FACTORS AFFECTING THE ADOPTION OF MOBILE BANKING SERVICE IN ETHIOPIAN COMMERCIAL BANKS

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FACTORS AFFECTING THE ADOPTION OF MOBILE BANKING SERVICE IN ETHIOPIAN COMMERCIAL BANKS

A Thesis Submitted to Addis Ababa University in Partial Fulfillment for the Award of the Degree of Masters in Marketing Management

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ADDIS ABABA UNIVERSITY

MASTER OF ARTS DEGREE IN MARKETING MANAGEMENT POST GRADUATE PROGRAM

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Statement of certification

This is to certify that Zebiba Yimer has carried out this thesis work title "**Factors affecting the adoption of mobile banking service in Ethiopian Commercial banks"**

The work is original in nature and is suitable for submission for the award of the Master of Arts Degree in Marketing Management.

Signature: _____

Date: June, 2024

Name of the Advisor: **Andinet Worku (PHD)**

DECLARATION

I the under signed, hereby declare that the thesis entitled "**Factors affecting the adoption of mobile banking service in Ethiopian commercial Banks"** is my original work and has not been submitted to any other college, institution or university other than Addis Ababa University for the award of the Degree of Master of art in Marketing management at Addis Ababa and that all sources of material used for the study have been appropriately acknowledged.

Zebiba Yimer _____ June 2024

Student Signature Date

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ABSTRACT

This study investigates the factors influencing mobile banking adoption among customers of three pioneering banks in Ethiopia: Commercial Bank of Ethiopia (CBE), Dashen Bank, and Awash Bank. Employing a quantitative research approach, the study integrates both descriptive and explanatory research designs to comprehensively analyze the determinants of mobile banking adoption. Data were collected using structured questionnaires based on a Likert scale from a sample of 384 respondents in Addis Ababa City.

The Technology Acceptance Model (TAM) was utilized as the theoretical framework, focusing on five key variables: perceived security, trust, perceived ease of use, perceived usefulness, and social influence. Statistical analyses, including correlation and regression, were conducted using SPSS version 22 to examine the relationships between these variables and mobile banking adoption.

The findings reveal that perceived usefulness has the most significant impact on mobile banking adoption, followed by trust, perceived security, perceived ease of use, and social influence. The regression model explains 85.8% of the variance in mobile banking adoption, indicating a strong predictive capability.

This research contributes to the understanding of mobile banking adoption in the Ethiopian context, highlighting the critical role of perceived usefulness and trust. The study provides valuable insights for banks and policymakers to enhance mobile banking services and strategies to increase adoption rates. Future research directions are suggested to explore additional factors and expand the study to other regions.

Keywords: *Mobile Banking Adoption, Technology Acceptance Model (TAM), Perceived Security, Trust, Perceived Ease of Use, Perceived Usefulness, Social Influence, Ethiopia*.

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List of acronyms

SPSS - Statistical Package for Social Science

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CHAPTER ONE

1.1 Background of the Study

Today's society is aggressively moving towards digitalization especially in connection with handling daily financial activities. Simple example is by the time this proposal and thesis is being done, the government changes the payment system of gas purchase for filling a car or vehicle into cashless, using the available digital payment platforms. It's known that the use of digital platforms requires the knowledge of using the given platforms and applications on mobile phones. Despite of less experience and no prior knowledge, every driver is expected to use the available digital platforms to effect payments to gas stations. Such that it's a quite indicator of the mandatory aspect of digitalization in the current society and market. The push towards to cashless transactions comes from different sources like the government as the previously mentioned case, competitors, society awareness and life style change, inconveniences, outside world pressure, non-stop innovations etc.

Financial institutions like banks are also trying to address the societies' need by adopting different electronic based services and products in order to generate more profit and expand their customer base. These products and services can be mentioned as mobile banking, ATMs, Internet banking, agency banking, virtual branch outlets etc.

Studies by Sanl and Hobikoglu (2015) indicate that the banking sector is one of the expanding financial industries that is aware of the advancements and changes occurring in the realm of technological innovation. Because of the growing awareness of client-centered service, declining prices, the market's competitive structure, and consumers' efforts to succeed in banking product, effective, and productive ways, demand for web-based banking products has increased. Additionally, they claim that electronic banking gives banks a crucial competitive advantage in terms of time, place, and value. In the current interbank competition, it is focusing on the cutting-edge technology that form the foundation of electronic banking.

Ethiopia, with its diverse economic landscape, is witnessing a shift in the way financial services are accessed and utilized. Mobile banking, as a subset of financial technology (Fintech), holds the potential to bridge gaps in financial inclusion and enhance overall economic development.

In Ethiopia, technological advancements have become pivotal in the banking sector, providing substantial value to both banks and their customers by facilitating banking transactions without the need to visit traditional brick-and-mortar branches. Mobile banking has revolutionized the global financial landscape by enhancing accessibility and convenience. This service has allowed banking institutions to compete more efficiently worldwide by leveraging technology to offer their products and services beyond physical and temporal limitations. However, despite its potential advantages, mobile banking adoption in Ethiopia encounters several challenges that require thorough investigation.

Ethiopian commercial banks, including Dashen Bank, Awash Bank, and Commercial Bank of Ethiopia, are progressively integrating mobile banking services into their operations. This study seeks to explore the multifaceted factors influencing the adoption of mobile banking within these institutions, encompassing Perceived Security, Trust, Perceived Ease of Use (PEOU), Perceived Usefulness (PU) and Social Influence (SI)) dimensions.

1.2 Statement of the problem

Gardachew (2010) highlighted that Ethiopia's banking industry is currently underdeveloped, calling for urgent capacity-building efforts and modernization through the adoption of advanced global technologies. The increase in import-export businesses and international trade and relations has exposed the inefficiencies and unreliability of the existing banking system.

Meaza (2013) observed that while electronic banking is prevalent in developed nations and expanding rapidly in developing countries, Ethiopia still primarily relies on cash as the main medium of exchange, with electronic payment systems in their nascent stages. As electronic payment systems proliferate worldwide, Ethiopia's financial sector must not lag in adopting these innovations. Consequently, Ethiopian commercial banks are increasingly embracing mobile banking systems to streamline operations and cut costs. Many banks in Ethiopia now offer mobile banking services, though user adoption rates remain low despite significant growth in the banking sector. The Commercial Bank of Ethiopia launched its mobile money service, CBE Birr, on December 11, 2017, followed by Dashen Bank's Amole service in 2018.

Zhao (2008) stressed the importance of understanding the barriers and drivers of e-banking adoption in developing countries, especially in Ethiopia, to foster its growth. Gaining a comprehensive understanding of the factors influencing the adoption of e-banking can help researchers and practitioners develop strategies to promote its widespread use. Despite the banking industry's growing interest in mobile banking, it has not been extensively researched. Ethiopia, the second most populous country in Africa, has one of the lowest financial inclusion rates (banked population) compared to other Sub-Saharan African nations, even as mobile phone penetration continues to rise rapidly. This growing mobile penetration presents an opportunity to enhance financial inclusion in Ethiopia.

The current technology advancement brought electronic banking using only mobile phones as operating device. People are being able to manage their banking activities using mobile phones. However, the potential of the market and the bank's performance are not still in a comparable state. Many branches are mostly stiffed with customers looking for banking services in branch lobby area. To address these customers', demand the bank is expected to do more on digitalization overall particularly mobile banking. The overall global practice of mobile banking with its services will be exhaustively discussed under the upcoming literature review section.

In discussions with banking professionals from the selected banks, it was revealed that although the number of mobile banking users is gradually increasing, the activity level of registered customers remains low compared to the total customer base. Therefore, it is crucial to identify the factors influencing mobile banking adoption within the context of these selected banks

Mobile banking, while holding substantial promise for financial inclusion in Ethiopia, faces notable challenges marked by a stark disparity in adoption rates among different banks. According to a report by NBE, the overall penetration of mobile banking in Ethiopia remains below its potential, with significant variations observed across various banking institutions. This is a critical issue as financial inclusion is a cornerstone of economic development, and the slow adoption of mobile banking hampers progress toward this goal.

For instance, a comparative analysis of leading banks in Ethiopia reveals a notable discrepancy in mobile banking adoption rates. Some Banks, despite having robust infrastructure, struggles to attract a significant user base, while other Banks, with similar resources, has witnessed a

substantial increase in mobile banking subscribers. This discrepancy necessitates an in-depth investigation into the specific factors influencing the adoption of mobile banking within the Ethiopian banking sector.

In addition, recent studies have pointed to the influence of socio-economic factors, such as income levels and educational background, on the adoption of mobile banking in developing countries. However, there is a dearth of research specifically examining how these factors manifest within the Ethiopian context and contribute to the observed disparities among banks. Understanding these dynamics is crucial for devising targeted strategies that can enhance the overall adoption of mobile banking in the country as the number of mobile banking users are far below the countries aspiration of creating cashless society or the financial inclusion strategy.

To sum up with, Despite the growing availability of mobile banking services, the adoption rates within Ethiopian Commercial Banks remain Variable and has not been as rapid as anticipated. Several factors may be impeding its adoption, including technological limitations, regulatory challenges, economic viability concerns, and social and cultural barriers. Understanding the factors influencing is essential to formulate effective strategies for accelerating the adoption of Mobile banking and realizing its potential benefits for the Ethiopian banking sector by ensuring financial inclusivity.

Hence, the primary aim of this study is to pinpoint the key factors that affect the uptake of mobile banking services among selected Ethiopian commercial banks

1.3 Research Question

This study aims to address the following research inquiries

- How does perceived usefulness influence the adoption of mobile banking in Ethiopian commercial banks?
- What is the impact of perceived ease of use on the adoption of mobile banking?
- How does perceived security affect mobile banking adoption?
- What role does social influence play in the adoption of mobile banking?
- How does trust influence the adoption of mobile banking services?

- Among the influencing variables, which one has the greatest effect on the adoption of mobile banking?

1.4 Objectives of the study

1.4.1 General objectives

The primary goal of this study is to investigate the factors influencing the adoption of mobile banking in Ethiopian commercial banks.

1.4.2 Specific objectives

The specific objectives include:

1. To examine the influence perceived usefulness on the adoption of Mobile Banking in Ethiopian Commercial Banks;
2. To determine the impact of perceived ease of use on the Adoption of Mobile Banking in Ethiopian Commercial Banks;
3. To investigate the influence of perceived security on the users' decision to adopt Mobile Banking services;
4. To explore the effect of trust on the adoption of Mobile Banking in Ethiopian Commercial Banks:
5. To examine the influence of social influence on the users' decision to adopt Mobile banking services;
6. To identify the independent variable that most significantly influences the adoption of mobile banking.

1.5 Significance of the study

This research holds paramount significance in several dimensions:

Strategic Decision-Making: Findings informed strategic decisions within Commercial Bank of Ethiopia, Awash Bank, and Dashen Bank, fostering their digital evolution.

Academic Contribution: This study will enhance the existing literature on mobile banking adoption by offering insights into the specific factors that influence its adoption in the Ethiopian context.

Financial Inclusion Promotion: By addressing theoretical, empirical, and practical gaps, the research aims to contribute to improved financial inclusion in Ethiopia. It has also offered practical recommendations for banks to improve their mobile banking services, thereby enhancing customer satisfaction and financial inclusion.

1.6 Scope of the study

This study examined the adoption of mobile banking specifically within three commercial banks: Commercial Bank of Ethiopia, Dashen Bank, and Awash Bank. It focuses solely on factors influencing mobile banking adoption and does not delve into other aspects of the banking sector.

Geographically, the study is confined to the city of Addis Ababa.

In terms of methodology, the research involved customers who use mobile banking services from the selected banks. Regression and correlation analyses were utilized to assess and determine how independent variables influence the adoption of mobile banking.

1.7 Limitation of the study

The study focuses on factors that affect the adoption of Mobile banking particularly in case of three Banks. Even if the finding of this paper will help much as an input and reference for future use, still it may not fit perfectly to other organizations, financial sectors or even banks due to different company policy, market share, financial capacity, business nature etc. For instance, Ethio-telecom engages in Mobile Banking service using the payment platform TELEBIRR.

1.8 Definition of terms

Mobile Banking Adoption: The extent to which customers actively utilize mobile banking services provided by banks

Financial Inclusion: Efforts to ensure that individuals and businesses have access to affordable and appropriate financial products and services.

