Addis Ababa University

College of Business and Economics

Department of MBA

Determinants of Digital Banking Adoption and the Moderating Role of Cultural Value in the Case of Addis Ababa Abay Bank Branches

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A Thesis Submitted in Partial Fulfilment of the Requirements for the Degree of MBA in Management

Addis Ababa, Ethiopia, June 2026

Declaration

I, the undersigned, declare that this thesis entitled **"Determinants of Digital Banking Adoption and the Moderating Role of Cultural Value in the Case of Addis Ababa Abay Bank Branches"** is my original work, prepared under the guidance of Dr. Zelalem Gebretsadik. All sources of materials used for the thesis have been duly acknowledged. I further confirm that the thesis has not been submitted either in part or in full to any other higher learning institution for the purpose of earning any degree.

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Date: ___June 10 2026_____

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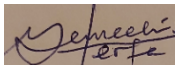
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List of Abbreviations

ATM - Automated Teller Machine

AVE - Average Variance Extracted

CR - Composite Reliability

CV - Cultural Value

DA - Digital Banking Adoption

HTMT - Heterotrait-Monotrait Ratio

IC - Individualism/Collectivism

NBE - National Bank of Ethiopia

PEOU - Perceived Ease of Use

PLS-SEM - Partial Least Squares Structural Equation Modeling

POS - Point of Sale

PU - Perceived Usefulness

SEM - Structural Equation Modeling

SI - Social Influence

SMS - Short Message Service

TAM - Technology Acceptance Model

TR - Trust

UA - Uncertainty Avoidance

USSD - Unstructured Supplementary Service Data

UTAUT - Unified Theory of Acceptance and Use of Technology

VIF - Variance Inflation Factor

Abstract

This study aimed to examine the factors influencing digital banking adoption and how cultural value moderates digital banking adoption among Abay Bank retail banking customers, Addis Ababa, Ethiopia. The study was based on an extended Technology Acceptance Model (TAM) with the three constructs of trust, social influence, and cultural value. The design of the research used was the explanatory quantitative research, in which the sampling technique used was stratified random sampling, with a sample size of 384 active participants in digital banking. The data obtained were primary data which were analyzed by using Partial Least Squares Structural Equation Modeling (PLS-SEM) using SmartPLS 4.

Findings showed that Perceived Usefulness ($\beta = 0.329$) and Cultural Value ($\beta = 0.327$) are the most significant direct factors influencing digital banking adoption. Trust ($\beta = 0.170$), Social Influence ($\beta = 0.133$), and Perceived Ease of Use ($\beta = 0.117$) were also found to have significant positive direct effects. The study also showed that the relationship between Perceived Ease of Use and digital banking adoption is significantly and positively moderated by Cultural Value, meaning that the ease of use of the interface is crucial for the users who tend to have high collectivist and uncertainty avoidance orientations. But neither perceived usefulness, social influence, nor trust had a significant interaction with cultural value. In the light of this study, the following recommendations are proposed for the digital adoption of the SMEs segment by Abay Bank: Digital micro-credit by backend automation using API, optimize backend API resilience, and implement vernacular interface localization. The study builds on the existing literature by providing cultural value as a key direct driver and a selective moderator in the development of financial markets in Sub-Saharan Africa.

Keywords: *Digital Banking Adoption, Technology Acceptance Model, Cultural Value, Abay Bank, PLS-SEM, Ethiopia.*

Chapter One

1. Introduction

1.1 Background of the Study

In the past 20 years, the financial services industry has undergone significant digital transformation. Advances in mobile technology, financial technology (fintech), internet connectivity, and digital payment systems have changed how financial institutions deliver services and how customers interact with them. At the same time, customer expectations have shifted toward faster, more convenient, and easily accessible financial services. As a result, digital banking has become an important strategic tool for banks seeking to improve efficiency, remain competitive, and meet the changing needs of customers in both developed and developing economies (Babbar, 2023; Alnemer, 2022).

Over the past years, the National Bank of Ethiopia (NBE) has systematically transformed the digital banking landscape in Ethiopia. Specifically, the Payment System Proclamation No. 718/2019 lays out extensive legal and functional frameworks which regulate the mobile banking technologies, electronic funds transfer systems, digital payment methods and provision of fintech services. The Law is specifically designed to improve financial inclusion, lower the reliance on cash-based transaction systems, boost the efficiency of payment systems infrastructure and create Ethiopia as one of the most technologically advanced financial markets in East Africa. Businesses have an opportunity to adopt an aggressive digital deployment plan to ensure compliance with regulations and capture new market opportunities. The conditions outlined in the Proclamation offer an opportunity for the non-bank fintech players in payments for the first time, altering the competitive landscape and bringing innovative concepts into the banking sector.

In this regard, Abay Bank, one of the most advanced private commercial banks based in Addis Ababa and founded in 2010, seems to be a technological revolution for the competitive banking industry in Ethiopia. Abay Bank has developed and put in place a comprehensive digital suite known as ‘Smart Banking' which consists of advanced mobile banking

applications, Unstructured Supplementary Service Data (USSD) services based on the dialing code *812#, internet banking platforms, Automated Teller Machines (ATMs) and Point of Sale (POS) terminal networks. The bank has a total of over 555 branches in the country and it has more than 4 million customers. The digital products are aimed at helping customers access their bank accounts, move money, pay water, electricity and gas bills, purchase airtime and take out loans while at home anytime of the day.

The ratio of branches to digital is very far from the number of branches management expects and projects, with branch positions having been maintained despite extensive investments in digital infrastructure, and wide customer marketing activities to encourage customers to use digital. This empirical finding that technological capability and functionality do not necessarily correlate with digital banking behavioral usage points to the need to explore other socio psychological and cultural factors as technological capability is not enough to ensure continued digital banking engagement.

Technology acceptance model (TAM) is the most widely adopted model that has been influencing the field of technology adoption research since its development by Davis (1989) and later modified by Venkatesh and Davis (2000) with the inclusion of other factors such as trust and facilitating conditions. The Extended TAM has been very helpful in elucidating the adoption of technology in diverse organizational and consumer contexts. However, one of the common problems with traditional TAM was that it neglects the role of cultural contextual factors as dynamic pathways in the theories of adoption.

The current research in cross culture has resulted in better understanding that cultural factors such as individualism-collectivism, uncertainty avoidance, long-term versus short-term temporal orientation and traditionalism-modernism have significant influences on the salience and magnitude of technological determinants in shaping technology adoption decisions (Hofstede, 2001; Triandis, 1995).

However, most of the empirical studies have considered the cultural aspects as background variables or as segmentation variables. This empirical approach is based on the underlying assumption that cultural influences are consistently and equally powerful on all technology channels. Rababa and Ali (2024) found that the cultural value is not consistently

operationalized as a moderating variable which can be tested statistically within the framework of the structural equation model in modern TAM studies on African context.

As a result of this theoretical and methodological gap, the current study proposes, and empirically tests, an Extended TAM model introducing digital banking's latent structural moderator, Cultural Value, that influences the direct relationship between the technological determinants and digital banking adoption. This model is composed of four important technological factors: Perceived Usefulness, Perceived Ease of Use, Trust and Social Influence. Partial Least Squares Structural Equation Modeling (PLS SEM) using SmartPLS 4 software was applied to operationalize the four latent constructs, one latent construct as moderating variable and the final dependent variable of the study which is the adoption. This will allow for a thorough quantification of Abay Bank's direct effects, interaction effects and conditional indirect pathway in digital banking.

1.2 Statement of the Problem

Abay Bank has made substantial investments in digital banking infrastructure with the objective of encouraging customers to move from traditional branch-based services to digital channels such as mobile banking, USSD services, and agent banking. From an operational perspective, this strategy offers clear advantages. Digital transactions generally cost much less to process than branch transactions, allowing banks to reduce service delivery costs and use resources more efficiently. Increased use of digital channels can also reduce the burden on physical branches and enable the bank to allocate more resources to activities that create greater value. Despite these potential benefits and continued investment in digital technologies, customer adoption of digital banking services has not reached the level anticipated by the bank. As a result, branch-based transactions continue to account for a significant share of banking activities, limiting the efficiency gains expected from digital transformation.

The existing literature on digital banking adoption in Ethiopia provides useful insights but leaves several important questions unanswered. One limitation is that a large proportion of previous studies have focused on the Commercial Bank of Ethiopia (CBE), the country's largest state-owned bank. Although these studies contribute to understanding technology

adoption in the Ethiopian banking sector, their findings may not fully reflect the realities faced by private commercial banks. Differences in customer characteristics, market positioning, service delivery models, and competitive pressures mean that the factors influencing digital banking adoption at Abay Bank may differ from those identified in studies conducted within CBE (Tadesse & Abebe, 2023).

