and passwords being stolen and the subsequent risk of losing money.

2.2.6.7 Attitude

Attitude is defined as an individual ‘s positive or negative evaluation of new technology adoption of acceptance. Attitude toward adoption is hypothesized in different beliefs perceived ease of use, perceived usefulness, relative advantage, and compatibility. Attitudes are described as the sum of beliefs attributed to a particular behavior (Aithal, 2016; Nag, 2018).

2.2.6.8 Cost

Within the context of mobile payment technologies, the cost could be defined as the amount of money that has to be spent on the usage of mobile payment technologies and/or required tools to acquire related technology (Aithal, 2016; ÖRS, 2018).

2.3 Empirical study

The researcher tried to review related researches works pertaining to the topic in order to demonstrate through understanding of the research topic. Based on the objectives and main findings of each research works under consideration, the review tries to make a link between the theoretical and empirical reviews in light of the underlying themes towards the provision of mobile wallet and services.

Andrew (2024) ―Challenges in the Adoption of Mobile Money Services by Mobile Phone Users in Lusaka, Zambia.‖ The study discusses if some issues such as lack of understanding, perceived risk, and a preference for traditional banking methods challenges in adoption of mobile money service and if it affects mobile users. The study argues that major deterrents like cultural factors, such as religious beliefs, play a minimal role in adoption decisions. Demographic factors, including age, education level, and income, exhibit a complex interplay with adoption rates within Lusaka, Zambia. The study goes on to explore how Limited accessibility, a lack of knowledge and trust, age, gender, income, and other socioeconomic factors, as well as occupation, may all be

obstacles for them to implement and adopt mobile services such as mobile wallet and how that‘s a major problem.

The lack of use of mobile money services hinders the development of Lusaka's digital economy as well as the efficiency and convenience of financial transactions offer suggestions for enhancing the usability and uptake of mobile money services in Lusaka. A detailed examination was made of multiple cultural determinants to discern their potential influence on individuals' adoption and use of mobile money services. The finding from respondents shows that an average of 49.1% of the participants felt that the cultural aspects presented had either negligible or no bearing on their engagement with mobile money services. The study findings illuminated that while mobile money services have significant potential, there exist tangible barriers in its adoption. Finally cultural dynamics, like technological discomfort and a history with cash transactions played a crucial role in the reticence toward mobile money adoption. Concurrently, trust and security concerns, coupled with varying levels of accessibility, largely influenced user confidence and satisfaction.

A research made by Tavilla (2012) titled ―Opportunities and Challenges to Broad Acceptance of Mobile Payments in the United States‖ made a study on the contrary shows that as more banks offer mobile banking services, a growing number of customers are taking advantage of and becoming more familiar and comfortable with these services and adept at conducting financial transactions via mobile phones. The study has found that satisfied mobile banking customers are more aware of mobile payments and more willing to use this payment method. Smartphone barrier turns out to be a lower hurdle than it was just a few years ago. While the results vary, industry research clearly indicates that mobile phone owners are aware of and interested in mobile contactless payments, with greater interest among smartphone owners. Industry forecasts representing a variety of consumer surveys in the U.S. have shown fairly consistent results, indicating major growth in smartphone adoption and an anticipated increase in the use of NFC enabled mobile phones. Pew Research reports that smartphone ownership in the United States is at approximately 46 percent and growing, while feature phone ownership is at about 41 percent. This indicates that smartphone owners are more prevalent within the overall population than owners of more basic mobile phones. The study concludes collaborative industry efforts to develop adequate education and effective security tools can assure them that mobile payments are a safe way to pay. Together, all these factors would help significantly augment mobile payments acceptance in the U.S.

Shashi (2023) made a paper titled ―Challenges in Digital Payment Adoption in India‖. The study delves to reasons or challenges due to which people hesitate to adopt digital payments. It explains various reasons to which the rate of adoption of digital payment is low. These reasons are – low digital literacy in India, especially in rural India. Lacks of proper infrastructure like the supply of electricity in remotest area, poor connectivity, and low quality of internet are few of them. According to a Nielsen survey, there are 352 million internet users in rural India, which is 20% more than there are in urban India.

However, the report noted that due to a lack of digital literacy, roughly 60% of rural Indians are not actively utilizing the Internet. According to the survey, connectivity issues are to blame for the low adoption rate because many rural areas in India lack the necessary internet speed. Lack of understanding also plays a role. Many decisionmakers in rural areas do not understand the importance of digital literacy or how to support it. This can lead to a lack of investment in digital literacy programs and initiatives. Language obstacles also exist because English is the primary language used for digital communication but indigenous languages are spoken and understood in rural areas of India. Additionally, the majority of residents of rural areas do not grasp the language used on digital platforms and for technology. For digital illiteracy more information and awareness about digital payments are required. Some individuals might not understand how to use digital payment platforms or may not be aware of the advantages of doing so. Only 14.7% of India‘s population in computer literate and 20% of population use internet. According to NSO 2020 survey.

According to a 2018 estimate by the ―Digital Empowerment Foundation‖, around 90% of Indians are digitally illiterate. India is facing a digital revolution that could progress our country's economic success and growth, but we also run the risk of creating a new class of "digitally-poor" citizens. The inability to use and benefit from information and communications technology services due to access or lack of skills is known as digital poverty, a relatively recent notion. From the analysis and reviews of research papers, articles, news, etc. certain reasons came out which are posing challenges in digital payment adoption.

A few of these reasons are – low digital literacy in India, especially in rural India. Lack of proper infrastructure like the supply of electricity in remotest area, poor connectivity, low quality of internet. Language problems because most of the communications are done in the English

language. Online fraud, cyber-crime, lack of willingness to digital payment adoption due to the proper maintenance of records of transactions, and fear of tax liabilities. Lack of stringent laws for disputes in digital payments etc. these factors in combination works are barriers to digital payment adoption in India.

Lovisa A (2016) ―Challenges of introducing and implementing mobile payments‖ , made a study that focuses on Swedish mobile payment application Wy Wallet where Citizens of Sweden facing a large shift in their habits of managing money transferring using mobile phones. They are now forced to use an application called Wy Wallet when making purchases with cell-phones. By having a customer focus the aim is to reach an understanding of the factors or situations that might have been affecting people's thoughts concerning the implementation of Wy Wallet in our society, and thereby contribute to existing research made within the acceptance and adoption of mobile payment methods.

Five factors that are proven to be determinants for an innovation to be adopted and they are Relative advantage – how improved the innovation gets over time,

Compatibility – the level to which the innovation is matched to an individual's life style, Complexity – how easy or difficult the innovation is perceived to be, Trialability on how easy the innovation is to be experimented with by the user, Observability on how visible the innovation is to others.