Technological Factors: Elements related to the technological infrastructure and readiness for mobile banking implementation.

Perceived Usefulness (PU): The degree to which a person believes that using a particular system would enhance their job performance.

Perceived Ease of Use (PEOU): The degree to which a person believes that using a particular system would be free from effort.

Perceived Security (PS): The degree to which a person believes that using mobile banking will be secure from threats such as fraud and privacy breaches.

Social Influence (SI): The degree to which an individual perceives that important others believe they should use a particular system.

Trust (TR): The belief in the reliability, integrity, and competence of the service provider.

1.9 Organization of the Study

To present a comprehensive analysis of factors affecting the adoption of Mobile Banking in Ethiopian Commercial Banks, this research unfolds in five chapters, starting with this introduction and progressing to a comprehensive literature review, a meticulous methodology, empirical findings, and, finally, insightful conclusions where;

Chapter two reviews pertinent literature, focusing on theoretical frameworks and empirical studies concerning factors influencing mobile banking. Chapter three outlines the research methodology, encompassing research design, sampling methods, data collection, and analysis procedures. Chapter four presents data analysis, interprets findings, and discusses implications. The thesis concludes with Chapter Five, summarizing key findings, contributions, recommendations for the banks involved, and suggesting future research directions

2. CHAPTER TWO: REVIEW OF RELATED LETIRATURE

Introduction

The aim of this chapter is to assess existing literature on adoption, specifically focusing on factors influencing the adoption of mobile banking. This literature review encompasses three main areas: theoretical perspectives, empirical studies, and a conceptual framework built upon previous research findings.

2.1. Theoretical Review

2.1.1. Overview and Global experience of Mobile Banking

Financial inclusion is a process that ensures that everyone in a country has simple access to, use of, and availability of the formal financial system (Pant, 2016). Providing financial services to the underprivileged and low-income members of the community at a fair price is the goal of the financial inclusion initiative (Munoru, 2016). The ability of an individual, family, or group to acquire a wide range of formal financial services that are practical, ethically provided, and reasonably priced is known as financial inclusion. Financial exclusion is a term used to describe those who lack this skill (Mbugua & Afande, 2015).

Economic development and poverty reduction depend heavily on financial inclusion. The World Bank (2018) states that access to adequate and reasonably priced financial goods and services that are offered responsibly and sustainably is a right for both individuals and enterprises. Governments, international development organizations, academics, and the corporate sector have all made financial inclusion a primary priority for the world. The World Bank wants to make financial access available to everyone so that the less fortunate and rural poor can escape poverty by helping them to create respectable lifestyles. A well-considered financial inclusion program can also help the underprivileged in rural areas start and grow their own enterprises (Pant, 2016).

The elimination of social inequality and the eradication of poverty are made possible by financial inclusion for society's most vulnerable and poorest people. It will give people the tools they need

to manage and save their money so they can make wise financial decisions. It will unleash potential and empower people on all levels, including men, women, and entire communities, encouraging investment there and reviving the economy overall (SEPA for Corporates, 2015). People who have access to financial inclusion are more likely to save, which enhances capital formation and strengthens the economy (Khanvilkar, 2015).

The strong economic progress and financial expansion of a people continue to be supported by a fundamental pillar known as financial inclusion. The potential that financial inclusion has in solving issues like global poverty, income inequality, underdevelopment, and welfare is the primary driver of this. Everyone having access to financial services is thought to result in a faster and more significant impact on global development when everyone's efforts are combined. According to Ndungu, Okibo, and Nyangu (2015), Transactions conducted via alternative banking channels have exceeded those carried out through traditional banking methods.

2.1.2. Theoretical review on Adoption Models

Many researchers in their study used various approaches. From those frameworks the technology acceptance model(TAM) and the technology-organization-environment frame work (TOE) are the common ones due to their inclusiveness of the factors which could have direct or indirect influence on adoption of any technology based services. The following sub-topics give details on TAM and TOE.

1. Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM) proposed by Davis (1989) is a widely used theoretical model for studying technology adoption in the banking sector. TAM suggests that perceived usefulness and perceived ease of use significantly influence users' intentions to adopt a technology. In the context of Mobile banking, perceived usefulness could refer to the convenience of accessing banking services through agents, while perceived ease of use may pertain to the simplicity of conducting transactions. Moreover, the Unified Theory of Acceptance and Use of Technology (UTAUT) by Venkatesh et al. (2003) may also offer insights into the factors influencing Mobile banking adoption, as it considers additional constructs like social influence and facilitating conditions.

- **Perceived Ease of Use (PEOU)**

The term "perceived ease of use" describes the extent to which someone thinks using a given technology won't need any physical or mental effort. It gauges how much thought is needed to use the intended applications, according to the prospective user (Davis, 1993). Opia (2008) asserted that technologies with perceived user interface complexity and a high learning curve were deemed dangerous to adopt. The favorable correlations between attitude toward usage and ease of use are supported by empirical data (Venkatesh & Davis, 2000), and it is clear that PEOU is a significant factor in determining whether or not consumers would accept IT (Venkatesh, 2000). Therefore, ease of use is a key factor in determining whether or not an invention will be accepted (Hart O. et al., 2012).

- **Perceived Usefulness (PU)**

It has to do with how much consumers believe using a system will be advantageous. It offers diagnostic tools for examining the relationships between actual usage, intention to use, and attitude toward use. It has to do with saving money and time, and it's viewed from the angles of bettering service rendering and expanding accessibility (Warshaw, 1989).

2. Technology-Organization-Environment (TOE)

The TOE framework was created to investigate the chances that technological advances will be successfully adopted. Chang et al., 2007, Zhu & Kraemer, 2006; Salwani et al., 2009; TOE is a thorough and well-known framework in the context of innovation adoption by various businesses and has been utilized in numerous research. Technology adoption inside an organization is influenced by elements related to the technological, organizational, and external environment setting, according to Tornatzky and Fleischer (1990).

- **Technological factors**

Various researchers provided varying descriptions of technical factors According to Hart O. et al. (2012), adoption is influenced by the variety of technologies available to a company as well as the application's perceived relative advantages, complexities(learning-curve), compatibility (organizational & technical), observability (imagination/visibility) and tri-ability (experimentation/pilot-testing).

The adopter's view of the benefits of e-banking is referred to as the technology element. Based on the supposition of Roger's diffusion of innovation (Rogers 2003), typical technological variables taken into account in technology adoption studies include relative advantages (perceived benefits) and relative disadvantages (perceived dangers).

Relative advantage, for the banking sector as well as consumers, covers both the direct and indirect benefits; the direct benefits include operational cost savings, greater organizational functionality, increased efficiency, increased profitability, and productivity gains. On the other hand, indirect benefits include the chance or intangible advantages like increased customer happiness due to better services, an improved banking environment, and satisfaction of their changing wants and lifestyles (Iacovou 1995, Kuan&Chau 2001, and Lu et al. 2005).

Relative disadvantage, implies when dealing with technologies related to online transactions, such as e-banking, security issues are problems (Chang 2007; Rogers 2003). Therefore, it is anticipated that the perception of the hazards associated with e-banking may affect its uptake (Ayana, 2012). Additionally, customers' reluctance to use the services greatly impedes the growth of e-banking, which is one of the risks encountered by bank institutions while providing e-banking services (Laforet 2005 and Zhao et al. 2008).

- **Organizational factors**

Business scope, organizational culture, top management support, organizational structure complexity as measured by centralization, vertical differentiation, and formalization, human resource quality, and size-related issues like specialization and internal slack resources are all covered by the organizational factor (Jeyaraj A. Et al., 2006). Consequently, both Iacovou (1995) and Grover (1993) asserted that firms' decisions to adopt technological innovation are influenced by a variety of factors, including company size, top management support, financial

resources, and human resources which can be categorized under organizational factors. Accordingly researchers like Tornatzky and Fleisher (1990) added that organizational factors can be seen as the managerial structure of the organization as centralization, formalization and complexity. The human resources the company have with its size and scope also part of the organizational factors.

- **Environmental factors**

According to Al-Qirim (2006), environmental considerations primarily relate to various enabling and obstructing elements in operational regions. According to Kvin Z. et al. (2004), environmental contexts include the environment in which a firm conducts its business, including its industry, competitors, access to resources provided by other externals, and interactions with the government. According to Ayana (2012) the legal issues, infrastructure, competition, political stability and government policy are substantial factors to consider under the environmental factors.

2.2. Review on findings of related studies

The researcher conducted a comprehensive review of empirical studies examining factors influencing the adoption of mobile banking, summarizing key findings as follows:

Mardung (2013) investigated the adoption of mobile money services in Botswana's banking and financial sectors using the Technology Acceptance Model (TAM). The study found that variables like gross income, education level, and having a bank account did not significantly affect the use of mobile banking. However, age and gender were significant, with younger individuals and certain genders showing a stronger preference for mobile money services. Employment status also played a significant role, with employed individuals favoring mobile banking more than the unemployed.

George and Gerald (2015) explored the adoption of mobile banking among Access Bank customers in Ghana. Their study highlighted perceived credibility and financial costs as major obstacles to customer adoption. These factors exerted a greater influence on consumer intention

to use mobile banking than perceived usefulness and ease of use. The study also emphasized the impact of awareness, simplicity, compatibility, and self-efficacy on mobile banking adoption.

Masinge (2010) focused on the factors influencing mobile banking adoption among the Bottom of the Pyramid (BOP) in South Africa, examining trust, perceived cost, and perceived risk through the TAM2 framework. The research indicated that affordability was critical for BOP customers, who considered mobile banking adoption if perceived as useful and easy to use.

Ndumba et al. (2014) studied the adoption of mobile banking in Kenyan commercial banks, revealing that perceived risk negatively affected adoption due to concerns like sending money to wrong accounts or privacy breaches. Conversely, perceived convenience, including accessibility and time-saving benefits, positively influenced adoption. Few scholars have examined the opportunities the concept presents for the banking sector in Ethiopia and the barriers to service uptake because it is a novel idea.

Gemech (2014) identified barriers such as security issues, lack of trust, regulatory gaps, inadequate ICT infrastructure, and limited competition among banks hindering the adoption of e-banking.

Zekeke (2016) examined opportunities and challenges in e-banking adoption at Dashen Bank S.C, finding significant impacts from perceived usefulness, risk perception, and environmental factors.

Garedachew (2010) highlighted challenges in Ethiopian e-banking, including regulatory shortcomings, political instability, high illiteracy rates, and fragmented financial networks.

Mulualem (2015) investigated mobile banking adoption at Commercial Bank of Ethiopia, confirming positive correlations between perceived usefulness, ease of use, and adoption, while perceived risk negatively affected adoption.

Haile (2015) explored factors influencing mobile banking adoption at the Commercial Bank of Ethiopia using the UTAUT model, emphasizing performance expectancy, perceived risk, cost, effort expectancy, and trust as crucial factors.

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Alemayehu (2018) explored the technological challenges and opportunities for mobile banking adoption in Ethiopian commercial banks and identified several technological challenges and opportunities for mobile banking adoption in Ethiopian commercial banks. Findings revealed that while advancements in mobile technology have created opportunities for financial inclusion, challenges such as limited network infrastructure, compatibility issues with existing systems, and security concerns hinder widespread adoption. The study emphasized the importance of addressing these technological barriers to enhance the accessibility and reliability of mobile banking services for Ethiopian customers.

Assefa, M., et al. (2020), Investigated the regulatory landscape and its impact on mobile banking adoption in the Ethiopian banking sector. The findings highlighted the significance of regulatory frameworks in shaping the environment for mobile banking services. Regulatory clarity, supportive policies, and effective enforcement were identified as key determinants influencing banks' ability to offer innovative mobile banking solutions. The study underscored the need for regulatory reforms to facilitate the growth of mobile banking and promote financial inclusion in Ethiopia.

Berhanu, T., & Ayenew, M. (2019) examined the economic factors influencing customer uptake of mobile banking services in Ethiopia. The findings indicated that factors such as transaction costs, perceived financial benefits, and access to banking infrastructure significantly influence consumers' decisions to adopt mobile banking. Moreover, income levels, education, and employment status emerged as key determinants shaping individuals' willingness to engage with mobile banking platforms. The study emphasized the importance of addressing economic barriers and promoting the value proposition of mobile banking to enhance adoption rates.