Second and more basic, existing Ethiopian studies on TAM have a systematic mis-specification of the role of cultural factors. Forms of social structure like collectivism, uncertainty avoidance, and financial-norm orientations of traditional financial institutions (TFN), which are deeply rooted in the social life of the banking population in Addis Ababa, are found in the literature as demographic footnotes rather than as active structural elements. This analytical decision eliminates one of the most consistent findings from more recent cross-cultural studies: that cultural values cause the conditional moderation effects that the aggregation models will not detect, such as the culture's ability to amplify or attenuate specific technology-adoption pathways (Handarkho, 2022; Nguyen & Nguyen, 2025; Srite&Karahanna, 2006).

Third, analytical focus has rarely been directed towards the institutional context in which adoption decisions are made in the past. The USSD *812# infrastructure, which is accessed by a large number of Abay Bank's customers, and the bank's status as a mid-tier competitor in terms of liquidity depth in the CBE and network penetration in Telebirr all contribute to adoption dynamics that are not captured by the generic models.

The current study attempts to tackle this threefold gap directly by operationalizing Cultural Value as a latent structural moderator in the Extended TAM path model and by applying the model only to the case of the Abay Bank. By applying this framework to Abay Bank customers, the study seeks to provide a more comprehensive understanding of the factors that drive digital banking adoption and to generate evidence that can support institution-specific digital banking strategies.

1.3 Research Questions

The study seeks to answer the following research questions among Abay Bank customers who actively use at least one digital banking service:

RQ1: What effect does Perceived Usefulness have on digital banking adoption among Abay Bank customers?

RQ2: What effect does Perceived Ease of Use (PEOU) have on digital banking adoption among Abay Bank customers?

RQ3: What effect does Trust in the security, reliability, and credibility of Abay Bank's digital banking systems have on digital banking adoption?

RQ4: How does Social Influence, including recommendations and expectations from family, friends, and peers, affect digital banking adoption among Abay Bank customers?

RQ5: Does Cultural Value moderate the relationship between Perceived Usefulness and Digital Banking Adoption?

RQ6: Does Cultural Value moderate the relationship between Perceived Ease of Use (PEOU) and Digital Banking Adoption?

RQ7: Does Cultural Value moderate the relationship between Trust and Digital Banking Adoption?

RQ8: Does Cultural Value moderate the relationship between Social Influence and Digital Banking Adoption?

1.4 Objectives of the Study

1.4.1 General Objective

The general objective of this study is to investigate the factors influencing digital banking adoption among Abay Bank customers in Addis Ababa by extending the Technology Acceptance Model to include Trust and Social Influence and by examining the moderating role of Cultural Value using a PLS-SEM approach.

1.4.2 Specific Objectives

SO1: To examine the effect of Perceived Usefulness on Digital Banking Adoption.

SO2: To assess the effect of Perceived Ease of Use (PEOU) on Digital Banking Adoption.

SO3: To evaluate the influence of Trust on Digital Banking Adoption.

SO4: To determine the role of Social Influence in Digital Banking Adoption.

SO5: To examine whether Cultural Value moderates the relationships between Perceived Usefulness, Perceived Ease of Use, Trust, Social Influence, and Digital Banking Adoption.

1.5 Statement of Research Hypotheses

Based on the research objectives and existing literature on TAM and digital adoption, the following hypotheses are proposed.

1.5.1 Direct Effect Hypotheses (H1-H5)

H1: Perceived Usefulness (PU) has a positive and statistically significant direct relationship with Digital Banking Adoption (DA) among Abay Bank digital channel participants in Addis Ababa.

H2: Perceived Ease of Use (PEOU) has a positive and statistically significant direct relationship with Digital Banking Adoption (DA). Participants who find Abay Bank's USSD *812# and mobile banking platforms cognitively accessible and intuitively navigable are expected to exhibit stronger adoption intentions.

H3: Trust (TR) in the security, reliability, and data-protection capabilities of Abay Bank's digital systems has a positive and statistically significant direct relationship with Digital Banking Adoption (DA).

H4: Social Influence (SI)encompassing peer recommendations, family endorsements, and communal social norms operative within Addis Ababa's urban financial communities has a positive and statistically significant direct relationship with Digital Banking Adoption (DA).

H5: Cultural Value (CV) directly positively affects Digital Banking Adoption (DA) of digital channel participants of Abay Bank, such that digital banking participants with higher collectivist and uncertainty-avoiding culture orientations will respond positively to digitally oriented services with a culturally positive approach.

1.5.2 Moderation Effect Hypotheses (H6–H9)

H6: The relationship between PEOU and DA is significantly and positively moderated by Cultural Value (CV).

H7: The relationship between Perceived Usefulness (PU) and Digital Banking Adoption (DA) is significantly moderated by Cultural Value (CV).

H8: The relationship between Social Influence (SI) and Digital Banking Adoption (DA) is significantly moderated by Cultural Value (CV).

H9: Cultural Value (CV) significantly and positively affects the relationship between Trust (TR) and Digital Banking Adoption (DA).

1.6 Significance of the Study

Theoretical Significance

This study is significant in three ways. From a theoretical perspective, it extends the TAM by adding the structural predictors of Trust and Social Influence, and places Cultural Value as a latent moderating variable, addressing the need to culturally adapt TAM extensions to banking settings in Africa as highlighted by Alnemer (2022) and Rababa and Ali (2024). Importantly, Cultural Value is not collapsed to the national level but rather operationalized at the individual respondent level using six reflective indicators, rather than the previous cross-national cultural moderation studies which collapsed it to a national level Hofstedian score. In addition, H5 is supported by Positive Direct Prediction of adoption, which means that CV has an independent contribution to explaining adoption behavior, not just a moderation effect on the relationship between other variables and adoption behavior.

Empirical Significance

The study's empirical contribution is that it provides primary survey data from 384 digital channel participants of Abay Bank, the Ethiopian adoption literature has largely ignored, in favor of CBE and the larger private banks like Awash and Dashen. The institutional focus results in outputs that are immediately transferable to other similar private sector banks competing in the digital environment after Proclamation 718/2019.

Practical Significance

From a practical standpoint, the disaggregated moderation results offer the Abay bankers a map for strategically and culturally targeted intervention, which adoption drivers yield culturally invariant returns and which do not. Such a distinction has implications for investment allocation in the digital product, localization of interfaces, and the design of targeted financial-inclusion outreach under the NBE regulatory requirements. The findings may also assist policymakers and financial institutions in designing more effective digital financial inclusion strategies that reflect local behavioral and cultural realities.

1.7 Scope and Limitations of the Study

This study is limited to Abay Bank branches located in Addis Ababa. The city of Addis Ababa was purposefully chosen because it represents a wide spectrum of educational and income levels, jobs, access to infrastructure and digital literacy levels. But the findings were not readily transferable to rural branches, which have different cultural contexts and infrastructure.

The research does not include and does not cover the retail banking customers who might use Abay Bank's Smart Banking digital platform for different reasons than those of the customers in the study. In addition, the study only covers accounts with customers who have signed up to and engaged with at least one of Abay Bank's digital banking channels over the 12-months leading up to the data collection period. The study therefore focuses on differences in the adoption of digital banking at the user level, and not on adopters and non-adopters.

The present research aims to explore and explain the adoption of mobile services, and therefore a cross-sectional design is used from a temporal perspective, as most of the

adoption studies used the TAM model. Because this is a cross-sectional study, however, the relationships among the study variables cannot be assumed to be causal.

From a methodological perspective, common method bias is a concern because self-reported survey measures are used, and may be mitigated with procedural and statistical controls. In order to reduce this risk, predictor and outcome variables were measured independently and statistical analysis was performed via Harman's single-factor test. Also, there are some limitations inherent in the nature of the results that must be dealt with when interpreting the results, and this is known to be a problem in many collectivist cultural settings. To minimize the risk of social desirability bias, the questionnaire was not shown to the respondents and personally identifiable data was not included.

1.8 Operational Definitions of Key Terms

The following section will provide rigorous, theoretically grounded, and citation backed operational definitions of the key latent and manifest constructs examined within this research:

Digital Banking: The provision and use of financial services via electronic, internet-based, mobile or telecommunication technologies that offer a substitute to face-to-face banking transactions in a branch. Digital banking, in the Abay Bank context, refers to transactional services delivered via the Abay Bank Mobile Banking Application, the Abay Bank USSD service short code ‘812’, Abay Bank web banking portal, Abay Bank ATM and POS network and the Abay Bank agent banking channel known as ‘Babbar' (Babbar, 2023).