The collected data revealed that all participants thought the application were too time consuming and complicated. They were also talking about the possibility that not everyone have access to wireless networks at all times and that would make the application operate even more slowly than it already does. Some of the participants had not heard about the application before and therefor were very surprised to hear that this is the service through which all mobile payment is forced to go through. To summarize it seems like Wy Wallet has not been getting a good response in terms of trust from the participants and interviewees. The whole process is seen as inconvenient and complicated and since the respondents prefer to use the traditional way more that mobile wallet.

The study concludes by explaining that one of the issues concerning mobile payment methods is that we, in the society we are living in, have people that are not accustomed with cell phones. This will probably not be a problem within a near future when all citizens belong to a generation that

has grown up with cell phones and its different features and qualities. What needs to be done is to make mobile payment methods as one of the standardized methods for transferring money.

Duncombe and Boateng (2009) provide a comprehensive review of the role of mobile phones in financial services within developing countries, exploring concepts, methodologies, issues, evidence, and future research directions. Their study highlights the transformative potential of mobile technology in enhancing financial inclusion and economic development, particularly in regions with limited traditional banking infrastructure. They outline a conceptual framework demonstrating how mobile technology can bridge the gap between formal financial institutions and underserved populations.

The authors discuss various mobile financial services, including mobile banking, mobile payments, and mobile money transfers, emphasizing their significance in the context of developing countries. Their analysis underscores the importance of mobile phones in facilitating access to financial services, thus promoting economic growth and development. In their study, Duncombe and Boateng (2009) adopt a systematic review approach to analyze the role of mobile phones in providing financial services in developing countries. They collect and synthesize data from a wide range of secondary sources, including academic journals, industry reports, case studies, and policy documents. This comprehensive literature review allows them to identify key themes, trends, and gaps in the existing research.

The researcher use qualitative analysis to evaluate the effectiveness and impact of mobile financial services. They examine various case studies from different developing countries to illustrate how mobile phones are being used to enhance financial inclusion. These case studies provide concrete examples and evidence of the benefits and challenges associated with mobile financial services. Additionally, they consider methodological approaches used in the existing literature, discussing the strengths and limitations of different research designs, data collection techniques, and analytical methods.

Through this rigorous review process, Duncombe and Boateng compile a substantial body of evidence that highlights the potential of mobile financial services to improve access to financial resources and foster economic development in developing countries. They also identify areas where further research is needed, proposing future research directions to address existing knowledge gaps and to explore new dimensions of mobile financial services.

A study by Bemenet Asmare, conducted in 2018, explores the implementation challenges of mobile and agent banking, specifically focusing on Lion International Bank S.C. in Ethiopia. The research begins with a comprehensive review of related literature, defining key concepts such as mobile banking, agent banking, and the various models used globally. Asmare identifies three main models: the Bank-Led Model, the Telco-Led Model, and the Mixed Model, highlighting the regulatory framework established by the National Bank of Ethiopia (NBE) that mandates only licensed financial institutions can offer mobile banking services. This regulatory context sets the stage for understanding the operational environment in which Lion International Bank operates.

Significant findings from Bennet's research point to a number of important obstacles to the acceptance of agent and mobile banking. These include difficulties with technology, problems with regulations, and insufficient training for bank employees and agents. According to the survey, one of the main obstacles is the unreliability of the telecommunications infrastructure and network outages. Poor ICT infrastructure, for instance, has been identified by 65% of respondents as a major obstacle. Moreover, bank staff frequently does not completely comprehend or follow existing regulatory frameworks, which results in operational inefficiencies. Uncertain standards of regulation were identified as a challenge by almost 58% of respondents. Furthermore, the study indicates that a large number of staff members and representatives lack adequate training, impeding the efficient implementation and application of mobile banking technology. Specifically, 70% of those surveyed said that more extensive training initiatives were necessary.

The researcher concludes the study by emphasizing the need for a multifaceted approach to address these challenges. The recommendations suggest that improving technological infrastructure and ensuring reliable network services are crucial steps. Moreover, enhancing regulatory compliance through continuous training and education of bank staff and agents can foster better implementation practices. The study also underscores the importance of stakeholder collaboration to streamline operations and ensure a consistent customer experience. These recommendations aim to not only overcome the current obstacles but also to pave the way for more robust and inclusive financial services in Ethiopia, ultimately contributing to greater financial inclusion. The data gathered and analyzed in this research illustrate the critical areas needing attention, with significant percentages of respondents pointing out the key issues, thereby providing a clear direction for potential improvements

2.3.1 Challenges in Implementation of Mobile Wallets

In today ‘s era, smart phones are not limited to use only for calls and SMS but we can use it for transaction of payments also which is called as mobile wallet, it is being adopted in many countries. Many banks are using this. But still there is lack of awareness and how to use it properly (Sinha, 2016).

Even though mobile money usage is growing faster in Africa compared to other regions in the world (Global System for Mobile communications Association (GSMA), Citation 2019), low adoption persists across the continent (Kikulwe et al., 2014).

In this study, barriers to mobile wallet adoption, literacy levels in implementation and mobile wallet accessibility are pointed to be examined and assessed in context of Ethiopia.

2.3.2 Barriers to Mobile Adoption in Ethiopia

Lack of Smartphones

The role of agriculture in the economies of sub-Saharan African countries cannot be overemphasized. With agriculture accounting for about 65% of the region's employment and 75% of its domestic trade, significant progress in reducing hunger and poverty across the region depends on the development and transformation of the sector (World Bank, 2014). Many potential users, especially in rural and low-income areas, do not own smartphones that are capable of running mobile wallet applications. In Ethiopia, a significant portion of the population does not own smartphones due to economic constraints. Feature phones, which lack the capabilities needed for most mobile wallet applications, are more prevalent.

Connectivity Issues

Poor or unreliable internet and mobile network coverage in rural areas hampers the usability of mobile wallets, which often rely on a stable internet connection for transactions. Many rural areas in Ethiopia suffer from poor or unreliable internet and mobile network coverage. The infrastructure for consistent and high-speed connectivity is often lacking.

Without reliable connectivity, users may experience frequent interruptions or failures when attempting to use mobile wallet services. This can lead to frustration, decreased trust in the technology, and ultimately lower adoption rates. Service providers must find ways to ensure that

their solutions work effectively even with limited connectivity, which can require additional technical development and resources (Davis, 2021).