Demeke, A., & Kebede, B. (2017) Demeke and Kebede's research explored social and cultural perceptions surrounding mobile banking adoption among Ethiopian consumers. The findings

revealed that while mobile banking offers convenience and accessibility, cultural preferences, trust in traditional banking channels, and perceptions of security influence individuals' attitudes towards adoption. Social networks, word-of-mouth recommendations, and community norms also play a significant role in shaping adoption behaviors. The study highlighted the need for tailored communication strategies and culturally sensitive approaches to promote mobile banking uptake.

Authors: Girma, T., & Tsegaye, W. (2021) analyzed environmental factors influencing the adoption of mobile banking services in Ethiopian commercial banks. Findings indicated that factors such as infrastructure availability, power supply reliability, and internet connectivity influence the accessibility and usability of mobile banking platforms. Environmental factors, including geographic location and urban-rural disparities, also impact individuals' access to mobile banking services. The study underscored the importance of addressing environmental challenges and investing in infrastructure development to foster mobile banking adoption in Ethiopia.

Here below are summary of few findings from each previous research work on mobile banking adoption in Ethiopian commercial banks:

Reserch work	**Authors**	**Year**	**Findings**
Explored technological challenges and opportunities for mobile banking adoption.	Alemayehu	2018	challenges such as limited network infrastructure, compatibility issues with existing systems, and security concerns hinder widespread adoption.
Regulatory Landscape and Its Impact	Assefa, M., et al.	2020	Regulatory clarity, supportive policies, and effective enforcement were identified as key determinants influencing banks' ability to offer innovative mobile banking

			solutions.
Economic Factors Influencing Customer Uptake	Berhanu, T., & Ayenew, M.	2019	Factors such as transaction costs, perceived financial benefits, and access to banking infrastructure significantly influence consumers' decisions to adopt mobile banking.
Social and Cultural Perceptions	Demeke, A., & Kebede, B.	2017	while mobile banking offers convenience and accessibility, cultural preferences, trust in traditional banking channels, and perceptions of security influence individuals' attitudes towards adoption
Environmental Factors Influencing Adoption	Girma, T., & Tsegaye, W.	2021	Factors such as infrastructure availability, power supply reliability, and internet connectivity influence the accessibility and usability of mobile banking platforms

In reviewing the aforementioned research, this study on factors affecting the adoption of mobile banking in Ethiopian commercial banks aims to make a significant contribution to the academic literature on mobile banking adoption for several reasons:

- **Unique Context**: Ethiopian commercial banks operate within a distinct socio-economic and regulatory environment compared to other regions. Therefore, this study will provide insights into mobile banking adoption dynamics specific to Ethiopia, filling a gap in the existing literature that primarily focuses on limited geographical contexts.

- **Emerging Market Perspective**: Ethiopia represents an emerging market with significant potential for mobile banking expansion. By examining adoption factors within this context, this study will shed light on the challenges and opportunities inherent in introducing and scaling mobile banking services in developing economies.

- **Cultural and Social Considerations**: Ethiopian society has its unique cultural norms, social structures, and consumer behaviors that influence technology adoption. Investigating how these factors intersect with mobile banking adoption will enrich the understanding of the role of culture and society in shaping consumer attitudes and behaviors towards financial technology.

- **Policy and Regulatory Implications**: Ethiopia's regulatory landscape may differ from that of other countries, impacting mobile banking adoption strategies and implementation. This study can identify regulatory barriers and enablers, offering valuable insights for policymakers and regulators seeking to foster financial inclusion and innovation in the country.
- **Practical Implications for Banking Institutions**: Understanding the factors influencing mobile banking adoption can help Ethiopian commercial banks tailor their services, marketing strategies, and technological investments to better meet the needs and preferences of their customers. This study can provide actionable recommendations for banks to enhance user experience, address barriers to adoption, and promote financial inclusion.

In summary, this study will add to the academic literature by offering empirical evidence and insights into mobile banking adoption dynamics within the unique context of Ethiopian commercial banks. By addressing the factors influencing adoption and their implications, this research will advance scholarly understanding and inform practical strategies for promoting mobile banking and financial inclusion in Ethiopia.

2.3. Reserch Framework

Drawing from theoretical and empirical insights, this study's conceptual framework integrates key factors influencing mobile banking adoption in Ethiopian commercial banks. It encompasses technological aspects like perceived security, trust, ease of use, usefulness, and social influence to offer a thorough understanding of the adoption process.

The framework is illustrated as follows

Factors affecting the adoption of Mobile Banking.

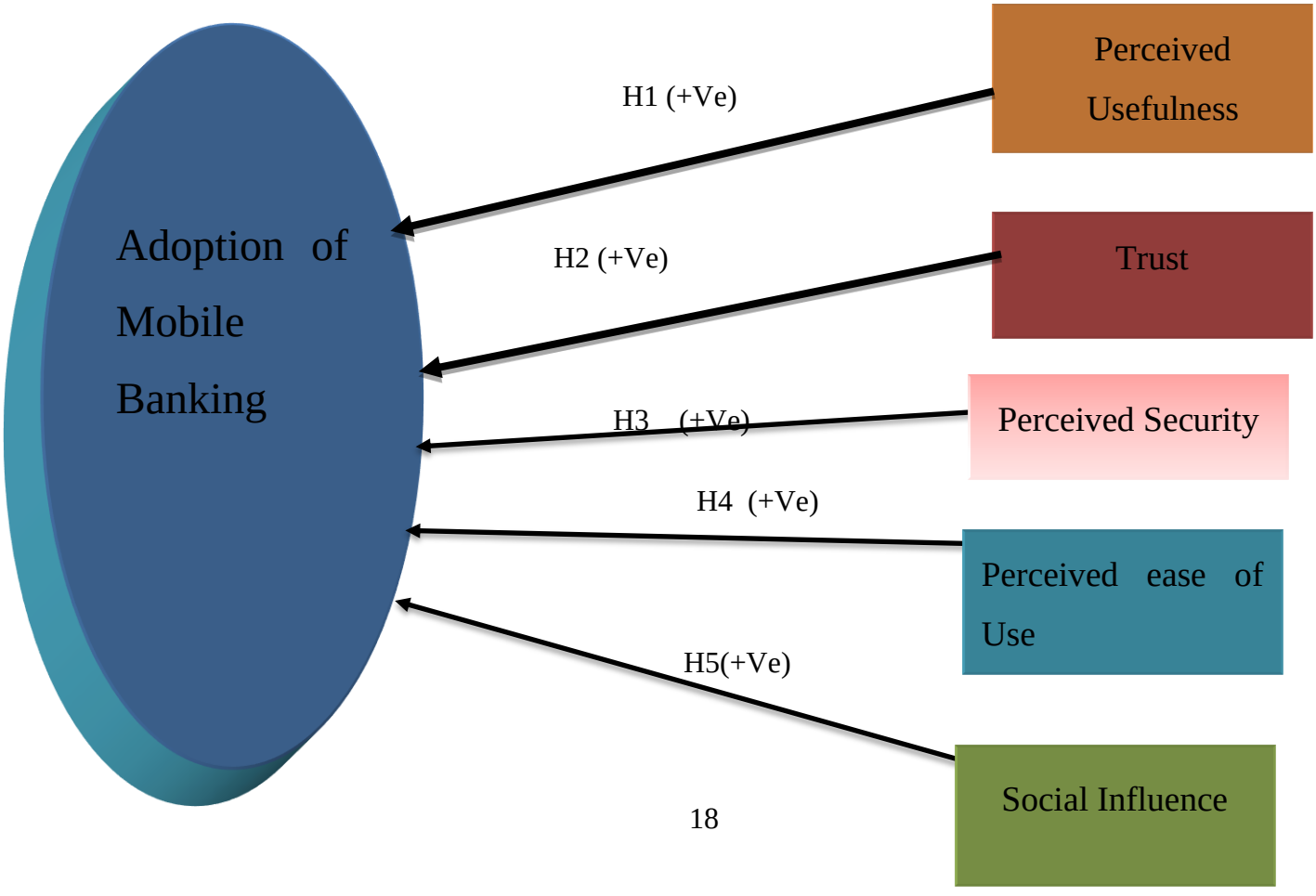


Figure 2.3: Research Framework based on reviewed literature

CHAPTER THREE: RESEARCH METHODOLOGY

Introduction

This chapter outlines the research methodology used in the study, covering the research design, data collection methods, sample selection, and data analysis techniques. The objective is to investigate the factors influencing the adoption of mobile banking in Ethiopian commercial banks. This section offers a comprehensive explanation of the study's execution, detailing the processes for data collection and analysis.

3.1. Research Approach and design

Reserch Approach: This research adopts a quantitative research approach to examine the factors influencing mobile banking adoption among customers of Commercial Bank of Ethiopia (CBE), Dashen Bank, and Awash Bank in Addis Ababa City.

This study uses a quantitative research approach to systematically collect and analyse numerical data related to mobile banking adoption. By employing structured questionnaires with Likert-scale items, the research seeks to measure factors such as perceived security, trust, ease of use, usefulness, and social influence. This approach allows for objective insights into the relationships between these factors and mobile banking adoption. Through statistical analysis, the study aims to identify significant predictors of mobile banking adoption and understand the underlying drivers of customers' adoption decisions.

Research Design: The research design of this study encompasses both descriptive and explanatory components.

- **Descriptive:** The descriptive research design is employed to characterize the current status of mobile banking adoption among customers of the selected banks. Descriptive statistics, such as mean, median, standard deviation, and frequency distributions, were used to summarize and present key features of the data, with mobile banking services
- **Explanatory:** Building upon the descriptive findings, the explanatory research design aims to elucidate the underlying factors driving mobile banking adoption. Multiple regression analysis was conducted to examine the relationships between independent variables (e.g., perceived security, trust, ease of use, usefulness, social influence) and the

dependent variable (mobile banking adoption). This analysis seeks to uncover the extent to which these factors influence customers' decisions to adopt mobile banking services, providing insights into the mechanisms driving adoption behaviour.

3.2. Population of the study

The target population for this research comprises customers who are actively using mobile banking services provided by the selected three banks: Commercial Bank of Ethiopia (CBE), Dashen Bank, and Awash Bank. These banks were chosen based on their significant presence and pioneering roles in digital banking, as well as their substantial customer bases. The study focused specifically on customers residing in Addis Ababa City, the capital and largest city of Ethiopia.

This study considered three pioneer banks because:

1. **Diverse Customer Base:** By including these three banks, the study ensured representation from a diverse customer base. Each bank serves a distinct demographic, encompassing varying income levels, educational backgrounds, and geographic locations within Addis Ababa City. This diversity enriches the research by capturing a broad spectrum of perspectives and experiences regarding mobile banking adoption.
2. **Comparative Analysis:** Focusing on multiple banks facilitates comparative analysis. By examining mobile banking adoption across different banking institutions, common trends and unique factors influencing adoption rates can be identified. This approach enhances the depth of analysis and enables a more comprehensive understanding of the dynamics driving mobile banking adoption.

3. **Digital Banking Pioneers:** CBE, Dashen Bank, and Awash Bank are widely recognized as pioneers in Ethiopia's digital banking landscape. Their proactive investments in technology and infrastructure have propelled the adoption of mobile banking services, resulting in large customer bases actively engaged in digital transactions. By studying mobile banking adoption among customers of these leading banks, this research aims to uncover key insights into the factors shaping adoption behavior in the Ethiopian banking sector.

3.3. Sampling size and techniques

Given the large population size, which exceeds 100,000, Morgan's sampling table is deemed suitable for determining the sample size. According to Morgan's sampling table, for a population size exceeding 100,000, a sample size of 384 is considered appropriate (Morgan, J. N., & Krejci, J. P. (1970). This sample size ensures adequate representation of the target population and allows for reliable statistical analysis of the data collected. Random sampling techniques will be employed to select participants from the target population, ensuring that each customer has an equal chance of being included in the study. Random sampling enhances the generalizability of the research findings to the broader population of mobile banking users in Addis Ababa City. As such, considering the logistical constraints of reaching a large and diverse population of mobile banking customers in Addis Ababa City, this study used Convenience sampling to select respondents and distribute questionnaires.

3.4. Method of Data collection, instruments and variables

The data for this research study were collected through a structured questionnaire administered to participants. Close-ended questionnaires were utilized to gather responses from participants, providing standardized options for each question. The questionnaire was distributed in person, to the respondents. Data collection occurred over a specified period, ensuring consistency and reliability in the responses.