Perceived Usefulness (PU): The extent to which a digital channel participant thinks that using a bank's digital channels will be more useful in managing their personal finances than using the bank's branch-based service delivery methods. PU includes time savings, transaction cost savings, 24-hour availability, and the ability to make complex and/or more frequent financial transactions (Davis, 1989; Venkatesh & Davis, 2000).

Perceived Ease of Use (PEOU): How easy it is for a digital channel participant to perceive that the Abay Bank digital channels (during the execution of the USSD channels prompt

sequences and the mobile banking application interface) require minimal cognitive load, learning effort and technical skill. PEOU captures users' perceptions on how easy it is to understand the interface, understand the instructions, understand the steps to complete the transaction, and its ease of integration with the user's existing technological ability (Davis, 1989; Venkatesh & Davis, 2000). Note: The construct PEOU is used throughout this study in all text, tables, and structural models.

Trust (TR): A belief that the digital systems of Abay Bank will be able to reliably and effectively protect personal financial information, prevent access by unauthorized parties and fraudulent transactions, maintain data integrity and accurately and institutionally process all transactions. Trust involves confidence in the technical security infrastructure of the bank, its compliance with the regulations, the stability of the institution, and its efforts to ensure customer data protection (Gefen et al., 2003; DeLone& McLean, 2003).

Social Influence (SI): The extent to which the participant in the digital channel thinks that it is expected, recommended or endorsed by influential people in their social network that they continue and expand their use of Abay Bank's digital banking services, such as family, colleagues, community, or well-known figures. Social Influence in the Ethiopia context is the dense communal networks of the iqub and idir associations, work place peer networks, and family financial socialization patterns (Fishbein & Ajzen, 1975; Venkatesh et al., 2003).

Cultural Value (CV): An underlying construct representing an individual's dispositional orientation along the culturally determined dimensions, operationalized using six reflective measurement items representing Individualism/Collectivism (IC1–IC3) and Uncertainty Avoidance (UA1–UA3). Cultural Value is at the same time positively related with Digital Banking Adoption (H5) and it moderates the relationship between PEOU–adoption and Digital Banking Adoption (H6) PU and Digital Banking Adoption (H7), Social Influence (SI) and Digital Banking Adoption (H8) as well as the relationship between Trust–adoption and Digital Banking Adoption (H9) following the theoretical premise that cultural worldviews systematically influence the salience of technology features and institutional trust (Hofstede, 2001; Triandis, 1995). Note: In this study, IC and UA dimensions are measured only as opposed to Power Distance and Long-Term/Short-Term Orientation.

Digital Banking Adoption (DA): This is the only endogenous construct in the structural model, defined as the behavioral intention and self-reported usage frequency of digital channels used by a digital channel participant in the service delivery of Abay Bank; these digital channels include the Mobile Banking Application and the USSD *812# platform, reflected as a construct measured through five Likert scale questions addressing the extent to which they use digital channels and the extent to which they try out additional transactional capabilities, and whether they plan to continue and increase their use of digital channels.

Chapter Two

2. Literature Review

2.1 Introduction

The adoption of digital banking is a key theme in financial and information systems research today and has emerged as a priority for banks to better understand why consumers use or refuse to use digital financial services. In recent years, there has been growing interest in the behavioral, technological, and contextual issues that influence adoption decisions in the past decade. This chapter discusses the theoretical and empirical literature on factors that determine the adoption of a digital bank, including perceived usefulness, perceived ease of use, trust, social influence, and cultural values. The review is focused on the literature published in the last five years (2015-26) to keep the topics relevant to current financial and technological realities; however, it also draws on the fundamental theories that continue to be applied in the field. The classical works like those of Davis (1989), Hofstede (2001) and Venkatesh et al. (2003) are also included since they are the foundation of most of the adoption models. These basic papers are presented along with some more contemporary papers in order to demonstrate the development of the field as well as the contribution that newer research has made to earlier theoretical frameworks.

2.2 Digital Banking

In the last 20 years, there have been remarkable advances in digital technologies, including the internet, mobile devices, cloud computing, social media platforms and data-driven service systems, which have led to a vast transformation of customers' expectations regarding their banking services. Today's customers have greater demand for banking services that are not just convenient, but also quick and customized and made available at any hour. This shift has introduced challenges for banks to continually restructure their service delivery models as a

result of changing technologies and market conditions (Skinner, 2014). Thus, digital transformation proves to be a key strategy for financial institutions to stay competitive and relevant in today's financial ecosystem (Pourebrahimi et al., 2018; Hakizimana et al., 2023; Amudhan et al., 2022).

The banking sector in Ethiopia is regulated under a framework, which has been considerably influenced by the National Bank of Ethiopia (NBE), especially through its Payment System Proclamation No. 718/2019. It's a piece of legislation that regulates electronic payment systems, mobile banking services, fund transfer systems, digital financial platforms, and fintech businesses. Private commercial banks like Abay Bank must continuously develop and optimize their digital channels, such as mobile banking apps and USSD-based services like #812 to support this regulation, and also make sure that these channels are accessible for customers with different levels of digital literacy (Berhe & Yohannes, 2024).

Ethiopian banking customers are also found to be greatly influenced by strong cultural and social values, such as uncertainty avoidance and collectivist values, which affect their perception of risk, trust and convenience in digital financial services (DFS) (Tadesse & Abebe, 2023). It is not just about the availability of technology, but also about the suitability of the digital banking services to the customers' cultural expectations and behavioral inclinations in the country. Therefore, banks that create digital systems that align with the regulatory environment and the cultural context are likely to have greater digital adoption and long-term customer engagement (Berhe & Yohannes, 2024; Tadesse & Abebe, 2023).

On a broader scale, digital banking has continued to grow globally due to improvements in digital infrastructure and the increasing demand for convenient financial services. However, despite its advantages, adoption is still not universal. Many customers remain hesitant to fully engage with digital banking due to concerns about security, trust, and the risks associated with online financial transactions (Kajol, Singh, & Paul, 2022)

Digital Banking includes all aspects of banking that rely on modern technology. Digital Banking is an umbrella term that includes Online Banking and Mobile Banking. Digital Banking consists of the various financial transactions that are carried out by using technology. Thus, Mobile Banking is a form of Digital Banking. However, Digital Banking

is extended to include other aspects of banking, especially in a cashless society. Once the foundation of the financial system, traditional banks have been under tremendous pressure to change for the age of technology. The rise of digital banking has revolutionized the financial services landscape, offering convenience, efficiency, and innovation that challenge the long standing dominance of traditional banking systems. Prayoga, R. G. (2023)

Advantage	Traditional Banks	Digital Banks
Convenience	Limited operating hours and dependence on physi cal branches; inperson visits required for many transactions.	24-hour access through online platforms and mobile apps; banking transactions anytime, anywhere without visiting a physical branch.
Cost effectiveness	Higher operational costs due to physical branches; often pass on costs to customers in the form of higher fees (transaction fees, account maintenance fees).	Lower operational costs without physical branches; competitive pricing with lower fees due to reduced overhead.
Ease of account opening	Often involves extensive paperwork and may re quire inperson visits to complete the process.	Quick and straightforward online account opening process; minimal paperwork and no need for inperson visits.
Instant account management	Transactions may not be real-time; account management typically requires visiting a branch or ATM.	Real-time account management via mobile apps; instant access to balances, transactions, and ability to make payments or transfers.
Innovative features and services	Traditional features with limited digital integration; slower adoption of new technologies.	Offers innovative digital tools like budgeting apps, automated savings features, real-time alerts, and integration with other financial services.

Table 1: Comparison between traditional and digital banking Aliza, N., Rahim, N. F. A., & Ramayah, T. (2025)

Digital banking includes the financial services and products that help businesses run more efficiently. For instance, the payroll, accounting, and payment software with optimized commercial ventures are examples of digital banking. Similarly, digital banking products and services make day to day financial transactions like booking tickets, paying for food, etc., incredibly easy.

In many developing countries, however, the adoption of digital banking is not without challenges. Common barriers include limited digital literacy, weak technological infrastructure, and low levels of trust in online financial systems. Despite these challenges, digital banking plays an important role in improving financial inclusion by extending financial services to individuals who were previously excluded from the formal banking system. Research in Ethiopia shows that factors such as perceived usefulness, trust in technology, service quality, and cost considerations significantly influence whether customers adopt electronic banking services. Strengthening digital infrastructure and increasing public awareness are often highlighted as key steps toward expanding adoption in the country (Ayinaddis, Mirete, & Getahun, 2025).

2.2.1 Categorization of Digital Banking Channels

Digital banking services are delivered through several electronic platforms that allow customers to access financial services without visiting physical branches. The most commonly used channels include mobile banking, internet banking, Automated Teller Machines (ATMs), SMS and USSD banking, and Point of Sale (POS) systems. These channels collectively expand access to banking services and improve convenience for customers across different segments of society.