Financial Inclusion

Many individuals in rural and underserved communities lack access to formal banking services, which are often prerequisites for using mobile wallets. Ethiopia has a high rate of unbanked individuals, especially in rural areas. Many people lack access to traditional banking services, which are often necessary to fully utilize mobile wallet functionalities (Lyons, 2021).

2.3.3 Impact of Literacy Levels on Mobile Wallet Adoption in Rural Ethiopia

Low literacy levels significantly hinder the adoption of mobile wallet applications, as users with limited digital skills struggle to understand and utilize these technologies. This creates resistance and slows the spread of mobile wallets, requiring substantial investment in training and education, which is resource-intensive. Additionally, mobile wallet apps often lack user friendliness for low-literacy individuals, leading to frustration and abandonment of the services. Language barriers further exacerbate these issues when the app's primary language does not match the user's first language (Davis, 2019).

2.3.4 Challenges of Mobile Wallet Accessibility in Ethiopia

A significant portion of the Ethiopian population, particularly in rural areas, has low digital literacy, hindering their ability to understand and use mobile wallet technologies. This lack of knowledge leads many potential users to avoid these services, limiting their adoption and effectiveness. Additionally, inadequate technological infrastructure, such as limited internet connectivity and poor mobile network coverage, exacerbates the issue. Poor infrastructure disrupts the smooth operation of mobile wallets, causing frustration among users and discouraging widespread adoption (Smith, 2020; Johnson & Lee, 2021).

2.3.5 Knowledge Gap

While previous studies have extensively explored the benefits and challenges of mobile wallet adoption globally, there is a significant knowledge gap regarding the specific barriers and facilitators of mobile wallet implementation in rural Ethiopia. Existing literature primarily focuses on urban settings or more developed regions, leaving a critical gap in understanding the unique socio-economic, infrastructural, and cultural factors that influence mobile wallet adoption in rural

Ethiopian contexts. Additionally, there is limited research on the effectiveness of targeted educational programs and infrastructure improvements tailored to these rural areas. This gap underscores the need for comprehensive, localized studies that address the distinctive challenges faced by rural populations, thereby providing actionable insights for financial institutions like Wegagen Bank S.C. to enhance digital financial inclusion.

CHAPTER THREE

3.0 Research Methodology

3.1 Introduction

By systematically exploring the methodological framework, this chapter lays the groundwork for the subsequent analysis and discussion of results, ultimately aiming to propose actionable solutions to improve mobile wallet adoption in rural Ethiopia. The chapter begins by detailing the research design and approach, followed by a description of the study area and population. It then elaborates on the data collection methods, including the selection of participants, the development of survey instruments, and the procedures for conducting interviews and focus groups. The chapter also discusses the data analysis techniques used to interpret the collected data.

3.2 Research Approach and Design

Research approach used for this research is quantitative research approach. The process of estimating numbers in quantitative research provides the fundamental link between empirical observation and mathematical expression of quantitative relations. In quantitative research data is typically selected and analyzed in a numerical form. Basic characteristics of quantitative research approaches related to specific research objectives are among others: (a) the association of research with experiments, (b) the investigation of phenomena; (c) the use of advanced tools of statistics, (d) the use of questionnaires (usually with closed questions), (e) the quantification of relations and features and (f) the collection, procession and presentation of quantitative data. (Singh, 2006; Goertz & Mahoney, 2012). The researcher used a descriptive research design for this dissertation to systematically identify and describe the barriers hindering the adoption of the Hello Cash mobile wallet service in rural Ethiopia. By employing quantitative methods, including the distribution of 98 questionnaires and the analysis of both primary and secondary data, the study aimed to provide a detailed understanding of factors such as limited smartphone access, poor internet connectivity, and user-unfriendly interfaces. Thus, a survey technique is chosen for data collection because survey technique helps to gather relevant data from sample of respondents by using of questionnaire and interview.

3.3 Population of the Study

The study focuses on employees working at Wegagen Bank. The target population consists of specific individuals from who are directly and somewhat directly working and informed in digital banking. The subgroups within this target population were chosen because of their active involvement in implementing WHC across different regions in Ethiopia, including rural areas, making them well-informed about the adoption and deployment of the mobile wallet in various locations.

3.3.1 Sample Design

The sample design for this study involves a stratified random sampling approach to ensure diverse and representative data collection. Participants will be selected from various branches and agent locations of Wegagen Bank. This will include randomly chosen branch staff, agents, and headquarters personnel to provide comprehensive insights into the challenges of the WHC mobile wallet service. The sampling period will cover data from the initial pilot launch in January 2017 up to paper collect data period May 2024. This design was expected to capture a wide range of perspectives and experiences, contributing to a thorough understanding the challenges of the implementation process.

3.3.2 Sample Frame

The sample frame for this study encompasses all branches and agent locations of Wegagen Bank in Ethiopia, Addis Ababa including branch staff, agents, and headquarters personnel involved in Hello Cash mobile wallet service implementation. Additionally, individuals who have interacted with WHC during the period from the pilot launch in January 2017 to May 2024 will be considered. This inclusive approach ensures representation from HQ staffs, offering valuable insights into the challenges and successes of mobile wallet implementation at Wegagen Bank.

3.3.3 Sample Size

The sample size for this study will be determined based on the saturation principle, aiming to achieve both data sufficiency and diversity. Despite initially considering the target population of 186 HQ staff and agents, the target population was used to ensure feasibility, efficiency, and data quality. This approach optimizes resources, enhances data collection efforts, and ultimately facilitates the generation of more focused and actionable findings.

3.3.4 Sampling Technique

Sampling was concerned with the selection of a subset of individuals from within a defined population to estimate characteristics of the entire population a sample was a ―subgroup of a population‖. It could be a group of people, objects, or items that are taken from a larger population for measurement.

A probability sample, which relies on random selection, would not guarantee that all selected participants have the necessary involvement or knowledge about the mobile banking service. This could lead to a less focused and less informative data set, as some respondents might not provide relevant information.

The study population divided into a HQ staffs and agents manly and branch out to sub-subgroups in order to reach the target population correspondingly. To obtain the desired sample size, the researcher employed basic random sampling. This strategy assists the researcher in collecting relevant samples for the study while eliminating distortion. The sample to the selected group was determined proportionately, as shown in Table below.

Table 1 ***Population and sample size of the respondent***

Job categories	Department	Population	Potential Respondants
IT support and administrative Staff	IT support system	22	11.7
	Administrative personnel	64	34.2
Digital Banking Staff	Rural agents	18	9.6
	Mobile money agents	25	13.3
	Mobile banking specialists	18	9.6
	Urban agents	25	13.3
Development infrastructure Staff	Software developer	7	3.7
	Database administrator	8	4.2
Total		187	125

Source: Wegagen Bank S.C.