Instruments: The primary instrument used for data collection was a structured questionnaire designed specifically for this research study. The questionnaire consisted of a series of close-ended questions, where respondents were asked to select their responses from predefined options. Likert scale items ranging from 1 to 5 were utilized to measure the level of agreement or disagreement with statements related to various constructs.

Variables: The questionnaire covered several variables relevant to the study's objectives, including:

- ✓ **Perceived Security:** Participants' perceptions of the security features offered by mobile banking services.

- ✓ **Trust:** The level of trust participants has in the security and reliability of mobile banking platforms.
- ✓ **Perceived Ease of Use:** Participants' perceptions of the ease of using mobile banking applications.
- ✓ **Perceived Usefulness (PU):** Participants' perceptions of the usefulness and benefits of mobile banking services.
- ✓ **Social Influence (SI):** The extent to which social factors influence participants' decisions to adopt mobile banking.
- ✓ **Mobile Banking Adoption:** The level of adoption of mobile banking services among participants.

For each variable, Likert scale items ranging from 1 (Strongly Disagree) to 5 (Strongly Agree) were utilized to assess respondents' attitudes, perceptions, and behaviours related to mobile banking adoption. These variables were carefully selected based on relevant literature and theoretical frameworks to capture the key factors influencing mobile banking adoption behaviour among Ethiopian commercial bank customers.

By employing close-ended questionnaires with Likert scale items, this research ensured standardized data collection and enabled quantitative analysis of participants' responses. The structured format of the questionnaire facilitated efficient data collection and analysis, allowing for robust insights into the factors driving mobile banking adoption in the Ethiopian context.

3.5. Method of Data analysis

The data collected for this research study was analysed using the Statistical Package for the Social Sciences (SPSS) version 22. The analysis involved several statistical techniques to explore relationships between variables and test hypotheses. The following methods of data analysis were employed:

1. **Descriptive Analysis:** Descriptive statistics were computed to summarize the main characteristics of the data set. Measures such as mean, median, standard deviation, and frequency distributions were used to describe the central tendency, dispersion, and distribution of variables. This analysis provided a comprehensive overview of the data and facilitated a better understanding of the sample characteristics.

2. **Correlation Analysis:** Correlation analysis was conducted to examine the strength and direction of relationships between variables. Pearson's correlation coefficient was used to measure the degree of linear association between pairs of continuous variables. This analysis helped identify any significant correlations between variables, particularly the independent variables and the dependent variable (Mobile Banking Adoption), providing insights into potential predictors of mobile banking adoption.
3. **Regression Analysis:** Regression analysis was employed to assess the impact of independent variables on the dependent variable and to test the hypothesized relationships. Specifically, multiple linear regression analysis was conducted to examine how variations in the independent variables (e.g., Perceived Security, Trust, Perceived Ease of Use, Perceived Usefulness, and Social Influence) influenced mobile banking adoption. The regression coefficients and associated statistics were used to determine the strength and significance of the relationships. Additionally, diagnostics such as the Durbin-Watson test were performed to assess assumptions and the overall goodness-of-fit of the regression model.

Tools like tables, pie charts and percentages are also used to present the data

By utilizing SPSS version 22 for data analysis and employing correlation analysis, descriptive analysis, and regression analysis, this research was able to effectively explore the relationships between variables and test the research hypotheses. These analytical techniques provided valuable insights into the factors influencing mobile banking adoption among Ethiopian commercial bank customers, contributing to a deeper understanding of consumer behaviour in the context of mobile banking services

3.6. Model Specification/Assumptions

A regression model will be specified to analyze the relationship between the dependent variable (Adoption of Mobile Banking) and various independent variables. This has enabled the researcher to identify which factors have a significant impact on Mobile banking adoption.

The model can be represented as:

$$Y=a+b1X1+b2X2+b3X3+\ldots+bnXn+\varepsilon$$

Where:

- Y represents the dependent variable, which is Mobile Banking Adoption.
- a is the constant term or intercept.
- b1, b2, b3,…,bn are the regression coefficients associated with the expalining variables X1,X2,X3,…,Xn respectively
- X1, X2,X3,…,Xn refers the independent variables, which include
    - ✓ X1: Perceived Security
    - ✓ X2: Trust
    - ✓ X3: Perceived Ease of Use (PEOU)
    - ✓ X4: Perceived Usefulness (PU)
    - ✓ X5: Social Influence (SI)

- ε represents the error term, which captures the variability in the dependent variable that is not explained by the independent variables.

The model specification outlines how the independent variables X1, X2, X3, X4, and X5 collectively influence the dependent variable (Mobile Banking Adoption). The regression coefficients b1, b2, b3, b4, and b5 represent the magnitude and direction of the impact of each independent variable on the dependent variable, holding other variables constant. This model helps in understanding the relationship between the variables and predicting the level of mobile banking adoption based on the values of the independent variables.

3.7. Validity and Reliability

3.7.1 Validity

To ensure the validity of the research instrument used in this study and to confirm its content validity, several steps were taken as outlined in the preceding chapter. The questionnaires were reviewed and corrected by the advisor for further accuracy and feedback. Additionally, to minimize the risk of erroneous responses and ensure the robustness of the study, the following measures were implemented:

Data was meticulously collected from reliable sources, specifically from respondents who use mobile banking services. The questionnaires were developed based on a thorough review of theoretical and empirical literature. The latest version of the SPSS data analysis tool was utilized for statistical analysis, with utmost care taken during data coding.

3.7.2 Reliability

According to Burn and Bush (2014), reliability refers to the consistency of responses given by a respondent. To evaluate the reliability of scale measurements for investigating multidimensional constructs, summated scale measurements are considered most appropriate (Hair et al., 2003). In such scales, each dimension represents an aspect of the construct. Therefore, in this study, Cronbach's alpha was used to check the internal consistency of the variables, with the reliability test results presented in chapter four.

Additionally, the research advisor and senior experts were consulted to ensure the measurement instruments were suitable for the data analysis.

3.8. Research Ethics

Throughout the study, all research ethics codes were strictly adhered to. All relevant concepts in this research were properly cited. The privacy of research participants was protected, and the information collected through questionnaires from sample respondents was kept confidential and used solely for the purposes of this study

CHAPTER FOUR

2 DATA PRESENTATION AND ANALYSIS

Introduction

In this chapter under discussion, the collected data has been analyzed using appropriate statistical techniques to test the research hypotheses and answer the research questions. Descriptive statistics provide an overview of participants' responses, while inferential statistics, including correlation and regression analysis, were used to explore the relationships between the explaining variables (Perceived Security, Trust, Perceived Ease of Use (PEOU), Perceived Usefulness (PU), and Social Influence (SI)) and the dependent variable (Mobile Banking Adoption). The findings are presented through tables, graphs, charts, and narratives to offer a comprehensive analysis of the data

4.1 Reliability Test:

A close-ended questionnaire survey was conducted and collected within a one-week timeframe. Of the 384 distributed questionnaires, 302 were returned, with 14 incomplete responses excluded from the analysis. Consequently, 288 questionnaires were used, reflecting a 76.5% response rate, which is considered adequate as per Saunders (2002).

The reliability test results for the items used in this study are displayed in the following table.

Table 4.1 Internal consistency coefficients of the constructs used

Constructs	Cronbach's Alpha	Items	Result interpretation
Perceived Security	.875	8	Good
Trust	.864	6	Good
Perceived Usefulness (PU)	.915	5	Excellent
Perceived Ease of Use (PEOU)	.714	4	Acceptable

Social Influence (SI)	.715	4	Acceptable
Mobile Banking Adoption	.970	5	Excellent

Source: Survey Result, 2024

The reliability test was conducted to evaluate the internal consistency of the measurement scales used for each construct in the study. According to Hair et al. (2006), reliability measures the internal consistency of items at the time the questionnaire is administered. It assesses the extent to which items within a construct consistently measure the same underlying concept.

In this study, Cronbach's Alpha coefficient was used to assess reliability, with values closer to 1 indicating higher internal consistency. Specifically, Cronbach's Alpha values between 0.7 and 1 indicate acceptable to excellent reliability.

The reliability test results showed varying levels of internal consistency across the constructs. Constructs such as Perceived Security, Trust, Perceived Usefulness, and Mobile Banking Adoption demonstrated good to excellent internal consistency, with Cronbach's Alpha values ranging from 0.875 to 0.970. These results suggest that the items within these constructs reliably measure their respective concepts, providing confidence in the validity of the measurement scales. However, constructs like Perceived Ease of Use and Social Influence showed acceptable reliability, with Cronbach's Alpha values of 0.714 and 0.715, respectively. Overall, the reliability test highlights the importance of assessing the internal consistency of measurement instruments to ensure the robustness and accuracy of research findings. Therefore, the research instrument is deemed reliable and valid.

4.2 Validity

As part of this research, two validation methods were employed to ensure the validity of the research instruments, specifically the questionnaire designed for data collection.

1. **Pilot Testing of Questionnaire:** A pilot test was conducted using 10% of the total questionnaires prepared for the study, involving a small sample of participants, typically

38 individuals. During the pilot test, participants completed the questionnaire, providing feedback on various aspects such as clarity, comprehensibility, and relevance of the questions. This feedback was crucial in identifying any ambiguities, misunderstandings, or problems with the questionnaire's wording or structure. Based on the feedback received, necessary revisions were made to improve the questionnaire's validity and ensure that it effectively measured the intended constructs. The refined questionnaire, incorporating changes from the pilot test, was then finalized for distribution to the larger sample of respondents.

2. **Expert Review:** Additionally, the questionnaires were forwarded to the research advisor and other experienced individuals in the field to conduct an expert review. These individuals, possessing subject matter expertise and familiarity with the study area and measurement scales used, assessed the questionnaire for content validity. They evaluated the questions to ensure that they adequately captured the constructs of interest and were aligned with established theories and prior research. The experts also assessed the clarity, coherence, and appropriateness of the questions in relation to the study objectives. Any suggestions or concerns raised by the experts were carefully considered, and adjustments were made to further enhance the questionnaire's validity. Once the questionnaire had undergone expert review and revisions, it was deemed suitable for distribution to the target respondents.

Through the combination of pilot testing and expert review, the validity of the research instruments, particularly the questionnaire, was rigorously assessed. These validation procedures were integral to ensuring that the questionnaire accurately measured the constructs under investigation, thereby enhancing the reliability and validity of the research findings.

4.3 Descriptive Analysis of Variables

According to Hair et al. (2003), once the relevant data has been collected and organized for analysis, a fundamental statistical procedure to perform is descriptive analysis. This analysis employs simple calculations of means and standard deviations for the variables of interest in each group in the study. The mean indicates the extent to which the sample group, on average, agrees or disagrees with different statements (Marczyk et al., 2005). A lower mean signifies greater disagreement among respondents, while a higher mean indicates greater agreement.

The descriptive statistics presented below clearly illustrate the mean and standard deviation for the explanatory variables (Perceived Security, Trust, Perceived Ease of Use (PEOU), Perceived Usefulness (PU), and Social Influence (SI)) and the dependent variable, Mobile Banking Adoption.

Table 4.3 Summary of descriptive statistics for all constructs

Descriptive Statistics			
	Mean	Std. Deviation	N
Mobile Banking Adoption	4.9813	.98352	288
Perceived Security	4.2813	.45100	288
Trust	4.0104	.70826	288
Perceived Ease of Use (PEOU)	4.0894	.76881	288
Perceived Usefulness (PU)	4.3757	.52169	288
Social Influence (SI)	4.0938	.76758	288

Source: Survey Result, 2024

As shown in the table above, the mean values for each construct are very similar, with the highest mean value being 4.9813 and the lowest mean value being 4.01. The table also indicates minimal variability among the variables, with the highest variance at 0.983 and the lowest at 0.451.

Therefore, it is reasonable to conclude that most respondents agreed with the statements in the questionnaire, as indicated by the high mean values for all constructs and the minimal deviation, which is less than 1.

4.4 Correlation Analysis

In this section, the relationships between the independent variables (perceived security, trust, perceived ease of use, perceived usefulness, and social influence) and the dependent variable (Mobile Banking Adoption) are examined. The analysis explores the strength and nature of the association between each independent variable and Mobile Banking Adoption in detail.