2.2.1.1 Mobile banking

Mobile banking refers to the use of mobile devices to access banking services such as checking account balances, making payments, and transferring funds. It allows customers to perform financial transactions remotely through mobile applications or other mobile-based systems (Chuko, Melaku, Takele, & Mogos, 2025). This form of banking enables users to access their accounts at any time and from any location, significantly reducing the need to visit bank branches. By improving convenience and accessibility, mobile banking also contributes to financial inclusion, especially in countries with large unbanked populations. Studies suggest that improving mobile banking systems can also enhance operational efficiency within banks, encouraging wider customer adoption (Singh & Srivastava, 2018; Ayinaddis, Mirete, & Getahun, 2025).

*2.2.1.2 **ATM***

Automated Teller Machines (ATMs) are electronic devices that allow customers to perform basic banking functions such as cash withdrawals, deposits, fund transfers, and balance inquiries without the assistance of bank staff (Aslam, Tariq, & Arif, 2019). In many respects, ATMs function as a digital extension of the traditional banking hall by enabling self-service financial transactions. Customers use ATMs to carry out routine banking activities in a way that is faster and more accessible than branch-based services (Nigatu, Belete, &Habtie, 2023).

2.2.1.3 Internet (Online) Banking

Internet banking refers to the delivery of financial services through web-based platforms that allow customers to perform transactions such as fund transfers, bill payments, and account management without physically visiting a bank branch. It relies on internet connectivity and digital interfaces to provide continuous access to banking services. Recent literature emphasizes that internet banking improves efficiency, accessibility, and customer experience by enabling users to interact with their banks at any time and from any location (IMF Working Paper, 2024).

2.2.1.4 SMS & USSD Banking

SMS banking is a kind of mobile banking that allows users to get notifications or carry out certain financial tasks via text messages (Short Message Service) on their phones. Services including account updates, transaction alerts, and balance queries are made available by SMS delivery. USSD banking and SMS are mobile based financial services that are crucial in developing nations because they enable consumers to access banking services without internet connectivity. USSD banking is a session based, real time communication system that enables financial transactions via GSM networks, making it affordable and accessible, particularly for consumers without smartphones or internet connectivity, according to recent studies Agbalaiko, E., Goodhead, G., &Ogoun, S. (2024). According to the Digital Progress

and Trends Report 2023, these technologies are crucial for financial inclusion in low infrastructure settings with low internet and smartphone penetration.

2.2.1.5Point of Sale (PoS)

Point of Sale (POS) digital banking is the term for electronic payment systems that let consumers use debit or credit cards at merchant locations. These technologies, which are essential to digital financial services, are crucial in lowering reliance on currency and increasing transaction efficiency.

2.3 Theoretical Review

The following section outlines the main theory used in this study. Theories are explained in terms of their evolution, key concepts and significance in terms of explaining digital banking adoption behavior. This study builds on several theoretical models as it considers both trust and social influence from the UTAUT framework, and adds cultural value as a moderating variable, thus extending the Technology Acceptance Model (TAM).

2.3.1 Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM) developed by Davis (1989) and validated through a large amount of empirical research is the most broadly used and most empirically tested theory that explains the adoption of information technology systems in organizational and consumer settings. TAM is based on Fishbein and Ajzen's (1975) Theory of Reasoned Action and Ajzen's (1991) Theory of Planned Behavior and suggests that two basic proximal determinants of an individual's behavioral intention to use and adopt a technological system are his perceptions related to the system's usefulness (PU) and ease of use (PEOU), which lead to actual system usage behavior. Perceived Usefulness (PU) is defined as the extent to which the prospective user thinks that using a specific system will be helpful in improving task effectiveness, job performance or the overall quality of the outcome achieved by the task. Perceived Ease of Use (PEOU) is the extent to which the perceived interaction with the

system will not require cognitive effort, complexity of operation or technical skills (Davis, 1989).

These constructs can be aligned with customer assessments of digital financial service channels in retail banking, such as the Abay Bank's Mobile Banking Application and USSD *812#, in that PU is linked to the customer's perception that the platform is truly enhancing their financial capabilities over time, while PEOU is related to the perception that the platform is cognitively accessible, intuitively navigable, and practically manageable without requiring specific technical expertise or significant investment of learning time. The explanatory architecture of TAMs is simple and strong, and has led to over 40 years of empirical testing and thousands of studies across a variety of technological domains and geographic contexts (Venkatesh, Walton, & Thong, 2026). In digital and mobile banking research, TAM has consistently shown high explanatory power, ranging from 40% to 75% of the variance in the adoption intention in developed countries as well as in developing countries (Meskela& Hailu, 2025; AlAnati& Sharaf, 2023).

Perceived Usefulness (PU) The level of trust that an individual has in a certain system to help him or her improve his or her job performance. The users' confidence that by using the technology they are going to gain improvements and enhancements to their performance. In the case of mobile banking apps, better performance could include quicker banking, better financial surveillance and access to special features, among other advantages. Perceived Ease of Use (PEOU) The strength of belief of a particular person that a given system is non penetrating and will not cause much difficulty to use. The user's expectation is for the new system to be easy to use. Mobile banking apps can achieve high scores for perceived ease of use because the user interface is intuitive, the transaction is easy to navigate and understand, and the apps are easy to use overall. IJM

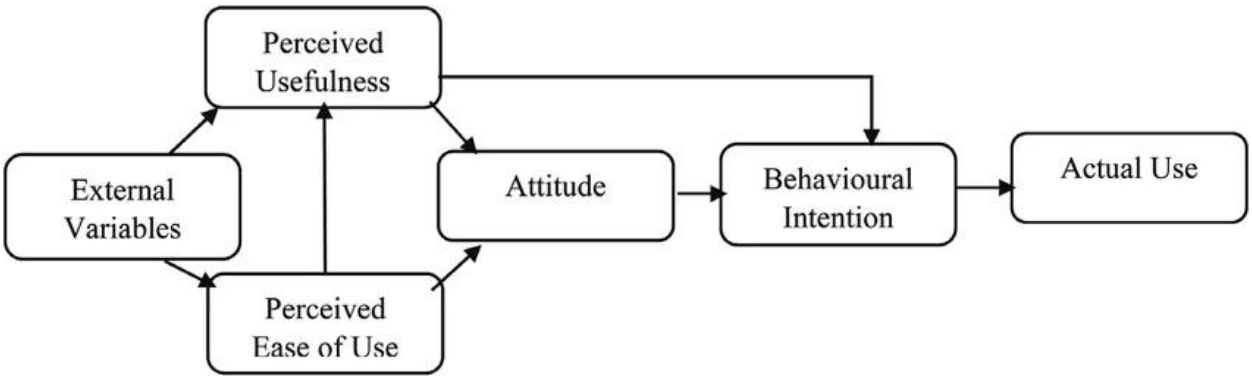


Figure 1: Technology Adoption Model

The Technology Adoption Model (TAM) has been accepted as a good model for explaining technology acceptance in the banking environment and other industries (Ladipo, P., Dixon Ogbech, B., Enyinnaya, N., & Akeke, O.). (2021). It has been widely used to analyze the determinants of digital banking adoption, and its extensions have included other constructs like perceived trust (Abdennebi, 2023; Zhang, 2024) and social influence (D. Wijayanti, 2024).

Trust and Security

Trust in banks was a primary factor in the initial trust of their users, which plays a critical role in intent to adopt (Lin, 2011). Additionally, trust enhances the usefulness and usability sense of the platform (Malaquias & Hwang, 2016). Luo et al., (2010) found that perceived privacy and financial threats are important factors affecting user risk beliefs, which have been shown to be negatively related to mobile banking acceptance. Robust security safeguards and communication thereof are imperative.

Social influence

Opinions of friends, family and colleagues have been found to be important determinates of adoption similar to subjective norm and social influence constructs in the variants of TAM (Illia et al., 2007). Positive network effects help ensure the adoption is accelerated, as more

users increase platform value, leading to greater adoption and resulting in a viral growth effect (Zhou et al., 2010) IJM.

In digital banking, TAM has been widely used and adapted to include the multi-faceted dimensions of banking technology adoption. Shankar and Jebarajakirthy (2019) used an extended TAM to investigate the adoption of mobile banking in India and their findings indicated that perceived usefulness had a significant and positive influence on the adoption intention, while ease of use, as a mediator, had a partial mediating effect between perceived usefulness and intention to adopt. They found that customers who believe digital banking is truly helpful in making financial decisions, saving time and money on transactions are significantly more likely to adopt digital banking. These findings were replicated across all demographic groups, thus providing evidence of the construct of usefulness' robustness.