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

$$= \frac{187}{(1+187*0.05^2)}$$

$$= \frac{187}{(1+0.465)}$$

$$= \underline{\underline{125}}$$

Therefore 125 samples were selected.

3.4 Data Sources

There are different methods used to gather information, all of which fall into two categories, primary and secondary data (Douglas, 2015). As the name suggests, primary data was one which is collected for the first time by the researcher through, personal interview experiments, observations, and questionnaire, etc. while secondary data was the data already collected or produced through a review of relevant documents and official web pages. Websites, books, journal articles, internal records are included as an example.

3.4.1 Primary Data Sources

Questionnaires

A questionnaire, invented by Sir Francis Galton, was a research instrument made up of a series of questions (items) designed to elicit standardized replies from respondents. Questions might be unstructured or structured. Unstructured questions encourage respondents to react in their own words, whereas structured questions require respondents to choose an answer from a list of options. Subjects' replies to individual questions (items) on a structured questionnaire can be combined into a composite scale or index for statistical analysis. Questions should be written such that respondents can read, comprehend, and reply to them in an insightful manner. The data collection methods that are used for this study are questionnaires. The questionnaires were designed with close-ended questions. Likert scale has also been used in asking respondents to express their level of agreement using a five-point scale. Likert scale has been developed in 1932 as part of doctoral

dissertation of Rensis Likert (Likert, 1932). Participants in the survey are asked to state their level of agreement with those given statements from strongly agree to strongly disagree. The scale is defined as follows: Strongly Agree (SA) = 5; Agree (A) = 4; Neutral (N) = 3; Disagree (D) = 2; and Strongly Disagree (SD) = 1.

3.4.2 Secondary Data Sources

For researching the challenges of implementing mobile wallet services in at Wegagen Bank, secondary data sources are essential. These sources encompass academic journals and articles that examine mobile banking adoption in rural regions, especially within developing countries. Key insights can be garnered from reports and publications by international bodies such as the World Bank, International Monetary Fund (IMF), and United Nations (UN), which provide an overview of financial inclusion in Ethiopia. Industry reports from financial and technology research firms offer valuable data on mobile wallet usage trends and technological barriers. Utilizing this array of secondary data sources will ensure a thorough and nuanced understanding of the complexities in implementing mobile wallet services in rural Ethiopia. For data gathering tool shaping and for empirical review to have profound study, secondary has played sufficient role.

3.5 Data Analysis

To analyze the data collected to determine the challenges on implementing Wegagen Bank Hello Cash challenges which was obtained from the quantitative data collection inform of employee‘s questionnaire, the researcher used software called Statistical Package for Social Science (SPSS) version 20 to analyze data and interpret it for reader comprehension. SPSS is a statistical analysis system that generates charts and tables to help present findings. It serves as one of the most commonly utilized software tools for analyzing quantitative data by social science researchers.
The approaches used will be numerical.

3.6 Validity and Reliability

Reliability and validity are central to determining the utility of any examination, or questionnaire. Reliability measures the reproducibility of results with repeated trials and reflects the internal consistency of the test. Validity describes a test ‘s ability to produce results consistent with other measures of the same characteristic. Validity in research basically establishes how correctly a particular approach measures something and how closely findings are to actual values or concepts

being examined (Noble & Heale, 2019). Reliability was an indicator of the amount of variability in the testing method, while validity measures the systematic error inherent in the testing method. (David J, 1997). This ought to be the two most crucial aspects to consider while selecting or designing an instrument. The researcher's constructed a questionnaire and sought to validate it by reviewing existing research questionnaires and consulting with their research advisor.The questionnaire is meticulously designed to ensure the desired degree of reliability as well as validity is reached.

3.6.1 Instrument for Reliability Test

Reliability measurement was commonly used in questionnaire development. Cronbach 's alpha is a measure of the internal consistency or reliability between several items, measurements or ratings. In other words, it estimates how reliable are the responses of a questionnaire (or domain of a questionnaire), an instrumentation or rating evaluated by subjects which indicated the stability of the tools (Cronbach, 1951). It is integrated as and $0.7 \leq \alpha < 0.8$: acceptable internal consistency, $0.8 \leq \alpha < 0.9$: good internal consistency and 0.9 and above was excellent internal consistency. With the above information, the researcher calculated reliability scale using Cronbach's coefficient alpha for the entire set of claims, which was determined to be 0.943, indicating that the questionnaire is ranged as excellent reliability.

Table 2 ***Measurement of reliability of variables***

Variables	**Items**	**Cronbach Alpha**
Barriers to mobile wallet adoption	**4**	**0.943**
Literacy levels and implementation challenged	**3**	
Mobile wallet accessibility	**4**	
Total Items	**11**	

Source: Own research (2024)

3.7 Ethical Considerations

Respondents are fully informed about the research's goal, methodology, and planned potential applications, as well as the possible consequences of their involvement and potential risks, if any, connected. The study's goal was conveyed to respondents so that they felt safe and comfortable responding. All participants are requested to engage willingly in data collection by filling out the questionnaire and responding to the interview, with the option to withdraw at any moment. Their opinions are concealed and anonymous, and respondents' identity was safeguarded. The material will be utilized solely for academic purposes. This study will take all research ethics and legal considerations into account.

CHAPTER FOUR

4.0 RESULTS AND DISCUSSION

4.1. Introduction

This chapter presents the empirical analysis of the data collected through close ended questionnaire which was analyzed through statistical package for social science (SPSS) version 2.0. Accordingly, the chapter has two sections in which the first section contains analysis of the data collected through questionnaire while the second section deals with presenting results of the interview conducted.

4.2. Response Rate

The sample sizes as discussed in chapter 3 a total of 125 questionnaires were prepared to potential respondents to fill the structured questions. Out of the 125 potential respondents, a total of 98 questioners were collected and the remaining 29 were not returned which was approximately 23%. In the end, a total of 98 respondents filled and returned the questionnaire. The overall respondent rate for the survey was approximately 77%.