After verifying the internal consistency and validity of the data, a Pearson correlation analysis was conducted. The purpose of this analysis is to determine the degree and direction of the relationship between the explanatory variables and Mobile Banking Adoption. By identifying significant correlations, the study aims to highlight which variables most strongly influence Mobile Banking Adoption. The following variables were used as factors influencing Mobile Banking Adoption:

- ✓ Variable 1: Perceived Security (Evaluated on a continuous scale from 1 to 5)
- ✓ Variable 2: Trust (Evaluated on a continuous scale from 1 to 5)
- ✓ Variable 3: Perceived Ease of Use (PEOU) (Evaluated on a continuous scale from 1 to 5)
- ✓ Variable 4: Perceived Usefulness (PU) (Evaluated on a continuous scale from 1 to 5)
- ✓ Variable 5: Social Influence (SI) (Evaluated on a continuous scale from 1 to 5)
- ✓ Variable 6: Mobile Banking Adoption (Evaluated on a continuous scale from 1 to 5)

According to Hair (2003), the Pearson correlation coefficient quantifies the degree of linear association between two variables, with values ranging from -1.00 to +1.00. A coefficient of +1.00 signifies a perfect positive association, -1.00 denotes a perfect negative association, and 0 implies no relationship between the two variables.

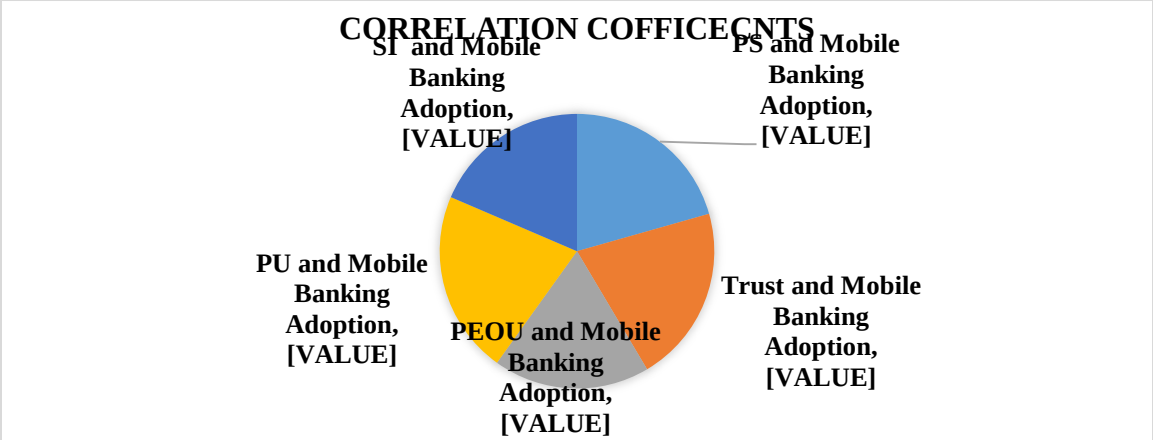
To accurately interpret the Pearson correlation coefficients for each variable in this study, the following guidelines are used as a reference.

Table 4.4 Rules of thumb for coefficients of variables

Range of Coefficient	Description of Strength
±.81 to ±1.00	Very strong
±.61 to ±.80	Strong
±.41 to ±.60	Moderate
±.21 to ±.40	Weak
±.00 to ±.20	None

Source: Hair (2003)

Table 4.4.1. Calculation of Pearson Correlation coefficients



		PS	TR	PEOU	PU	SI	MBA
Perceived Security(PS)	Pearson Correlation	1	.667**	.629**	.683**	.634**	.853**
	Sig. (2-tailed)		.000	.000	.000	.000	.000
	N	288	288	288	288	288	288
Trust (TR)	Pearson Correlation	.667**	1	.674**	.656**	.677**	.864**

	Sig. (2-tailed)	.000		.000	.000	.000	.000
	N	288	288	288	288	288	288
Perceived Ease of Use (PEOU)	Pearson Correlation	.629**	.674**	1	.689**	.685**	.763**
	Sig. (2-tailed)	.000	.000		.000	.000	.000
	N	288	288	288	288	288	288
Perceived Usefulness (PU)	Pearson Correlation	.683**	.656**	.689**	1	.698**	.892**
	Sig. (2-tailed)	.000	.000	.000		.000	.000
	N	288	288	288	288	288	288
Social Influence (SI)	Pearson Correlation	.634**	.677**	.685**	.698**	1	.768**
	Sig. (2-tailed)	.000	.000	.000	.000		.000
	N	288	288	288	288	288	288
Mobile Banking Adoption(MBA)	Pearson Correlation	.853**	.864**	.763**	.892**	.768**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	
	N	288	288	288	288	288	288
**. Correlation is significant at the 0.01 level (2-tailed).							

Source: Survey Result, 2024

Based on the Pearson correlation coefficients presented in the above table, the following interpretations can be made:

4.4.1 Perceived Security(CP) and Mobile Banking Adoption

Perceived security refers to the users' perception of the security measures implemented by mobile banking platforms. A high correlation coefficient of 0.853 indicates a very strong positive relationship between perceived security and Mobile Banking Adoption. This suggests that as customers' perception of security increases, their likelihood of adopting mobile banking

services also increases. This finding underscores the importance of robust security measures in fostering trust and confidence among users

4.4.2 Trust(TR) and Mobile Banking Adoption

Trust has a very strong and positive correlation (0.864) with Mobile Banking Adoption. Trust reflects the degree to which customers trust the reliability and integrity of mobile banking platforms. With a correlation coefficient of 0.864, trust demonstrates a strong positive association with Mobile Banking Adoption. This indicates that as customers' trust in mobile banking systems grows, their propensity to adopt mobile banking services also increases. Building trust is therefore critical for encouraging widespread adoption and usage of mobile banking platforms.

4.4.3 Perceived Ease of Use (PEOU) and Mobile Banking Adoption

The correlation coefficient between Perceived Ease of Use (PEOU) and Mobile Banking Adoption is 0.763, indicating a strong positive correlation. Perceived ease of use refers to users' perception of the simplicity and convenience of mobile banking applications. The correlation coefficient of 0.763 suggests a moderately strong positive relationship between perceived ease of use and Mobile Banking Adoption. This implies that as users perceive mobile banking applications to be easier to use, they are more likely to adopt them. Ensuring intuitive user interfaces and seamless navigation can enhance perceived ease of use and promote adoption.

4.4.4 Perceived Usefulness (PU) and Mobile Banking Adoption

The correlation coefficient between Perceived Usefulness (PU) and Mobile Banking Adoption is 0.892, indicating a very strong positive correlation.

Perceived usefulness reflects the extent to which users believe that mobile banking services enhance their efficiency and effectiveness in financial transactions. With a correlation coefficient of 0.892, perceived usefulness exhibits a strong positive association with Mobile Banking Adoption. This indicates that as customers perceive mobile banking services to be more useful, they are more inclined to adopt them. Emphasizing the practical benefits and

value-added features of mobile banking can enhance perceived usefulness and drive adoption rates.

4.4.5 Social Influence (SI) and Mobile Banking Adoption

The correlation coefficient between Social Influence (SI) and Mobile Banking Adoption is 0.768, indicating a strong and positive correlation.

Social influence refers to the influence of social networks, peers, and reference groups on individuals' adoption decisions. The correlation coefficient of 0.768 indicates a moderately strong positive relationship between social influence and Mobile Banking Adoption. This suggests that individuals are influenced by the adoption behavior of their social circles, leading to higher adoption rates among those with influential peers embracing mobile banking. Leveraging social networks and peer recommendations can amplify adoption efforts and foster a culture of mobile banking usage.

These findings provide valuable insights into the factors driving Mobile Banking Adoption within the Ethiopian banking industry, emphasizing the significance of perceived security, trust, ease of use, usefulness, and social influence in shaping customers' adoption decisions. This suggests that each of these factors can influence Mobile Banking Adoption within the Ethiopian banking industry.

4.5 Regression Analysis

Regression models make several assumptions to ensure the validity of the results. These assumptions are important for accurate parameter estimation, hypothesis testing, and making valid predictions.

Assumptions of Simple regression model

Here are the key assumptions of a linear regression model (the most common type of regression model) used in this particular research:

1. **Linearity**: The relationship between the independent variables (predictors) and the dependent variable (response) is assumed to be linear. The model assumes that the response variable can be represented as a linear combination of the predictors.
2. **Independence:** The observations in the dataset are assumed to be independent of each other. This assumption ensures that the observations do not influence each other, and there is no systematic pattern of correlation or dependence among them.

3. **Normality:** The residuals are assumed to follow a normal distribution. This assumption is important for hypothesis testing, confidence intervals, and making accurate predictions. It also ensures that the estimated coefficients have minimum variance.

4. **No multicollinearity**: There should be little or no multicollinearity among the predictor variables. Multicollinearity occurs when two or more predictors are highly correlated, making it difficult to separate their individual effects on the response variable. High multicollinearity can lead to unstable estimates and unreliable inferences.

It's important to assess these assumptions before interpreting the results of a regression model. Violations of these assumptions may require additional modeling techniques or adjustments to the data to ensure the validity of the results.

4.6 Multiple regression assumption tests

4.6.1 Linearity

In this study, the positive B values for Perceived Security, Trust, Perceived Ease of Use (PEOU), Perceived Usefulness (PU), and Social Influence (SI) indicate a positive linear relationship with Mobile Banking Adoption. This means that as the values of these independent variables increase, the expected value of Mobile Banking Adoption also increases. Hence, it is justified to assume linearity in this regression analysis, as the positive coefficients suggest a direct and proportional relationship between these factors and the adoption of mobile banking

4.6.2 No-auto correlation (Durbin Watson Test)

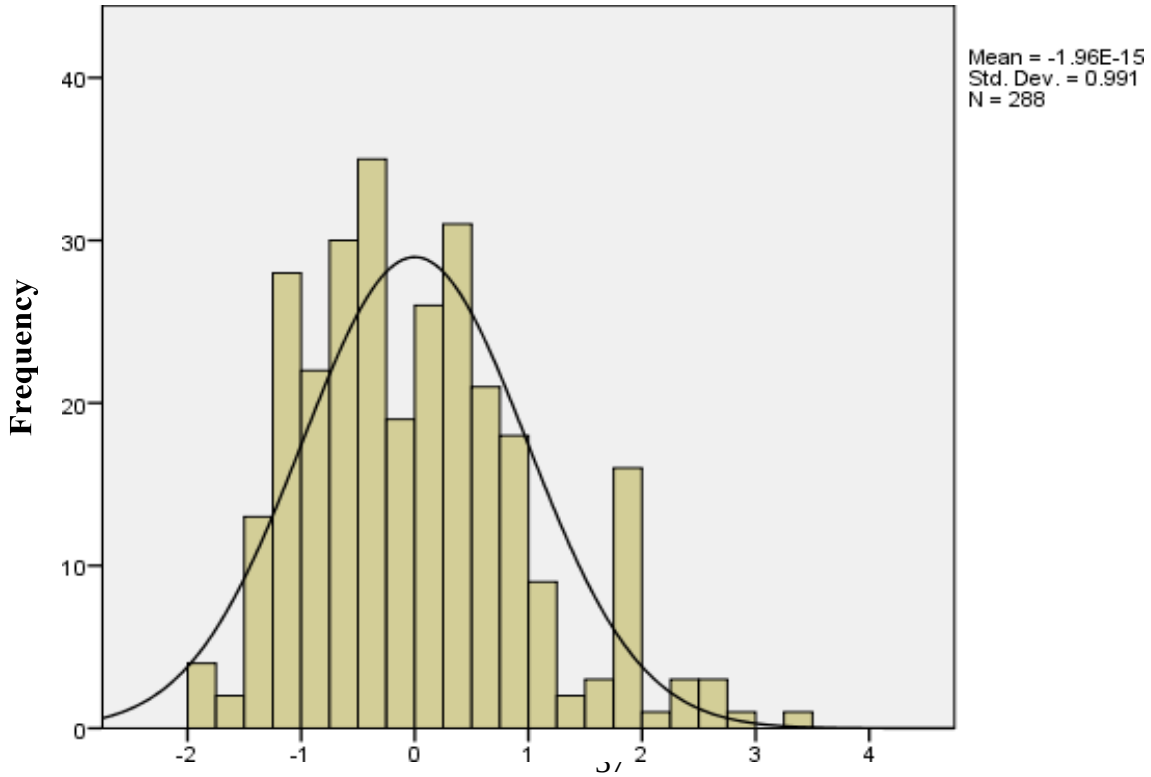
The Durbin-Watson test measures autocorrelation in the residuals of a regression analysis. According to Field (2009), values between 1.5 and 2.5 are considered normal. In this study, the Durbin-Watson statistic of 1.771 indicates that there is no significant positive autocorrelation in the residuals, meaning the residuals are not highly correlated with each other. This suggests that the observations are independent, making the result relatively normal and suitable for regression analysis

4.6.3 Normality Test

The sample size in this research is sufficiently large. According to the Central Limit Theorem, when the sample size is large, the estimated coefficients (B values) tend to be approximately normally distributed. Additionally, the histogram shown below, which closely resembles a bell curve, provides further confirmation of the normal distribution of the data.