Following this research, another study confirmed and further elaborated the relationship between TAM constructs and digital banking adoption. Patil et al (2020) also examined the adoption of mobile payment in India by adding constructs like perceived risk and social influence in the TAM model and found that even after incorporating the constructs of perceived risk and social influence, the strongest predictor of intention to use was perceived usefulness. Their research reveals that the risk of danger may be a bit less of a restriction when consumers understand the practical benefits of digital banking. The same is true for Al Okaily et al. (2021) who used the TAM model in a Jordanian context and obtained an R2 of about 67 percent, confirming its explanatory ability in a developing country context.

But there's been complaints about the simplicity of TAM too. In a context where cultural norms are high, trust is low and technology infrastructures are weak, the original two factors model may not be enough, according to academics. Based on this, Chaouali et al. (2016) stated that in a society where interpersonal trust and social influence are the prevailing cultural norms, the TAM should be expanded to incorporate the factors that are related to interpersonal trust and social influence. In Brazil, Malaquias and Hwang (2019) noted that social norms and institutional trust need to be combined with TAM to be able to explain the behavior of adopting mobile banking. These amendments are instrumental in the current study's adaptation of TAM that includes cultural value as a moderating variable and trust and social influence.

TAM is a relevant set of principles for the Ethiopian context of banking. A modified TAM model was used in Gebre (2020) study on mobile banking adoption among the bank customers in Addis Abba city and the study showed that perceived usefulness was significantly related to mobile banking adoption, and the fit of the model was considerably improved when there were additional variables to explain adoption such as trust and system quality. This reflects the methodology of the present study, which extends TAM in a way to account for the Ethiopian context, where trust deficits and limited digital infrastructure still pose a great hurdle in digital banking.

2.3.2 Unified Theory of Acceptance and Use of Technology (UTAUT)

The Unified Theory of Acceptance and Use of Technology (UTAUT) developed by Venkatesh et al. (2003) is a synthesis of eight previous technology acceptance models, such as TAM, Theory of Planned Behavior, Theory of Innovation, and Motivational Model, etc. UTAUT recommends four core determinants of technology acceptance and use: performance expectancy, effort expectancy, social influence, and facilitating conditions. Performance expectancy is equivalent to TAM's perceived usefulness, while effort expectancy corresponds to perceived ease of use. Social influence is the effect of other people's attitudes and behaviors on an individual's adoption decision; enabling conditions are the extent to which an individual believes that organizational and technological infrastructure is accessible to facilitate system use.

The associations between the main predictors and adoption intentions were found to be moderated by the four moderating variables that UTAUT also includes: gender, age, experience, and voluntariness of use. Venkatesh et al. (2003) reported that UTAUT explained approximately 70 percent of the variance in behavioral intention to use technology, a substantially higher explanatory power compared to its predecessor models. A recent theoretical synthesis by Venkatesh, Walton, and Thong (2026) further reviewed and synthesized over two decades of UTAUT based research, concluding that while UTAUT and its extensions retain established cross-cultural validity, boundary conditions including cultural context, regulatory environment, and institutional trust levels materially moderate the magnitude and significance of core UTAUT pathways.

UTAUT has offered a very rich theoretical framework to explain adoption behavior in the digital banking area. In a study on mobile banking adoption in Tanzania, Lwoga and Lwoga (2017) used UTAUT, and found that the strongest predictor of the mobile banking adoption was social influence among the rural bankers followed by performance expectancy and effort expectancy. The finding has especially important relevance to the Ethiopian context were communicating via word of mouth and peer recommendations is one of the most important determinants of technology adoption decisions in close-knit social networks. The result is particularly relevant for Ethiopia, where decisions on technology use in social networks with connectivity are significantly shaped by recommendations from neighbors and word of mouth communication.

In a study of mobile banking adoption in Lebanon, Tarhini et al. (2016) added trust and perceived risk as other constructs to UTAUT. Based on their results, they asserted that social influence and performance expectation were important predictors and that trust was as a link between adoption intention and social influence. The findings underscore the potential importance of the role of trust in digital banking adoption in contexts where customers are not an institutional credit taker-for-granted.

The social influence construct from UTAUT is one of the most important extensions to the TAM model, used in the present study. This paper provides a complete and contextually relevant model to explain digital banking adoption at Abay Bank by incorporating social influence variables along with the TAM variables of perceived usefulness and perceived ease of use, as well as an additional predictor, trust.

2.3.3 Cultural Value

In this study, cultural value is treated as a moderating variable, which manifests as the depth of an individual's cultural beliefs and value orientations, that enhance or diminish the relationships between the TAM based determinants and digital banking adoption. Testing cultural value as a moderator requires an analytic examination of whether the slopes of the relationship between PU adoption, PEOU adoption, trust adoption, and social influence adoption vary across levels of cultural value as opposed to merely noting that the study was conducted in country X.

Srite and Karahanna (2006) were among the first to empirically test two cultural values (individualism collectivism, uncertainty avoidance) to moderate the impact of TAM relationships with behavioral intention, which showed that the cultural values moderated the effects of PU and PEOU on behavioral intention. Their primary result was that PEOU was more influential on the intention in HAW environments, whereas the SI had a much greater influence in HCA environments. This is because in these contexts, consumers placed greater emphasis on the reliability and reliability of the digital interfaces. Much of the literature on mobile payments and digital banking has replicated and extended these key moderation results. Handarkho (2022) performed a cross-demographic analysis to explore the structural moderation of Hofstede's cultural dimensions on the acceptance of mobile payment technologies among various demographic groups in the study, she concluded that collectivism significantly and consistently reinforced the role of social influence on mobile payment adoption intention, whereas uncertainty avoidance significantly reinforced the link between institutional trust perceptions and mobile payment adoption intention. More importantly, Handarkho (2022) found that the cultural moderation effect persisted after controlling for age, income, and technology experience, showing that cultural value is not merely a proxy of demographic factors, but is rather an independent structural factor.

Similarly, Nguyen and Nguyen (2025) established cultural value orientation as a significant boundary condition for mobile banking continuous usage intention, demonstrating that the cultural moderation effects are not confined to initial adoption but extend to sustained usage behavior a finding with direct implications for the long term digital channel migration objectives of private commercial banks like Abay Bank.

Tarhini et al. (2015), in a cross-cultural TAM study spanning the UK, Lebanon, and Qatar, found that power distance and uncertainty avoidance significantly moderated the PU intention relationship, while collectivism significantly moderated the social influence intention relationship. Given Ethiopia's high collectivism and relatively high uncertainty avoidance profile, our results offer strong a priori support for putting cultural value as a moderator in the Ethiopian setting.

Ethiopia is a diverse nation with over 80 ethnic groups and a highly heterogeneous cultural composition. Despite this diversity, the main ethnic groups in Addis Ababa share a number of dominant cultural values, such as a strong sense of community and mutual obligation (reflected in institutions like idir, iquib, and mahber); respect for elders and authority; religious influence on economic behavior (both Islamic and Orthodox Christian value systems emphasize caution, communal obligation, and avoidance of usury); and a relatively high aversion to economic risk.

Ethiopia is a society that is highly collectivist (low IDV score ~20) and moderately uncertainty avoiding (UAI score ~55), thus has group norms, trust, and risk related concerns as particularly important drivers of decision making. These cultural characteristics suggest:

- Cultural value will increase the effect of Social Influence on adoption (will be greater in collectivist societies than in individualist societies).
- Cultural value will amplify the effect of Trust on adoption (uncertainty avoidance cultures place greater weight on security assurances).
- Cultural value may moderate the effect of PEOU particularly for customers who associate unfamiliarity with perceived risk, making ease of use perceptions more consequential.
- Cultural value may moderate the PU adoption relationship utilitarian PU benefits may be perceived differently depending on whether customers frame banking primarily as an individual or communal activity.

2.4 Empirical Review

This section explores the empirical evidence on digital banking adoption, with research findings from across the globe, Africa, sub–Saharan Africa and Ethiopia published between 2015 and 2026. The review is structured around the main variables of the study: perceived usefulness, perceived ease of use, trust and perceived security, social influence and cultural value. Recurrent patterns, conflicts, and gaps are identified in this section, which support the current study and draw together evidence from multiple contexts.

2.4.1 Global Context

In the global empirical research on digital banking adoption, the most prominent and reliable finding is that perceived utility is the most dominating predictor of adoption intentions in different contexts. Alalwan et al. (2017) carried out a comprehensive study on Jordan's mobile banking adoption based on an extended TAM model, where perceived usefulness was found to directly affect the intention to adopt the mobile banking services, and that perceived ease of use and social influence were the next factors. Consumers will be less inclined to accept and keep using digital banking solutions if it does not provide them with practical advantages (e.g. saving time, convenience and making transactions more affordable). However, many other studies have confirmed the results of these empirical studies, showing that perceived usefulness is a predictor.