Table 3 ***Demographic data of respondent***

Variable	Categories	Frequency	Percent	Valid percentage
Gender	Male	46	46.9	46.9
	Female	52	53.0	53.0
	Total	98	100	100
Age	25-34 years	66	67.3	67.3
	35-44 years	30	30.6	30.6
	45-54 years	2	2.04	2.04
	65 and over years	-	-	-
	Total	98	100	100
Educational level	High school degree	-	-	-
	Bachelor degree	62	63.2	63.2
	Master‘s degree	34	34.6	34.6
	Doctorate	2	2.04	2.04
	Total	98	100	100

Source: Own Survey, 2024

The table illustrates demographic distribution among respondents, showing that 46 (46.9%) were male and 52 (53%) were female, indicating a higher representation of females. The age distribution reveals that the largest segment consisted of adults aged 25 to 34 years, comprising 66 respondents (67.3%), followed by those aged 35 to 44 years with 30 respondents (30.6%). Fewer respondents were in the age groups of 45 to 54 years (2.04%) and 65 years and older (0%). This suggests a predominantly young demographic involved in influential roles within the banking and mobile wallet sectors.

Regarding educational attainment, the majority of respondents held bachelor's degrees (62 respondents, (63.2%), followed by master's degrees (34 respondents, 34.6%). This indicates that the respondents possess a high level of education, enabling them to comprehend the information pertinent to the study's objectives.

4.3 Distribution of respondents' position and years of service at Wegagen Bank S.C.

Table 4 **The *responders' position, location, and length of service with the bank***

Variable	Categories	Frequency	Percent	Valid percentage
Department Role	Headquarters staff	53	54	54
	Digital banking staff	41	41.8	41.8
	Development Infrastructure staff	4	4.08	4.08
	Total	98	100	100
Location of work	Headquarter	90	91.8	91.8
	Regional office	8	8.1	8.1
	Total	98	100	100
How long have you been employed at Wegagen Bank?	1-4 years	61	62.2	62.2
	5-10 years	35	35.7	35.7
	11-15 years	-	-	-
	15-20 years	2	2.04	2.04
	More than 20 years	-	-	-

	Total	98	100	100
How many years of professional experience do you have in total before your current role at Wegagen Mobile Wallet?	1-2 years	-	-	-
	3-4 years	58	59.1	59.1
	5-6 years	35	35.7	35.7
	7-10 years	3	3.06	3.06
	More than 10 years	2	2.04	2.04
	Total	98	100	100

Source: Own Survey, 2024

The data highlights Wegagen mobile wallets' centralized operational strategy, with almost all of its workforce 53 (54%) stationed at headquarters. This concentration primarily comprises IT support and administrative roles, indicating a focus on centralized management and decision making. Specifically, 90 (91.8%) of IT support and administrative staff operate from headquarters, emphasizing the core functions' pivotal role in supporting the mobile wallet operations. This organizational approach likely enhances operational efficiency and consistency across Wegagen's service regions. Furthermore, we can conclude that Wegagen mobile wallets has a relatively stable workforce with a significant portion 61 (62.2%) of employees having been employed for almost four years. This suggests a level of experience and continuity within the organization, which can contribute to institutional knowledge and operational stability. Additionally, the presence of employees with longer tenures 37 (35.7%) for 5-10 years and 2 (2.04%) for 15-20 years. The percentages show that a majority of Wegagen mobile wallets' staff have been employed for nearly four years, reflecting a stable workforce with significant experience and tenure.

4.4 Involvements and understanding of respondents with mobile wallet implementation

Table 5 ***Respondents Involvements and understanding of mobile wallet***

Variable	Categories	Frequency	Percent	Valid percentage
Involvement in mobile wallet implementation	Very directly	95	96.9	96.9
	Somewhat directly	3	3.0	3.0
	Indirectly	-	-	-
	Not involved	-	-	-
	Total	98	100	100
Understanding of mobile wallet technology	Excellent	67	68.3	68.3
	Good	31	31.6	31.6
	Fair	-	-	-
	poor	-	-	-
	Total	98	100	100

The table data indicates a high level of direct involvement and understanding among respondents regarding mobile wallet implementation. Specifically, 95 (96.9%) of the respondents are directly engaged in the implementation process, highlighting a significant commitment to and hands-on participation in integrating mobile wallet technologies within their operational contexts. This suggests that a vast majority of those surveyed are actively contributing to the deployment, management, or enhancement of mobile wallet services within their respective organizations.

Furthermore, 67 (68.3%) of the respondents possess a comprehensive understanding of mobile wallets. This statistic underscores a strong grasp of the intricacies and functionalities of mobile wallet systems among the surveyed group. This level of understanding was crucial as it likely facilitates effective decision-making, troubleshooting, and user support related to mobile wallet platforms.

4.5 Implementation challenge

A total of 4 questions on barriers to mobile wallet adoption were posed to respondents, each rated on a Likert scale from _1'indicating ―Strongly Disagree‖ to _5'indicating ―Strongly agree‖. The summarized results encompass all variables studied, including Mean and Standard Deviation analyses, which the researcher used to interpret the data points. Additionally, the researcher sought to complement insights gleaned from interviews and open-ended questions by triangulating them with findings derived from the Likert-type statements related to similar variables, where applicable.

4.6 Barriers to Mobile wallet adoptions

Table 6 ***Summary of barriers to mobile wallet adaption***

	N	Mean	Standard Deviation
Rural populations lack access to smartphones or internet connectivity	98	3.17	0.987
Mobile wallet interfaces are not user-friendly or initiative for rural users.	98	4.94	0.237
Limited integration of mobile wallet solutions into broader financial inclusions strategies for rural communities	98	4.61	0.592
The lack of smartphone –compatible devices or affordable feature phones hinders adoption.	98	3.08	1.134

Source: Own Survey, 2024

The combined statistical findings for the variables under dispute, along with the data points' Mean and Standard Deviation, are displayed in Table 4.4. The number of respondents who supplied an answer for each associated variable is indicated in the "N" column. Conversely, the standard deviation column displayed the variety of the data points for each variable under examination, while the mean attempted to indicate the average at which the data points fall for each particular variable.

Table 7 ***Rural populations lack access to smartphones or internet connectivity***

		Frequency	Percent	Valid Percent
Valid	Strongly Disagree	12	12.2	12.2
	Disagree	23	23.4	23.5
	Neutral	10	10.2	10.2
	Agree	42	42.8	42.8
	Strongly agree	11	11.2	11.2
	Total	98	100	100

Source: Own survey, 2024

Under the above Table 4.5 respondents were asked rural populations lack access to smartphones or internet connectivity. 42.8 % of respondents agreed that rural populations lack access to smartphones or internet connectivity. Whereas, 23.4% of them disagreed, and 11.2 % strongly agree that rural populations lack access to smartphones or internet connectivity for using mobile wallet.