Figure 4.6: Histogram

Dependent Variable: Mobile Banking Adoption



Regression Standardized Residual

Source: Survey Result, 2024

4.6.4 Multi-collinearity

According to Hair et al. (2003), correlation coefficients among predictor variables provide insight into the presence of multicollinearity. Low to moderate correlation coefficients suggest minimal multicollinearity. In the correlation matrix table, the coefficients between independent variables confirm the absence of multicollinearity, as all coefficients are below 0.7.

Hair et al. (2003) also proposed that tolerance and variance inflation factor (VIF) are useful measures for assessing collinearity among variables. A tolerance value less than 0.10 or VIF values below a certain threshold (typically 10) indicate a low level of multicollinearity among predictor variables

Table 4.6 Bivariate correlation analysis: Coefficients of the variables

Coefficients[a]								
Model		**Unstandardized Coefficients**		**Standardized Coefficients**	**t**	**Sig.**	**Collinearity Statistics**	
		B	**Std. Error**	**Beta**			**Tolerance**	**VIF**
	(Constant)	-.216	.072		-10.004	.000		
	Perceived Security	.345	.113	.451	3.924	.000	.187	5.351

	Trust	.378	.070	.534	5.377	.000	.197	5.070
	Perceived Ease of Use (PEOU)	.204	.169	.266	.617	.000	.209	4.430
	Perceived Usefulness (PU)	.618	.115	.521	6.242	.000	.136	7.380
	Social Influence (SI)	.177	.169	.231	.457	.000	.329	4.631
a. Dependent Variable: Mobile Banking Adoption								

Source: Survey Result, 2024

Both the tolerance limits and VIF values shown in the table above confirm the absence of significant correlations among predictor variables. Therefore, it can be concluded that multicollinearity is not a concern in this research, and it has not impacted the findings.

4.7 Multiple Linear Regressions

4.7.1 Regression analysis among the predictors of Mobile Banking Adoption.

The study utilized multiple regression analysis with the SPSS data analysis tool to explore the relationship between the explaining variables and the dependent variable, while also accounting for the influence of other variables. This approach allowed the researcher to evaluate the unique impact of each explanatory variable while controlling for their combined effects. The analysis produced several critical tables, including Model Summary, ANOVA, and coefficients of predictors, which are presented comprehensively below:

Table 4.7 Regression analysis: Model Summary

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson

1	.926[a]	.858	.855	.37442	1.771

a. Predictors: (Constant), Social Influence , Perceived Usefulness , Trust, Perceived Security, Perceived Ease of Use

b. Dependent Variable: Mobile Banking Adoption

Source: Survey Result, 2024

The model summary provides a comprehensive overview of the regression model's performance.

The R value of 0.926 indicates a very strong correlation between the predictors and the dependent variable.

The R-squared value of 0.858 suggests that 85.8% of the variance in mobile banking adoption can be explained by the combination of independent variables (Perceived Security, Trust, Perceived Ease of Use, Perceived usefulness, and Social Influence). This substantial R-squared value suggests a strong fit of the model to the data, implying that the selected independent variables collectively contribute significantly to the variance observed in Mobile Banking Adoption. The remaining 14.2% of variance in mobile banking adoption is not explained by the model. This unexplained variance could be due to other factors not included in the model, such as individual differences in technological aptitude, personal preferences, specific contextual influences, or external factors like economic conditions. Understanding these additional factors requires further research beyond the current model.

In conclusion, the R-squared value of 0.858 indicates that the independent variables in the multiple regression model accounted for a significant amount of variation in the dependent variable, demonstrating a robust relationship among the variables studied.

Furthermore, the Durbin-Watson statistic of 1.771 suggests that there are no significant issues with autocorrelation in the regression residuals.

Table 4.7.1. Regression analysis: ANOVA

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	238.085	5	47.617	339.656	.000[b]
	Residual	39.534	282	.140		
	Total	277.619	287			

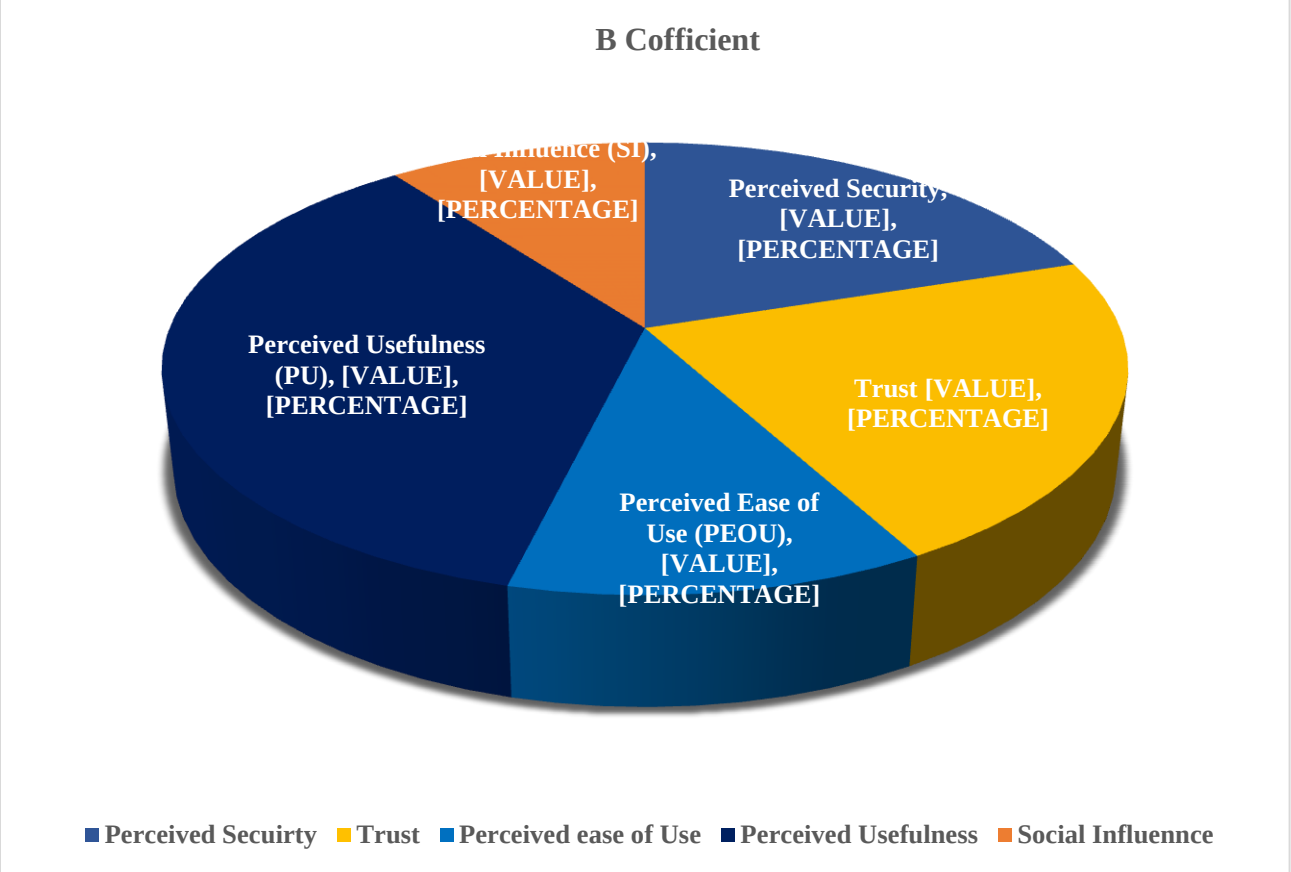
a. Dependent Variable: Mobile Banking Adoption

b. Predictors: (Constant), Social Influence , Perceived Usefulness, Trust, Perceived Security, Perceived Ease of Use

Source: Survey Result, 2024

As shown in the above table, The F-value of 339.656 with a significance level of 0.000 indicates that the overall regression model is statistically significant. This high F-value suggests that the independent variables, as a group, significantly predict the dependent variable. The significance level ($p < 0.001$) shows that there is a very low probability that the observed relationship occurred by chance, confirming the model's reliability and predictive power.

Table 4.7.2. Regression analysis: Coefficients



Coefficients[a]								
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-.216	.072		-10.004	.000		
	Perceived Security	.345	.113	.451	3.924	.000	.187	5.351
	Trust	.378	.070	.534	5.377	.000	.197	5.070
	Perceived Ease of Use	.204	.169	.266	.617	.000	.209	4.430
	Perceived Usefulness	.618	.115	.521	6.242	.000	.136	7.380
	Social Influence	.177	.169	.231	.457	.000	.329	4.631
a. Dependent Variable: Mobile Banking Adoption								

Source: Survey Result, 2024

The coefficients of the independent variables in the regression model provide insights into the magnitude and direction of their impact on Mobile Banking Adoption, while holding other variables constant. The positive coefficient for each variable suggests that an increase in that variable is associated with an increase in Mobile Banking Adoption

From the above regression analysis table, the following analysis results can be drawn:

1. Constant: -216

The constant term represents the expected value of the outcome variable (Mobile Banking Adoption) when all predictor variables (Perceived Security, Trust, Perceived Ease of Use, Perceived Usefulness, and Social Influence are zero. The constant term in the regression model has an unstandardized coefficient of -0.216, which is significant ($p < .001$). This indicates that if all independent variables are held at zero, the baseline level of mobile banking adoption would be slightly negative. While hypothetical, this suggests that without the influence of the studied factors, mobile banking adoption would be minimal.

2. Perceived Security: 0.345

A one-unit increase in perceived security results in a .345-unit increase in mobile banking adoption. This strong positive impact underscores the importance of enhancing security measures in mobile banking platforms. Implementing advanced security features and reassuring users about the safety of their transactions can significantly boost adoption rates. This finding is consistent with previous studies by Alalwan et al. (2016) and Aweke (2015).

Implication: The higher the perceived security, the greater the adoption rate of mobile banking.

3. Trust: 0.378

Similarly, a one-unit increase in trust leads to a .378-unit increase in mobile banking adoption. This indicates a strong positive effect, highlighting that building and maintaining trust with users is crucial for adoption. Banks should focus on transparency, reliability, and building a

trustworthy brand to foster user trust. This result aligns with findings by Zhou (2011) and Mohammed (2018).

Implication: The higher the trust, the greater the adoption rate of mobile banking.

4. Perceived Ease of Use (PEOU): 0.204

A one-unit increase in perceived ease of use results in a .204-unit increase in mobile banking adoption. This indicates that making mobile banking applications user-friendly can positively impact their adoption. Banks should prioritize intuitive design and user-friendly interfaces to enhance the ease of use. This finding is consistent with the studies by Riquelme and Rios (2010) and Alemayehu (2019).

Implication: The easier the use of mobile banking, the higher the adoption rate will be.

5. Perceived Usefulness (PU): 0.618

A one-unit increase in perceived usefulness leads to a .618-unit increase in mobile banking adoption, making it the most influential variable. This suggests that users are more likely to adopt mobile banking if they find it beneficial and valuable. Banks should highlight the practical benefits and convenience of mobile banking to encourage adoption. This finding aligns with research by Koenig-Lewis et al. (2010) and Molla (2018).

Implication: The more useful mobile banking is perceived, the higher the adoption rate will be.

6. Social Influence (SI): 0.177

A one-unit increase in social influence results in a .177-unit increase in mobile banking adoption. Although this is the least impactful among the studied variables, it is still significant. This suggests that social influence, such as recommendations from friends and family or societal trends, plays a role in mobile banking adoption. Banks can leverage social proof and influencer marketing to enhance adoption rates. This finding is supported by studies from Baptista and Oliveira (2015) and Asrat (2017).