The perceived ease of use is also consistently found to be an important predictor, but it is found to operate via perceived usefulness. Raza et al. (2019) examined mobile banking adoption in Pakistan and concluded that the perceived ease of use variable had a significant impact on the adoption intention and indirectly on the perceived usefulness variable. This will make consumers more positive about mobile banking applications and more likely to plan to use them if they feel the applications are easy to use and intuitive to use. This is particularly relevant for developing countries like Ethiopia as the ease of use of mobile banking apps can be significantly affected in the first instance by the lack of digital literacy.

In addition to trust, perceived security is found to be a key determinant of digital banking adoption around the world, particularly since the emergence of digital fraud and cybercrime. Mortimer et al. (2015) used metanalysis to examine trust in the context of mobile commerce, and found that trust is a highly positive and significant predictor of adoption intention in 37 studies in various countries. When it came to digital banking services, consumers were more likely to use these services when they believed their bank would protect their financial and personal information. On the other hand, even if they recognized the benefits of digital channels, the consumers with poor trust views did not use them, which can be understood as the potential for adoption being a limit.

AlAnati& Sharaf (2023) further corroborated and expanded on this point with a large scale study of commercial banking customers, demonstrating that digital banking service quality characteristics in terms of system reliability, transactional security and customer support

were related to the customer trust and adoption intentions on their own and in combination with each other in building customer trust for digital banking as well as digital banking adoption. Their structural equation modeling results showed that trust served as the mechanism between the quality of service perception and the adoption intention, emphasizing the importance of trust as the mechanism in the relationship between a customer and a business in adopting digital banking (AlAnati& Sharaf, 2023).

Nguyen et al. (2016) examined the factors influencing the adoption of internet banking in Vietnam and concluded that trust acted as a mediator between the institutional reputation and adoption intention. Digital banking adoption depends on trust building strategies, like open security communication and reliable service delivery, and reputation and reliability are important for banks to gain clients to their digital bank. In cross-cultural settings, Martins et al. (2014) and Hanafizadeh et al. (2014) made similar statements of the significance of trust as a predictor in digital banking adoption in Portugal and Iran, respectively.

Recently, Raza et al. (2024) have used SmartPLS structural equation modeling to investigate how security metrics, system quality, and consumer trust influence behavioral intentions in the context of using electronic banking channels in a multisectoral population. Their results showed that perceived security infrastructure had a much greater effect on perceived consumer trust than did convenience and functionality constructs, and it was the strongest pre-condition for consumer trust. It was also the most accurate predictor of intention to adopt. Raza et al. (2024) demonstrated the validity of PLSSEM implemented on SmartPLS (Ringle, Wende & Becker, 2024) to be more reliable in estimating the effect size than the covariance based SEM methodologies; this was a very strong indication of the PLSSEM approach used in the present study.

Social influence is also emerging as an important predictor for digital banking adoption particularly within the UTAUT based studies. Zhou et al. (2019) investigated mobile banking adoption in China, where social influence on the adoption intention measured by endorsement of digital banking from friends, family and colleagues was found to be a strong predictor in terms of intention to adopt, particularly for older, less digitally aware users. It illustrates how social learning and peer recommendation play an important role in the digital adoption gap between people with limited knowledge of technology and the influence that peer recommendations and social learning can have on people's digital adoption.

There have been many comparisons and cross-cultural studies that have explored the moderating impact of cultural values on the digital banking adoption relationship. Laukkanen et al. (2016) examined the five European nations and the results indicated that the national cultural factors had an impact on the link between the core factors that influence mobile banking adoption and the mobile banking adoption behavior, most significantly on uncertainty avoidance and power distance. There was significantly lower correlation between perceived usefulness and adoption in high uncertainty avoidance countries, where the need to use something for its usefulness was dampened by privacy concerns and fear of technical issues. The finding of this study supports the theoretical framework for this study greatly.
These results are further corroborated by other evidence from the mobile banking context in Southeast Asia: Nguyen and Nguyen (2025) highlighted that cultural value orientation is an important boundary condition for mobile banking continuous usage intention after initial adoption. The cultural moderation hypothesis of the present research was supported by findings of collectivist orientation moderating the effects of social influence, and the effects of uncertainty avoidance moderating the effects of trust.

2.4.2 African Context

Though the continent is grappling with major infrastructural gaps, low digital literacy and strong social and cultural factors impacting financial behaviors, the rate of digital banking adoption is steadily increasing in Africa. The African context is very instructive of financial banking in Ethiopia due to the similarities in socioeconomic characteristics, including high penetration rates of mobile phones compared to Internet and a very small number of unbanked people as well as the strong cultural attitude towards financial transactions.

In the study of mobile banking adoption in Ghana, Addai et al. (2015) identified perceived usefulness and ease of use as factors that influenced mobile banking adoption among the urban bank customers, which is consistent with the TAM findings in the rest of the world. However, they found that social influence was more influential in Ghana than in Western studies, which is in line with the more communal social structures in sub-Saharan African societies. Customers' social networks' beliefs and practices had an impact on their selection of digital banking services.

Laukkanen (2016) developed an extended TAM model by incorporating trust and perceived risk and concluded that trust is the highest predictor of mobile banking uptake in Nigeria with customers age group 25-45. Security concerns were more relevant to the customers as Nigeria was plagued by a high incidence of identity theft and digital fraud, while banks with a reputation for security and fraud prevention were better able to encourage the adoption of digital banking among their customers. This result indicates that trust is important for adoption in high fraud risk environments instead of just a predictor.

In Nigeria, Akinyemi and Asani (2015) studied the factors of internet banking adoption and the obstacles faced by customers of banks in Lagos, and concluded that perceived security and customer awareness were the major obstacles for customers of bank in Lagos to adopt internet banking. They discovered that many of the respondents in Nigeria benefit from online banking but weren't convinced by the concerns about the security and integrity of online transactions and the fear of unauthorized access to their accounts. According to the authors, in order to bridge the gap between knowledge and real adoption, banks are required to make a significant investment in customer education and security communication. In the case of the Ethiopian banking sector, this is especially the case.

Nambiar and Lu (2018) explored the moderating role of cultural factors on the relationship between mobile banking adoption intention and the four factors namely, social influence, trust, anxiety and self-efficacy in four African countries and concluded that collectivism significantly influenced the relationship between social influence and adoption intention. In countries with higher collectivism cultural profiles, social influence on people's adoption behavior was greater because they were influenced more by the recommendations and practices of social reference groups in their financial decision making. The cultural value moderation theories that were formulated in this paper have been validated as sound theories by cross-national African data.

2.4.3 Sub Saharan Africa Context

Very high penetration of mobile phones, significant financial exclusion and strong social and cultural norms in the way people act economically are characteristics which are of importance for digital banking adoption in Sub Saharan Africa. Research has already been

done on the adoption and impact of digital financial services and mobile money services in East Africa are developing rapidly, with M Pesa being a spark in Kenya.

Kiwia et al. (2019) applied the UTAUT framework to prove the adoption of mobile banking in Tanzania, and they found that social influence is the most influencing determinant of mobile banking adoption among rural banking customers, followed by performance expectancy and facilitating conditions. Their research showed that trusted peers and community leaders' recommendations was one of the strongest influences for the first time users to gain knowledge and trust; and the key factor to bridge knowledge gaps and confidence gaps. The authors also noted that enabling conditions, such as mobile networks that were reliable and high-cost data services, slightly influenced the relationship between performance expectancy and adoption intention.

Gwahula (2020) analyzed the influence of the perceived usefulness and perceived ease of use on the adoption of Internet banking in Tanzania and concluded that both variables were significantly predictive variables and also showed a strong interaction effect, meaning that persons who rated the internet banking as being useful and easy to use rates were significantly more likely to be users than those that rated it high on one variable only. This means that in the Tanzanian setting, perceived usefulness and perceived ease of use are partially independent predictors and that need to be taken into account in the Ethiopian data.

In Kenya, Njuguna and Karlsson (2019) looked at the adoption of M Pesa and formal mobile banking services and the trust in the banking institution was the key factor in terms of perceived usefulness and adoption. High utility perceptions were more likely to lead to actual adoption behavior by customers who have a high level of trust in their bank, while trust customers' low level of trust remained wary despite recognizing the advantages that digital banking offers. The results in this regard are consistent with those obtained in the study that trust plays a significant role as a moderator and direct influence on digital banking adoption.