Table 8 ***Mobile wallet interfaces are not user-friendly or initiative for rural users***

		Frequency	Percent	Valid Percent
Valid	Strongly Disagree	-	-	-
	Disagree	-	-	-
	Neutral	-	-	-
	Agree	6	6.1	6.1
	Strongly agree	92	93.8	93.9
	Total	98	100	100

Source: Own survey, 2024

Nearly all respondents (93.8%) find the current interfaces lacking in user-friendliness. This overwhelming consensus suggests a pressing need for redesigning interfaces to be more intuitive for rural users

Table 9 ***Limited integration of mobile wallet solutions into broader financial inclusions strategies for rural communities***

		Frequency	Percent	Valid Percent
Valid	Strongly Disagree	-	-	-
	Disagree	8	8.1	8.2
	Neutral	-	-	-
	Agree	14	14.2	14.3
	Strongly agree	76	77.5	77.6
	Total	98	100	100

Source: Own Survey, 2024

A significant majority sees integration as a major challenge. This highlights the importance of creating comprehensive strategies that incorporate mobile wallets into broader financial systems to enhance their effectiveness.

Table 10 ***The lack of smartphone compatible devices or affordable feature phones hinders***

		Frequency	Percent	Valid Percent
Valid	Strongly Disagree	11	11.2	11.2
	Disagree	14	14.2	14.3
	Neutral	-	-	-
	Agree	12	12.2	12.2
	Strongly agree	43	43.8	43.9
	Total	98	100	100

Source: Own Survey, 2024

Over half of the respondents point to the lack of compatible devices as a barrier. This suggests a need for increased availability and affordability of compatible devices to boost adoption rates.

4.7 Literacy levels and implementation challenges

Table 11 ***Summary literacy levels and implementation challenges***

	N	Mean	Standard Deviation
The level of literacy among user affects their understanding of mobile wallet technology.	98	5	0
Consideration of literacy levels is crucial in evaluating the accessibility and usability of mobile wallet interfaces	98	4.96	0.197
The literacy level of stake holders influences their grasp of the benefits and functionality of mobile wallet solutions	98	4.10	0.303

Source: Own survey, 2024

The mean and standard deviation for literacy levels and challenge are summarized in the table. Data were arranged in descending order of mean, with 1 being the lowest rank and 3 being the highest, with a mean score of 4.96. The majority of respondents thought that the availability of the mobile wallet service will be significantly impacted by implementation issues and literacy levels.

Table 12 The level of literacy among user affects their understanding of mobile wallet technology

		Frequency	Percent	Valid Percent
Valid	Strongly Disagree	-	-	-
	Disagree	-	-	-
	Neutral	-	-	-
	Agree	-	-	-
	Strongly agree	98	100	100
	Total	98	100	100

Source: Own survey, 2024

All respondents (100%) "Strongly agree" that literacy levels among users significantly affect their understanding of mobile wallet technology. This highlights the critical role of literacy in the adoption and effective use of mobile wallets. It suggests that users with higher literacy levels are more likely to understand and utilize mobile wallet technology effectively.

*Table 13**Consideration of literacy levels is crucial in evaluating the accessibility and usability of*

		Frequency	Percent	Valid Percent
Valid	Strongly Disagree	-	-	-
	Disagree	-	-	-
	Neutral	-	-	-
	Agree	4	4.0	4.1
	Strongly agree	94	95.9	95.9
	Total	98	100	100

Source: Own survey, 2024

A vast majority of respondents (95.9%) "Strongly agree" and (4.0%) "Agree" that literacy levels should be considered when evaluating the accessibility and usability of mobile wallet interfaces. This result emphasizes the importance of designing mobile wallet interfaces that cater to varying literacy levels, ensuring that they are accessible and usable for all potential users, especially those with lower literacy levels**.**

Table 14 ***The literacy level of stakeholders influences their grasp of the benefits and functionality of mobile wallet solutions***

		Frequency	Percent	Valid Percent
Valid	Strongly Disagree	-	-	-
	Disagree	-	-	-
	Neutral	-	-	-
	Agree	88	89.7	89.8
	Strongly agree	10	10.2	10.2
	Total	98	100	100

Source: Own survey, 2024

A significant portion of respondents (89.7%) "Agree" and (10.2%) "Strongly agree" that stakeholders' literacy levels influence their understanding of the benefits and functionality of mobile wallet solutions. This indicates that stakeholders with higher literacy levels are better equipped to understand and promote the benefits of mobile wallet solutions. It underscores the need for stakeholder education and training to improve their grasp of mobile wallet technology**.**

4.8 Mobile wallet accessibility

Table 15 Summary for Mobile wallet accessibility**.**

	N	Mean	Standard deviation
The bank has a well-defined strategy to prioritize accessibility for illiterate users in rural areas in our mobile wallet development plans	98	4.65	0.6
Our mobile wallet interface is designed with simplicity and intuitive navigation to accommodate illiterate users	98	4.93	0.258
We prioritize the development of features that cater specifically to the needs of illiterate users	98	5	0
There is strong support from stakeholders for investing resources in improving accessibility	98	1.53	0.839

Source: Own survey, 2024

Table 16 ***The bank has a well-defined strategy to prioritize accessibility for illiterate users in rural areas in our mobile wallet development plans***

		Frequency	Percent	Valid Percent
Valid	Strongly Disagree	-	-	-
	Disagree	-	-	-
	Neutral	7	7.1	7.1
	Agree	20	20.4	20.4
	Strongly agree	71	72.4	72.4
	Total	98	100	100

Source: Own survey, 2024

Regarding the statement, "The bank has a well-defined strategy to prioritize accessibility for illiterate users in rural areas in our mobile wallet development plans," Table 4 displays the frequency distribution of respondents' levels of agreement. All 98 respondents responded to the statement above, and of those, 20.4% agreed, 72.4 percent strongly agreed, and 72.4% of the whole population were neutral.

Table 17 ***our mobile wallet interface is designed with simplicity and intuitive navigation to accommodate illiterate users***

		Frequency	Percent	Valid Percent
Valid	Strongly Disagree	-	-	-
	Disagree	-	-	-
	Neutral	-	-	-
	Agree	7	7.1	7.1
	Strongly agree	91	92.8	92.9
	Total	98	100	100

Source: Own survey, 2024

Table 18 ***we prioritize the development of features that cater specifically to the needs of illiterate users.***

		Frequency	Percent	Valid Percent
Valid	Strongly Disagree	-	-	-
	Disagree	-	-	-
	Neutral	-	-	-
	Agree	-	-	-
	Strongly agree	98	100	100
	Total	98	100	100

Source: Own survey, 2024

Based on the above table, prioritizing the development of features that cater specifically to the needs of illiterate users is agreed 100% indicates a clear and undisputed priority on developing features for illiterate users, showcasing a focused approach towards inclusivity.