Implication: The greater the social influence, the higher the adoption rate of mobile banking.

These interpretations rely on the provided B values, which indicate how much the outcome variable changes with a one-unit increase in each predictor variable, while holding other predictors constant. It is crucial to note that these interpretations assume linearity, independence, normality, and no multicollinearity in the regression model.

Based on this, the regression equation would be formulated as follows:

Mobile Banking Adoption = -216 + 0.345 * PS + 0.378 * TR+ 0.204 * SI + 0.618 * PU + 0.177 * PEOU

4.8 Summary of hypothesis Testing

Hypothesis 1: Perceived Security and Mobile Banking Adoption

The correlation analysis shows a strong positive relationship between perceived security and mobile banking adoption, with a correlation coefficient of .853. The regression analysis further supports this finding, with a standardized coefficient (β) of .345, which is statistically significant ($p < .001$). These results confirm that perceived security significantly impacts mobile banking adoption.

Therefore, Hypothesis 1 is supported, indicating that enhancing the security features of mobile banking services can significantly increase user adoption.

Hypothesis 2: Trust and Mobile Banking Adoption

Trust was found to have a strong positive relationship with mobile banking adoption, with a correlation coefficient of .864. The regression analysis revealed a standardized coefficient (β) of .378, which is statistically significant ($p < .001$). This suggests that trust is a crucial determinant of mobile banking adoption.

Hypothesis 2 is thus supported, underscoring the importance of building and maintaining user trust through transparent communication and reliable service delivery.

Hypothesis 3: Perceived Ease of Use and Mobile Banking Adoption

The correlation coefficient for perceived ease of use and mobile banking adoption is .763, indicating a strong positive relationship. The regression analysis provides further evidence, with a standardized coefficient (β) of .204, which is statistically significant ($p < .001$).

These findings support Hypothesis 3, showing that perceived ease of use positively influences mobile banking adoption. Banks should focus on developing intuitive and user-friendly mobile banking applications to enhance user adoption.

Hypothesis 4: Perceived Usefulness and Mobile Banking Adoption

Perceived usefulness exhibits the strongest positive relationship with mobile banking adoption, with a correlation coefficient of .892. The regression analysis reinforces this, with a standardized coefficient (β) of .618, which is highly significant ($p < .001$). This confirms that perceived usefulness is the most significant predictor of mobile banking adoption.

Hypothesis 4 is supported, indicating that emphasizing the practical benefits and advantages of mobile banking can greatly increase its adoption among users.

Hypothesis 5: Social Influence and Mobile Banking Adoption

The correlation analysis shows a strong positive relationship between social influence and mobile banking adoption, with a correlation coefficient of .768. The regression analysis indicates a standardized coefficient (β) of .177, which is statistically significant ($p < .001$).

These results support Hypothesis 5, suggesting that social influence has a significant, though relatively lower, impact on mobile banking adoption compared to the other factors. Banks can leverage social networks and peer recommendations to encourage more users to adopt mobile banking.

The hypothesis testing results indicate that all five variables—perceived security, trust, perceived ease of use, perceived usefulness, and social influence—significantly influence

mobile banking adoption. The regression coefficients show that perceived usefulness has the strongest impact on adoption, followed by trust, perceived security, perceived ease of use, and social influence. These findings are consistent with the correlation analysis, which also indicated strong positive relationships between each independent variable and mobile banking adoption.

4.9 Hypotheses Results

Factors affecting the adoption of Mobile Banking

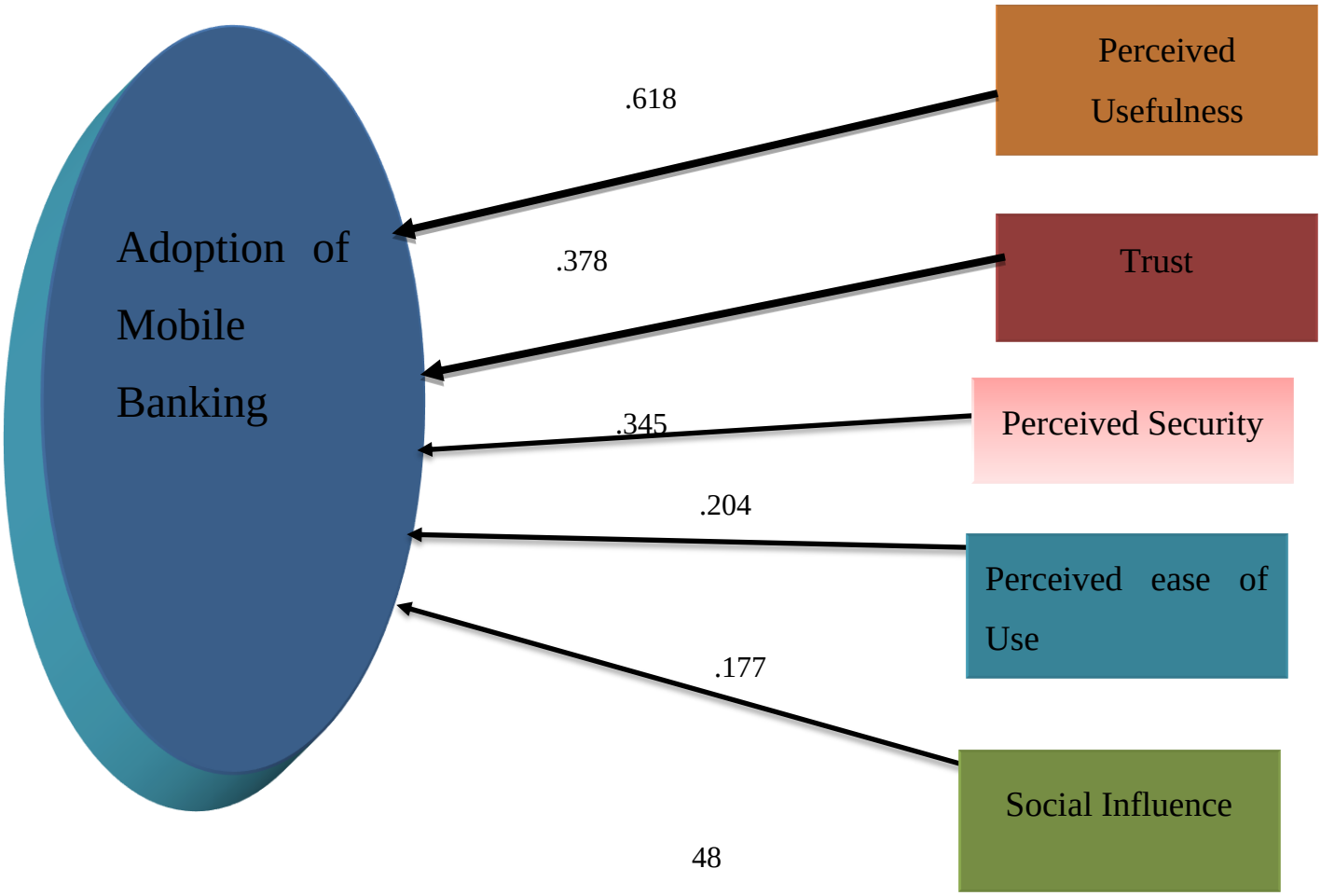


Figure 4.9: Results of Analyses Based on the Survey Questionnaire

4.10 Discussion

In this section, the findings of the current study are discussed in relation to previous research both globally and within Ethiopia. Each variable's impact on mobile banking adoption is analyzed in detail.

The findings showed that the developed variables significantly influence Mobile Banking Adoption. All the five independent variables namely: Perceived Security, Trust, Perceived Ease of Use, Perceived Usefulness and Social influence have explained Mobile Banking Adoption.

The analysis shows that perceived security has a strong positive relationship with mobile banking adoption, with a correlation coefficient of .853 and a significant standardized regression coefficient (β) of .345 ($p < .001$). These findings align with previous research conducted by Alalwan et al. (2016), who found that perceived security is a critical factor influencing the adoption of mobile banking in Jordan. Similarly, a study by Akturan and Tezcan (2012) in Turkey also highlighted the importance of security concerns in mobile banking adoption. In the Ethiopian context, Aweke (2015) reported that perceived security significantly affects the adoption of e-banking services, which is consistent with the current study's findings. Therefore, it is evident that enhancing security features in mobile banking can significantly boost user adoption, both locally and globally.

Trust emerged as a crucial factor with a strong positive relationship to mobile banking adoption, evidenced by a correlation coefficient of .864 and a significant standardized regression coefficient (β) of .378 ($p < .001$). This finding is consistent with the study by Zhou (2011) in China, which found that trust plays a significant role in mobile banking adoption. Similarly, Shaikh and Karjaluoto (2015) confirmed the importance of trust in mobile banking adoption in their global literature review. Locally, the findings of this study align with the research by Mohammed (2018), who found that trust significantly influences the adoption of mobile banking in Ethiopia. Thus, building and maintaining trust through transparent communication and reliable services is crucial for the adoption of mobile banking.

The correlation coefficient for perceived ease of use is .763, and the standardized regression coefficient is .204 ($p < .001$), indicating a strong positive relationship with mobile banking adoption. This result is consistent with Davis's Technology Acceptance Model (TAM) (1989), which posits that perceived ease of use significantly influences technology adoption. Additionally, a study by Riquelme and Rios (2010) in Singapore found that perceived ease of use positively impacts mobile banking adoption. In Ethiopia, similar findings were reported by Alemayehu (2019), who noted that ease of use is a significant determinant of mobile banking adoption. These findings suggest that user-friendly interfaces and straightforward navigation are essential for encouraging mobile banking adoption.

Perceived usefulness has the strongest positive relationship with mobile banking adoption, with a correlation coefficient of .892 and a highly significant standardized regression coefficient (β) of .618 ($p < .001$). This finding is in line with the original TAM proposed by Davis (1989), which highlights perceived usefulness as a primary predictor of technology adoption. Internationally, a study by Koenig-Lewis et al. (2010) in the UK found similar results, emphasizing the importance of perceived usefulness in mobile banking adoption. In the Ethiopian context, the study by Molla (2018) also confirmed that perceived usefulness significantly influences mobile banking adoption. Therefore, emphasizing the practical benefits and advantages of mobile banking is critical for increasing user adoption.

Social influence has a strong positive relationship with mobile banking adoption, as indicated by a correlation coefficient of .768 and a significant standardized regression coefficient (β) of .177 ($p < .001$). This finding is supported by Venkatesh et al.'s (2003) Unified Theory of

Acceptance and Use of Technology (UTAUT), which identifies social influence as a significant factor in technology adoption. Studies by Baptista and Oliveira (2015) in Mozambique and Luo et al. (2010) in China also found that social influence significantly affects mobile banking adoption. Locally, Asrat (2017) reported similar findings in Ethiopia. Thus, leveraging social networks and peer recommendations can help in encouraging more users to adopt mobile banking.

The findings of this study demonstrate that perceived security, trust, perceived ease of use, perceived usefulness, and social influence are significant predictors of mobile banking adoption in Ethiopian commercial banks. These results are consistent with the broader literature on mobile banking adoption, both globally and locally. The high R^2 value of .858 indicates that these variables collectively explain a significant portion of the variance in mobile banking adoption. However, the unexplained variance of 14.2% suggests that future research should explore additional factors influencing adoption. Overall, the study highlights the importance of addressing user concerns and perceptions to enhance mobile banking adoption, thereby promoting financial inclusion and fostering a robust digital banking environment in Ethiopia.

Thus, the effect of the independent variables on Mobile Banking Adoption in this research is modeled as:

Mobile Banking Adoption = -216 + 0.345 * PR + 0.378 * TR + 0.204 * PEOU + 0.618 * PU + 0.177 * SI+. 072(St. Error)

CHAPTER FIVE

5. Summary of findings, Conclusion and Recommendation

This final section of the study encompasses fundamental subsections such as research summary, conclusions, recommendations, and future research direction

5.1 Summary of Major Findings

The primary objective of this study was to investigate the factors influencing the adoption of mobile banking in Ethiopian commercial banks, focusing on perceived security, trust, perceived ease of use, perceived usefulness, and social influence. To achieve this, a quantitative research approach was employed, utilizing a descriptive and explanatory research design. The study population consisted of customers from three selected commercial banks in Addis Ababa: Dashen Bank, Awash Bank, and the Commercial Bank of Ethiopia. A sample size of 384 respondents was determined using statistical sampling techniques to ensure representativeness and reliability of the results.