In Kenya and Uganda, Mugo et al. (2017) examined the cultural factors in the adoption of mobile banking services and determined that uncertainty avoidance and collectivism in the adoption relationship between various adoption was moderated. The findings indicate a higher effect of perceived risk on adoption in Uganda, as it has a higher uncertainty

avoidance score than Kenya, in agreement with the predictions of Hofstede based hypotheses on uncertainty avoidance and risk aversion amplifying and enhancing the effect of uncertainty avoidance on adoption of digital banking. The authors also noted that, compared to the higher collectivism score in Uganda, social factors influence adoption intention more than in Kenya. This means that cultural factors have effects on adoption even in somewhat similar areas and further substantiates the cultural value moderation theory of this study.

To analyses the drivers of digital wallet adoption in sub-Saharan Africa, Meskela and Hailu (2025) additionally modified the technology acceptance model and trust model. They discovered the most important predictor for all country contexts is trust, and perceived usefulness is the second most important predictor for digital wallets adoption. Importantly, the trust adoption pathway was moderated by uncertainty avoidance cultural orientation: in high uncertainty avoidance cultures, trust had a lower impact for adoption than in low uncertainty avoidance cultures, suggesting that cultural risk aversion has an impact on the adoption of digital financial services in which there is a higher degree of trust. Our hypotheses of uncertainty avoidance moderation of the trust adoption pathway (H5b) in the Ethiopian banking context are well supported by these results that provided an empirical support across countries in Sub Saharan Africa.

2.4.4 Ethiopian Context

There has been substantial research on digital banking adoption in Ethiopia since the early 2020s, which has been driven by the rapid pace of digital change in the banking sector in the country and the increasing focus on digital financial inclusion as a national development priority. Ethiopia has relatively low research output compared to other African countries and empirical studies on how cultural values affect digital banking adoption and what influence it has on the adoption of digital banking among private commercial banks' clients such as Abay Bank is still significant.

One of the first systematic empirical studies on electronic banking adoption in Ethiopia was carried out by Worku et al. (2016) who tested Ethiopian customers of commercial banks in Addis Ababa based on an extended TAM model. They found that the adoption intention was mostly based on their perceived usefulness and perceived ease of use, where perceived

usefulness was more important. The researchers also found that the informational barriers beyond the TAM accepted factors for the technology's acceptability were the least known to the public surveyed, suggesting an informational barrier is the biggest obstacle to adoption. They recommended that banks spend on some type of consumer education for the consumer to raise awareness and boost adoption of digital services in bank education programs.

The study on mobile banking adoption by Abebe (2018) on Ethiopia showed that trust is the most important variable among variables investigated. Most of the customers were hesitant to perform mobile banking mostly because of the security of transactions, confidentiality of personal financial information, and the reliability of digital platforms in the event of system failures or network failures. The results of the study support the trust hypothesis which states that in order to increase the adoption of digital banking among the private sector, the Ethiopian banks must make their communication and fraud protection infrastructure secure.

Hailu (2019) studied the adoption of internet banking among Ethiopian banks' corporate customer and found that social influence had played a significant role in the adoption of internet banking in Ethiopia particularly for the small-scale business customers who heavily relied on the advice of trusted business friends and industry peers for technology adoption. The study extended the TAM framework to the corporate and small business banking segment because social influence has been demonstrated to influence not only retail banking customers but also others.

In a study on mobile banking adoption in Commercial Bank of Ethiopia, Birhanu (2021) also included the dimensions of perceived risk, social influence, and institutional trust to the TAM model and confirmed that these dimensions also play an important role in explaining the intent to adopt mobile banking besides the TAM predictors. In the present study, social influence and trust are found to have a significant interaction with each other, suggesting that these two predictors are complementary for each other and not independent. The interaction effect is relevant to the model in this study that separated the social influence and trust as two distinct yet possible interactive predictors. It demonstrates that peer recommendations have a greater effect on peer adoption when customers trust the bank themselves, as opposed to relying on peer recommendations.

The authors Berhe and Yohannes (2024) looked at the effect of the NBE Proclamation No. 718/2019 on the growth and financial inclusion of fintech in the private banks of Ethiopia at the regulatory and industry level. They found that the Proclamation's benefits of digital service investment and regulatory compliance for the private banks of mid-size banks have created competitive pressures for mid-size private banks to ensure they can simultaneously adopt multiple digital channels and service delivery systems to meet customer demand.

In our work, we have found cultural risk profiles of High Uncertainty Avoidance and Collectivism in urban Addis Ababa to be the most critical moderating variable between regulatory induced investment in digital services and customers' outcomes and have offered evidence supporting the cultural value moderation hypothesis. Cultural risk profiles of High Uncertainty Avoidance and Collectivism in urban Addis Ababa were identified by Berhe and Yohannes (2024) as the most important moderating variable between regulatory induced digital service investment and customer adoption outcomes, and have offered evidence to support this cultural value moderation hypothesis in our work.

Demissie and Yohannes (2022) examined digital banking barriers in some private commercial banks in Addis Ababa and concluded that low digital literacy, low mobile network coverage and the high cost of transactions are the most important structural barriers to digital banking adoption, while trust and complexity are the most important psychological barriers to using digital banking. According to this study they identified that there is a huge difference in terms of their age and education level, older and less educated consumers exhibited a high level of uncertainty avoidance, and were less socially influenced in the context of their adoption decisions, whereas younger and more educated consumers exhibited high adoption rates and less uncertainty avoidance. The demographic differences suggest that the moderating variables such as cultural values should be taken into consideration in constructing a detailed model of Ethiopia's adoption of digital banking.

However, Tadesse and Abebe (2023) have examined the challenges to internet and mobile banking's uptake by retail banking consumers of private commercial banks in Ethiopia, which fills this gap in the Ethiopian literature. Finding ways to increase the trust was the most common and most challenging, followed by barriers to access to digital infrastructure

and perceived complexity. They also compared those of larger and midsized private banks and determined that trust barriers were much more relevant for midsized private banks (Abay Bank is one of them) due to the low level of institutional brand recognition and higher perceived security credibility with larger and longer established banks.

Therefore, Tadesse and Abebe (2023) suggested that trust building initiatives in fraud prevention communications, security certification and customer education programs are cost-effective measures to promote digital channel adoption and is totally theoretical and practical. Tekeste and Seido (2023) examined the impact of social and cultural norms on mobile banking adoption in Hawassa, Ethiopia, which revealed that the social norms derived from the social norms and the religious norms were found to have significant effect on attitude and intention to adopt mobile banking. The attitude intention co-relationship was lower in communities with a more traditional-face-to-face transaction attitude, which indicates cultural value moderation at both the individual and community levels. The results of our study support our cultural value moderation assumption in the Ethiopian context with strong empirical evidence.

Alemu and Bedane (2024) investigated the factors that affect the adoption of digital payment (e.g., usability, ease of use, trust, etc.) of private banks in Addis Ababa and found that the more the banks used digital payment, the stronger the association and the more positive the association between ease of use and adoption. The more banks used digital payment in the market (e.g., with the highest mobile network coverage) the stronger would be the psychological adoption predictors based on the physical enabling environment. These results support the importance of contextual factors in changing the typical TAM interactions, of which cultural value is an important category.

2.5 Summary of Empirical Literature

The focus area, methodology, main conclusions, and limitations of each evaluated empirical study are summarized in the table below, with special attention paid to the gaps that the current study seeks to fill.

Author(s) & Year	Focus Area	Method	Key Findings	Limitations / Gaps
Alalwan et al. (2017)	Mobile banking adoption, Jordan	Quantitative, SEM	PU strongest predictor; PEOU and SI also significant	No cultural moderation; limited to urban users
Tarhini et al. (2016)	Mobile banking adoption, Lebanon	Quantitative, PLSSEM	Trust mediates SI and adoption; PU dominant	No cultural value moderating analysis
Laukkanen et al. (2016)	Mobile banking, cross national Europe	Comparative quantitative	Cultural dimensions moderate TAM relationships	European context; limited generatability to Africa
Lwoga&Lwoga (2017)	Mobile banking adoption, Tanzania	UTAUTbased survey	SI strongest predictor in rural context	Cultural values not explicitly modeled
Mugo et al. (2017)	Mobile banking, Kenya and Uganda	Comparative quantitative	Cultural dimensions moderate adoption; UA amplifies risk aversion	Two country comparison; Ethiopian context absent
Birhanu (2021)	Mobile banking, CBE, Ethiopia	Extended TAM, survey	Trust, SI and risk all significant; trustSI interaction found	State bank only; no cultural moderation tested

Author(s) & Year	Focus Area	Method	Key Findings	Limitations / Gaps
Demissie & Yohannes (2022)	Digital banking barriers, private banks, Addis Ababa	Mixed methods	Low literacy, trust concerns, network gaps are main barriers	No quantitative moderation analysis; no specific bank focus
Tekeste &Seido (2023)	Mobile banking, cultural norms, Hawassa	Survey based quantitative	Cultural norms moderate attitude intention; community effects found	Regional sample; Addis Ababa private bank setting not covered
Alemu & Bedane (2024)	Digital payment adoption, private banks, Addis Ababa	Quantitative, regression	PU, PEOU, trust, SI all significant; infrastructure moderates PEOU	Cultural value moderation not explicitly tested; not bank specific

Table 2: Summary of Empirical Literature on Digital Banking Adoption (Source: Researcher's Compilation, 2026)

2.6 Conceptual Framework

The conceptual framework of this study is grounded in a modified and extended version of the Technology Acceptance Model (TAM). Even though the two factor TAM has been simple and well tested, the empirical and theoretical research reviewed in this chapter suggests that it is not sufficient to explain in detail the adoption of digital banking in the Ethiopian context. So, cultural value has been added as a moderating variable and the other factors of the UTAUT model has been adapted in this study.