Table 19 ***There is strong support from stakeholders for investing resources in improving accessibility***

		Frequency	Percent	Valid Percent
Valid	Strongly Disagree	62	63.2	63.3
	Disagree	20	20.4	20.4
	Neutral	16	16.3	16.3
	Agree	-	-	-
	Strongly agree	-	-	-
	Total	98	100	100

Source: Own survey, 2024

A significant majority of respondents perceive a lack of stakeholder support (83.6%) and (16.3) were answered neutral. This indicates a potential area for advocacy and awareness-raising to secure necessary investments and support from stakeholders.

4.9 Discussion

The data analysis revealed significant barriers to the adoption of the Hello Cash mobile wallet service in rural Ethiopia, aligning with findings from previous empirical research. Key challenges identified include limited smartphone access, poor internet connectivity, and userunfriendly interfaces. These results underscore the critical role of technological infrastructure and user literacy in mobile wallet adoption, consistent with the theoretical frameworks and models of technology acceptance discussed in emperical literature review and other similar research findings:

- The study found that limited smartphone access was a major barrier, which aligns with findings from other studies in developing regions. For instance, a study by Mbogo (2010) on mobile payments in Kenya highlighted that device availability significantly impacts user

adoption. Similarly, Donner and Tellez (2008) emphasized the importance of affordable and accessible mobile devices in fostering financial inclusion through mobile services.

- Poor Internet Connectivity Poor internet connectivity was another significant barrier identified. This finding was supported by Aker and Mbiti (2010), who found that infrastructure deficiencies, such as unreliable internet and electricity, hinder the widespread use of mobile financial services in Sub-Saharan Africa. Jack and Suri (2011) also noted that connectivity issues limit the effectiveness and reliability of mobile banking systems.
- User-Unfriendly Interfaces The data revealed that user-unfriendly interfaces are a considerable obstacle, especially for users with low literacy levels. This observation is consistent with Duncombe and Boateng (2009), who found that the usability of mobile financial applications was crucial for adoption, particularly among less-educated populations. Tiwari, Buse, and Herstatt (2007) also highlighted that intuitive and easy-touse interfaces are vital for increasing adoption rates among diverse user groups.
- The study underscored the significant impact of literacy levels on the comprehension and utilization of mobile wallet technologies. This was in line with the findings of Sarma and Pais (2011), who identified that literacy and financial education, are key factors influencing the adoption of financial technologies in rural areas. Singh (2009) also stressed the importance of targeted educational programs to enhance user understanding and confidence in using mobile banking services.

Chapter Five

5.0 SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary of Key Findings

Introduction in the first chapter sets the stage by highlighting the challenges Wegagen Bank S.C. faces in deploying the Hello Cash mobile wallet service in rural Ethiopia. This chapter outlines the research problem, objectives, and significance. It identifies barriers such as limited smartphone access, poor internet connectivity, and user-unfriendly interfaces. The chapter establishes the context and rationale for the study. Chapter two proceeded with Literature Review reviewing existing literature on mobile banking adoption, focusing on rural and developing areas. It explores theoretical frameworks and models of technology acceptance, examining factors like literacy and infrastructure that influence mobile wallet adoption. The literature review provides a foundation for understanding the context and variables affecting the study. The methodology chapter explains the research design and methods used to conduct the study. A descriptive research design was selected, utilizing quantitative approaches. Data was collected through structured questionnaires distributed to 98 respondents. Purposive sampling was employed to select participants. Data analysis was conducted using descriptive statistics via SPSS software. Data Analysis and Findings in chapter four presents the analysis of the survey data. It details the statistical techniques used to interpret the responses, such as frequency distributions, means, standard deviations, and percentages. The findings highlight the main barriers to mobile wallet adoption, providing a detailed understanding of the issues faced by rural users. Here are the major findings from the data analysis:

- The study revealed that literacy levels among stakeholders play a crucial role in their understanding and acceptance of mobile wallet technologies. Majority of respondents, 89.7% who "Agree" and 10.2% who "Strongly agree," highlighted that stakeholders' literacy levels significantly influence their comprehension of the benefits and functionalities of mobile wallets. This suggests that those with higher literacy levels are more likely to understand and utilize mobile wallet services effectively. Consequently, this finding underscores the necessity for Wegagen Bank to implement targeted educational

programs aimed at improving digital literacy among its users, particularly in rural areas where literacy rates are typically lower.

- The researcher has also observed that mobile wallet accessibility of mobile wallets to illiterate users emerged as a critical area of focus for Wegagen Bank. The study found that the bank has been proactive in developing strategies to make mobile wallet services more user-friendly and accessible. However, challenges persist, particularly in rural regions where technological infrastructure is limited.

- Technological Barriers, including limited access to smartphones and poor internet connectivity, were identified as significant impediments to the adoption of mobile wallet services based on the respondent‘s answer. The study showed that many rural users struggle with accessing mobile banking services due to the high cost of smartphones and inadequate internet infrastructure.

- The study found that more comprehensive efforts are needed to ensure that mobile wallet services are effectively incorporated into the financial ecosystem for broader financial inclusion. This includes collaboration with government agencies and other financial institutions to promote mobile wallets as a viable alternative to traditional banking.

- User Experience and Interface Design The usability of mobile wallet applications was another significant finding. Majority respondent‘s answer shows that existing interfaces are not user-friendly, particularly for those with limited experience with digital technologies.

- Participants indicated that a lack of understanding of basic financial concepts often hinders the use of mobile banking services. These findings collectively suggest that while Wegagen Bank has made significant progress in implementing the Hello Cash Mobile Wallet service, there are still substantial challenges that need to be addressed.

5.1 Conclusion

The implementation of the Hello Cash Mobile Wallet service by Wegagen Bank S.C. has provided valuable insights into the challenges inherent in deploying mobile banking solutions in rural Ethiopia. The study revealed several key barriers to adoption, including limited digital literacy among users, inadequate infrastructure, and cultural resistance to new financial technologies. These factors have significantly impeded the widespread acceptance and effective utilization of mobile wallet services among the target populations.

Firstly, the study found that digital literacy plays a crucial role in the adoption and use of mobile wallet services. Many users in rural areas lack the necessary skills and knowledge to navigate and utilize mobile banking applications effectively. This gap in digital literacy is a significant impediment to the successful implementation of such services. Furthermore, the research highlighted the importance of intuitive and user-friendly interface designs tailored to meet the needs of less literate populations. Despite these efforts, the complexity of mobile wallet technology continues to be a deterrent for many potential users.