The correlation analysis revealed significant positive relationships between the independent variables and mobile banking adoption. The correlation coefficients indicated the strength of these relationships, with perceived usefulness showing the strongest correlation ($r = .892$) and perceived ease of use showing the lowest, yet still significant, correlation ($r = .763$). This suggests that users are more likely to adopt mobile banking if they perceive it as beneficial and practical, underscoring the need for banks to highlight the functional benefits of mobile banking in their marketing and user education efforts.

The multiple regression analysis demonstrated that all five independent variables significantly predict mobile banking adoption. Perceived usefulness had the highest standardized coefficient ($\beta = .618$), followed by trust ($\beta = .378$), perceived security ($\beta = .345$), perceived ease of use ($\beta = .204$), and social influence ($\beta = .177$). The model summary indicated a high R value of .926 and an R^2 value of .858, suggesting that 85.8% of the variance in mobile banking adoption can be explained by these variables. This high explanatory power highlights the importance of

these factors in influencing adoption. However, the unexplained variance of 14.2% suggests that there are other factors not included in this model that also influence adoption, indicating the need for future research to explore additional variables.

The findings of this study have several implications for Ethiopian commercial banks. Perceived usefulness emerged as the most significant predictor of mobile banking adoption, indicating that users are more likely to adopt mobile banking if they perceive it as beneficial and practical. Therefore, banks should emphasize the functional benefits of mobile banking in their marketing and user education efforts. Trust was also found to be a crucial factor, highlighting the importance of building and maintaining user trust through robust security measures and transparent communication. Ensuring the integrity and reliability of mobile banking services is essential for fostering user trust. Perceived security significantly influenced adoption, suggesting that users need assurance that their transactions and personal information are secure. Banks should continuously enhance their security protocols and communicate these measures effectively to users.

While less impactful than perceived usefulness and trust, perceived ease of use still played a significant role in adoption. Banks should focus on creating intuitive and user-friendly mobile banking applications to facilitate ease of use. Social influence, although having the least impact among the five variables, still significantly influenced mobile banking adoption. Leveraging social networks and peer recommendations can help in encouraging more users to adopt mobile banking.

Overall, the study highlights the importance of addressing user concerns and perceptions to enhance mobile banking adoption. By focusing on these key factors, Ethiopian commercial banks can develop targeted strategies to increase user adoption, thereby promoting financial inclusion and fostering a more robust digital banking environment. The findings of this study are consistent with previous research both locally and internationally, reinforcing the critical role of perceived usefulness, trust, and security in driving mobile banking adoption

5.2 Conclusion

This study aimed to investigate the factors affecting the adoption of mobile banking in Ethiopian commercial banks, specifically focusing on variables derived from the Technology Acceptance Model (TAM): perceived security, trust, perceived ease of use, perceived usefulness, and social influence. The study's findings provide critical insights into the relative importance and impact of these variables on mobile banking.

The study confirms that perceived usefulness and trust are critical determinants of mobile banking adoption. Security concerns and ease of use also play significant roles, while social influence has a lesser but still notable impact. These findings are consistent with previous research both globally and within Ethiopia, highlighting the universal importance of these factors in technology adoption.

5.3 Recommendations

Based on the research findings discussed in the previous chapters, Ethiopian commercial banks are recommended to focus on the following areas to enhance the adoption of mobile banking services:

1. **Enhance Perceived Usefulness**:

   - **Promote Functional Benefits**: Emphasize the practical benefits of mobile banking, such as convenience, time-saving, and the ability to perform transactions anywhere and anytime. This can be achieved through targeted marketing campaigns and customer education programs.
   - **Offer Value-Added Services**: Introduce and promote additional services like bill payments, fund transfers, mobile wallets, and investment options through the mobile banking platform. Providing diverse functionalities can increase the perceived usefulness and attract more users.
   - **User Testimonials and Case Studies**: Share success stories and testimonials from existing users who have benefited from using mobile banking. This can help potential users understand the tangible benefits and motivate them to adopt the service.

2. **Build and Enhance Trust**:

   - **Strengthen Security Measures**: Implement robust security protocols such as two-factor authentication, encryption, and regular security audits to ensure the safety of user data and transactions. Highlight these security features in communications to reassure users.

   - **Transparent Communication**: Clearly communicate the security measures and data protection policies to users. Provide regular updates on security improvements and educate users on how to protect their personal information.

   - **Customer Support and Assurance**: Offer reliable and accessible customer support to address any concerns or issues users may have. Providing prompt assistance can build trust and confidence in the mobile banking service.

3. **Improve Perceived Security**:

   - **Visible Security Features**: Incorporate visible security features such as secure login mechanisms, transaction verification messages, and security badges within the mobile banking app. Making security measures visible can reassure users about the safety of their transactions.
   - **Security Awareness Campaigns**: Conduct regular security awareness campaigns to educate users about the potential risks and best practices for secure mobile banking usage. Inform users about common threats like phishing and how to avoid them.
   - **Regular Security Updates**: Ensure that the mobile banking app is regularly updated to address any security vulnerabilities. Promptly communicate these updates to users to maintain their confidence in the system's security.

4. **Enhance Perceived Ease of Use**:

- **User-Friendly Interface**: Design the mobile banking application with a simple, intuitive, and user-friendly interface. Ensure that the navigation is straightforward and that users can easily perform desired tasks without confusion.
- **User Training and Support**: Provide user training sessions, tutorials, and guides to help customers become familiar with the mobile banking app. Offer in-app support features or help sections to assist users in real-time.
- **Feedback Mechanism**: Implement a feedback mechanism to gather user input on their experience with the app. Regularly update the app based on user feedback to improve usability and address any issues.

5. **Leverage Social Influence**:

- **Peer Recommendations**: Encourage satisfied customers to share their positive experiences with friends and family. Implement referral programs where users can earn rewards for referring others to use the mobile banking service.
- **Community Engagement**: Engage with local communities through events, seminars, and workshops to raise awareness about mobile banking. Highlight the benefits and security features of the service to build trust within the community.
- **Social Media Presence**: Maintain an active presence on social media platforms to reach a broader audience. Share informative content, user testimonials, and updates about the mobile banking service to influence potential users.

By implementing these comprehensive recommendations, Ethiopian commercial banks can enhance the adoption of mobile banking services, address user concerns, and create a more secure, user-friendly, and beneficial mobile banking environment.

5.4 Future Research Directions

Based on the findings and limitations of this study, several future research directions are recommended to further understand the factors influencing mobile banking adoption:

Firstly, this study took samples from selected banks in Addis Ababa. Therefore, other researchers are recommended to select respondents from other cities and regions in Ethiopia to capture a broader and more representative picture of mobile banking adoption across different geographical and socio-economic contexts. Comparative studies between urban and rural areas could highlight unique challenges and opportunities in promoting mobile banking in diverse settings.

Longitudinal studies are also suggested to track changes over time in user perceptions and adoption behaviors. By observing these dynamics over extended periods, researchers can identify long-term trends and the impact of technological advancements, such as improved security features and user interfaces, on mobile banking adoption. This approach will provide insights into how evolving technology and increasing user familiarity influence adoption rates.

Moreover, future research should consider including additional variables such as technological aptitude, economic conditions, and personal preferences. Examining how individual differences in digital literacy and comfort with technology affect mobile banking adoption can offer valuable insights for designing user-friendly systems. Additionally, understanding the influence of economic factors like income levels and employment status can help identify barriers and opportunities for promoting mobile banking among different demographic groups. Exploring personal preferences and lifestyle choices, such as travel frequency and work habits, can provide a more nuanced understanding of the drivers of adoption.

Researchers are encouraged to conduct cross-regional comparisons to understand the cultural and contextual influences on mobile banking adoption. Studies comparing different regions or countries can reveal how cultural attitudes, regulatory environments, and technological infrastructure affect adoption rates. Furthermore, examining the differences in adoption between urban and rural areas can lead to targeted strategies that address the unique needs of different populations.

Qualitative approaches, such as in-depth interviews and focus groups, are recommended to gain a deeper understanding of users' experiences, motivations, and barriers to mobile banking adoption. These methods can provide rich, contextualized data that complement quantitative

findings. Additionally, conducting user experience studies can help identify usability issues and areas for improvement by observing how users interact with mobile banking apps and collecting feedback on their experiences.

The impact of regulatory changes on mobile banking adoption is another critical area for future research. Policy analysis can shed light on how government regulations, financial policies, and legal requirements facilitate or hinder adoption. Investigating the role of compliance with international security standards and local regulations can help identify best practices for regulatory compliance and security assurance, thus building user trust.

By pursuing these detailed research directions, future studies can provide a comprehensive understanding of the factors influencing mobile banking adoption, contributing to the development of effective strategies that address user concerns and enhance the overall user experience.

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Appendix

Appendix 1

Research Instrument

ADDIS ABABA UNIVERSITY SCHOOL OF COMMERCE COLLEGE OF BUSINESS AND ECONOMICS MARKETING MANAGEMENT DEPARTMENT

Introduction to the Questionnaire

Dear Respondent,

This questionnaire is designed to gather information about the factors affecting the adoption of mobile banking services among customers of selected Ethiopian commercial banks (CBE, Dashen, and Awash Bank). Your participation in this survey is highly appreciated and will contribute significantly to the research. Please note that your responses will be kept confidential and will only be used for academic purposes.

Instructions:

Please indicate your level of agreement with each statement by marking the appropriate box.

Part I. General Information

1. How old are you? (Please, write your age in terms of years only). _____ (Years).
2. What is your maximum education level?

☐ University /College Student ☐ Diploma ☐ PHD

☐ Master's Degree ☐ Bachelor's Degree ☐ Professor

☐ Vocational School Certificate

3. What is your gender?

    ☐ Male

    ☐ Female

4. How long have you been using mobile Banking Service with the bank? _____ (Years)

Part II: Factors affecting the adoption of mobile banking service

Use the following scale for your responses:

1 = Strongly Disagree

2 = Disagree

3 = Neutral

4 = Agree

5 = Strongly Agree

Variable	Item	SD	D	N	A	SA
Perceived Security	I feel secure using mobile banking services.	1	2	3	4	5
	Mobile banking services provide adequate security features.	1	2	3	4	5
	I trust the security measures implemented by my bank.	1	2	3	4	5
	My personal information is safe with mobile banking.	1	2	3	4	5
	Mobile banking transactions are secure.	1	2	3	4	5
	The bank's mobile app ensures transaction security.	1	2	3	4	5
	I am confident in the bank's ability to protect my data.	1	2	3	4	5
	The bank promptly addresses security concerns.	1	2	3	4	5
Trust	I trust my bank's mobile banking services.	1	2	3	4	5
	The bank's mobile services are reliable.	1	2	3	4	5

	My bank is trustworthy.	1	2	3	4	5
	I believe in the bank's competence.	1	2	3	4	5
	My bank has a good reputation.	1	2	3	4	5
	I have confidence in the bank's mobile banking services.	1	2	3	4	5
Perceived Ease of Use (PEOU)	Mobile banking services are easy to use	1	2	3	4	5
	| Learning to use mobile banking services is easy for me	1	2	3	4	5
	I find mobile banking services to be user-friendly	1	2	3	4	5
	It is easy to navigate through the mobile banking app	1	2	3	4	5
Perceived Usefulness	Mobile banking improves my banking efficiency.	1	2	3	4	5
	Mobile banking is useful for managing my finances.	1	2	3	4	5
	Mobile banking saves me time.	1	2	3	4	5
	Mobile banking enhances my banking experience.	1	2	3	4	5
	Using mobile banking is beneficial.	1	2	3	4	5
Social Influence (SI)	People important to me think I should use mobile banking services	1	2	3	4	5
	Friends and family members encourage me to use mobile banking services.	1	2	3	4	5

	My colleagues believe that mobile banking is beneficial	1	2	3	4	5
	The people whose opinions I value prefer mobile banking	1	2	3	4	5
Mobile Banking Adoption (MBA)	I frequently use mobile banking services	1	2	3	4	5
	I am satisfied with my overall experience with mobile banking	1	2	3	4	5
	Mobile banking is my preferred method for conducting banking transactions	1	2	3	4	5
	I intend to continue using mobile banking services in the future	1	2	3	4	5
	I would recommend mobile banking services to others	1	2	3	4	5

Thank you again for your participation in this research,