Secondly, infrastructural challenges such as unreliable network connectivity and inconsistent electricity supply have further hindered the deployment and use of mobile wallet services. These infrastructural deficits are particularly pronounced in rural areas, where the lack of stable internet access and frequent power outages pose significant obstacles to the seamless operation of mobile banking services. Additionally, cultural factors and resistance to adopting new technologies have been identified as major barriers. Many users still prefer traditional banking methods, citing concerns over security and the reliability of digital transactions.

5.2 Recommendations

To overcome the identified challenges and enhance the adoption of mobile wallet services, the following recommendations are proposed by the researcher:

- Digital Literacy Programs offer educational initiatives to enhance digital literacy, empowering users to navigate mobile wallet functionalities confidently as well as Visual and audio Guidance Incorporate visual icons and audio prompts to guide users through transactions, reducing dependency on text and Infrastructure Accessibility Ensure reliable

network connectivity and affordable smartphone access to broaden mobile wallet adoption and also narrowing the gaps for the barriers of mobile wallet adoptions.

- Programs promoting enhanced digital literacy ought to be established in action. Wegagen Bank S.C. has to make efforts in robust training programs in digital literacy designed with rural communities in account. The advantages of mobile banking, fundamental digital skills, and practical training sessions should all be included in these programs to foster user competence and confidence with mobile wallet applications.

- Developing a more user-friendly and accessible interface for the Hello Cash Mobile Wallet is crucial, which is why employing User-Friendly Interface Design could be beneficial. To accommodate a variety of user groups, this entails streamlining the navigation process, employing readily interpreted iconography, and adding several language choices. Ensuring the interface is comprehensible to individuals with limited literacy skills would considerably improve its usefulness and adoption rates.

- The researcher believes that the study's findings and recommendations offer a path for dealing with the present obstacles and utilizing the potential of mobile wallet services to transform the banking landscape in Ethiopia. Wegagen Bank S.C. is believed to be able to extend financial inclusion to underserved rural populations and contribute to the overall economic development of the region by implementing and adopting these recommendations more successfully.

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Appendix:

Invitation to Participate in Research: Mobile Wallet Solutions Questionnaire.

Delina Sileshi

MSc Student, Project Management

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Dear Respondents

I trust this correspondence finds you in good health and high spirits.

My name is Delina Sileshi, and I am currently advancing my academic journey as a Master‘s student in Project Management at St. Mary‘s University. In pursuit of scholarly excellence, I am undertaking a research dissertation focused on elucidating the challenges inherent in the implementation and adoption of mobile wallet solutions, with a particular emphasis on the offerings of Wegagen Bank.

The primary objective of this research endeavor is to meticulously identify and comprehend the impediments encountered in the deployment and utilization of mobile wallet technologies. This exploration encompasses insights from headquarters personnel, digital banking professionals, stakeholders, and development infrastructure staff. The data procured from this study will not only augment my academic dissertation but also furnish actionable recommendations to enhance the adoption of mobile wallet solutions, including within rural demographics.

In furtherance of this academic inquiry, I humbly solicit your participation in completing the enclosed questionnaire. The survey is structured to elicit comprehensive information regarding general background, implementation hurdles, adoption obstacles, and solicits open-ended responses for any additional insights. While your participation is entirely voluntary, it would be deeply appreciated. Rest assured, all responses will be treated with the utmost confidentiality and will be utilized exclusively for this academic dissertation.

Your time and willingness to contribute to this endeavor are sincerely appreciated. Please accept my heartfelt gratitude for your invaluable input. Should you have any inquiries or require further elucidation, please do not hesitate to contact me at [Delina.sileshi1@gmail.com].

Thank you profoundly for your time, cooperation, and willingness to assist in advancing academic knowledge in this field.

With regards,

MSc student, Delina Sileshi

Project Management, St. Mary‘s University

Addis Ababa, Ethiopia

Section 1: General Information

1. Gender: ☐ Male ☐

☐ Female ☐

1. Age:

- 25-34 ☐
- 35-44 ☐
- 45-54 ☐
- 55-64 ☐
- 65 and over ☐

2. Educational background:

- High school ☐
- Bachelor Degree ☐
- Master‘s degree ☐
- Doctorate ☐

3. Department Role:

- Headquarter staff ☐
- Digital banking staff ☐
- Development Infrastructure staff ☐

4. How many years of professional experience do you have in total before your current role at Wegagen Mobile Wallet?

☐

1-2 years ☐

3-4 years

5-6 years ☐

7-10 years More ☐

than 10 years ☐

5. Location of work:

- Headquarter ☐
- Regional office ☐

6. How long have you been employed at Wegagen Bank?

- 1-4 years ☐
- 5-10years ☐
- 11-20 years ☐
- More than 20 years ☐

7. Involvement in mobile wallet implementation:

- How directly are you involved in implementation mobile wallet solutions?
- Very directly ☐
- Somewhat directly ☐
- Indirectly ☐

8. Understanding of mobile wallet technology:

- How would you rate your understanding of mobile wallet technology?

- Excellent ☐
- Good ☐
- Fair ☐
- Poor ☐

SECTION 2-Collective General Questionnaire

N.B Please put a tick (√) mark to indicate the extent to which you agree with each of the following

Key: 5=Strongly Agree, 4= Agree, 3= Neutral, 2= Disagree and 1= Strongly Disagree

SECTION 3

PART A- Barriers to Mobile wallet adoptions

	1	**2**	**3**	**4**	**5**
Rural populations lack access to smartphones or internet connectivity					
Mobile wallet interfaces are not userfriendly or initiative for rural users.					
Limited integration of mobile wallet solutions into broader financial inclusions strategies for rural communities					
The lack of smartphone –compatible devices or affordable feature phones hinders adoption.					

PART B- Literacy levels and implementation challenges

	1	2	3	4	5
The level of literacy among user affects their understanding of mobile wallet technology.					
Consideration of literacy levels is crucial in evaluating the accessibility and usability of mobile wallet interfaces					
The literacy level of stake holders influences their grasp of the benefits and functionality of mobile wallet solutions					
Adequate training materials and support are essential for users with varying literacy levels to adopt mobile wallet solutions					

PART C- Mobile wallet accessibility

	1	2	3	4	5
The bank has a well-defined strategy to prioritize accessibility for illiterate users in rural areas in our mobile wallet development plans					
Our mobile wallet interface is designed with simplicity and intuitive navigation to accommodate illiterate users					
We prioritize the development of features that cater specifically to the needs of illiterate users					
There is strong support from stakeholders for investing resources in improving accessibility					