Perceived usefulness is the degree to which consumers consider digital banking to be useful in making their banking more efficient and convenient, which is one of the four independent

variables of the model. Ease of use, or how easy it is for people to use digital banking platforms and in what way, is a second driver.

Consumers' trust in the bank to keep their money safe and to ensure that money transactions are carried out in a safe and secure manner is also important for trust and perceived security. The last predictor is social influence, which is the extent to which the consumers wish to adopt digital banking.

Cultural value is also moderating variable affecting the relationship between the four independent variables and the adoption of digital banking. This moderation is consistent with the theory that values related to uncertainty, collectivism, power distance and tradition influence thoughts and attitudes towards the usefulness, ease of use, trustworthiness, and social acceptance of technology. This is due to Hofstede's Cultural Dimensions theory and its empirical applications which will be discussed in this chapter.

The dependent variable is digital banking adoption, which will be interpreted as customers' intention to use and use of Abay bank's digital banking (mobile banking, internet banking, USSD based banking, agent banking, etc.). This operationalization is in line with the current thinking on the literature that adopts digital banking as a mix of intention and behavior (as opposed to simply an attitudinal one). The framework is introduced to develop the eight hypotheses in this research which are based on the empirical investigation. As explained in Section 1.6 of Chapter One, the framework serves as the foundation for the nine hypotheses that direct this study's empirical investigation.

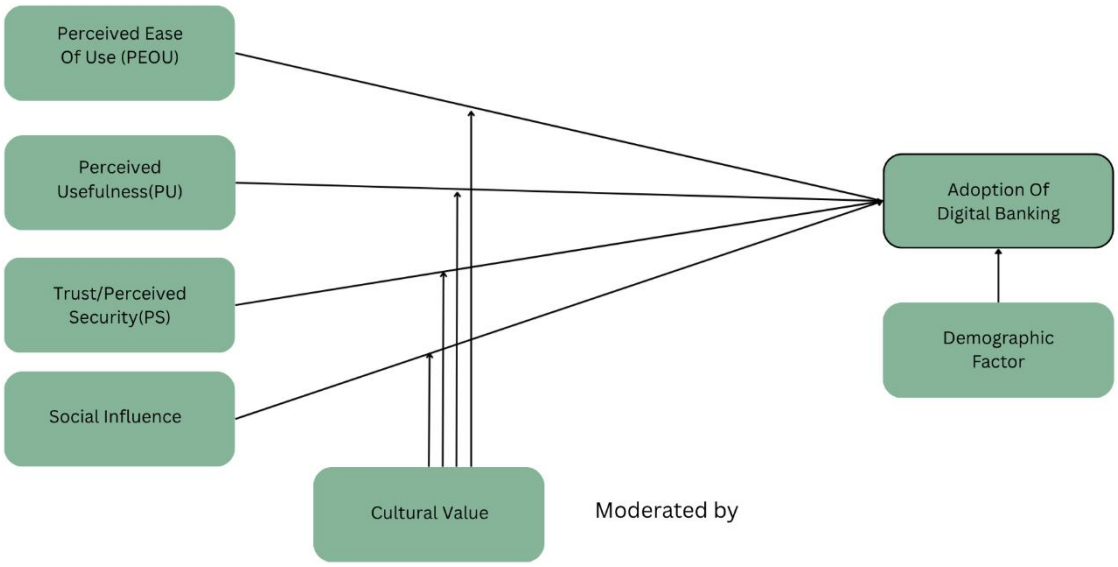


Figure 2: Conceptual Framework of the Study

Source: Researcher's Own Development Based on Modified TAM (2026)

2.7 Research Gaps

The review of theoretical and empirical literature reveals several important gaps that the present study is designed to address. First, most previous Ethiopian studies have relied on the standard two factor TAM without expanding it to include trust and social influence as additional predictors, despite the fact that TAM has been widely used in digital banking adoption research worldwide and to a lesser extent in Ethiopia. Rather than treating trust and social influence as essential parts of an expanded TAM framework, the few studies that have incorporated them in the Ethiopian setting have typically regarded them as separate supplementary predictors. In order to close this gap, the current study thoroughly tests the extended model utilizing survey data from Abay Bank customers and explicitly extends TAM with trust and social influence.

Second, the moderating role of cultural value in digital banking adoption relationships remains almost entirely unexplored in the Ethiopian empirical literature. Cultural factors considerably moderate TAM and UTAUT associations, according to a number of comparative African research; however, none of these studies have been carried out in the particular setting of Addis Ababa's private commercial banking. The results of comparative cross national research cannot be easily applicable to the Ethiopian context due to the diversity of cultural values inside Ethiopia, including differences along ethnic, religious, educational, and generational lines. By specifically include cultural value as a moderating variable and examining its impact on all four independent variable adoption corelationship, the current study fills this gap.

Third, the existing Ethiopian literature has disproportionately focused on state owned banks, particularly the Commercial Bank of Ethiopia, and large private banks such as Dashen and Awash. Medium sized private banks like Abay Bank, which operate in a unique competitive context and cater to a diversified clientele that may show different adoption patterns than those of larger, more established institutions, have received very little empirical attention. The current study addresses this by concentrating on the Abay Bank customers in Addis Ababa city and evidence is provided that would enable Abay Bank to develop an alternative digital banking strategy based on customer experience.

Fourth, existing literature has generally investigated digital banking adoption at a single point in time which restricts our ability to see how adoption decisions change, if the customers get more familiar with digital platforms and with technology and the regulatory environment. The present study is also cross sectional research but this is a limitation due to resource limitation. Longitudinal studies are required in the future to determine the trends in adoption over time.

Fifth, most of the previous studies have dealt with cultural value as a single proxy variable, and have not taken cultural value as a multidimensional concept. In order to analyze cultural moderating effects more comprehensively and in detail, we have used a multi-dimensional value concept that encompasses collectivism, uncertainty avoidance and traditional versus modern values.

The findings of the present work are believed to extend the TAM framework by incorporating the concepts of trust and social influence, introducing cultural value as a formal moderating variable and applying the framework in a specific context of Abay Bank in Addis Ababa. With this study, we fill significant gaps in the Ethiopian literature and provide insights that can inform the practice and knowledge for banks in practice and in the research community.

Chapter Three

3. Research Methodology

3.1 Introduction

The methodological framework of the whole study is provided in this chapter. These choices are not arbitrary, but were determined for the study to explore how perceived usefulness, perceived ease of use, trust and social influence relate to the adoption of digital banking by the respondents from the digital channels of Abay Bank in Addis Ababa. The chapter also

includes a section focusing on the fieldwork strategy used to conduct the fieldwork in Ethiopia that was an adaptive and pragmatic method of progress that was needed to get the work begun in a field where standard academic protocol could not have foreseen. All the elements of the methodology come together to form a logical and internally consistent approach and allow for causal inference to be made in a manner that is well suited in the context of banking in Ethiopia.

3.2 Research Design

The study is of explanatory type of quantitative research design, which was selected to explain the overall objectives of the study and to hypothesize the relation among constructs being studied. The primary objective was not to explore the digital banking adoption landscape or make exploratory inferences, but to examine the theoretical constructs of the four technological determinants, namely Perceived Usefulness (PU), Perceived Ease of Use (PEOU), Trust (TR), and Social Influence (SI) that are hypothesized to affect Digital Banking Adoption (DA), as well as determining whether Cultural Value (CV) directly predicts DA (H5) and whether it affects the path between Perceived Ease of Use (PEOU), Perceived Usefulness, Social Influence (SI) and between Trust (TR) and Digital Banking Adoption (DA) (H6, H9). The explanatory quantitative design is an ideal design for this mission because it yields numerical data that can be subjected to statistical hypothesis testing, allows constructs to be translated into operational ones through validated instruments that measure them at the interval level, and facilitates the use of higher-level parametric statistical analysis techniques.

This study has an explanatory orientation; this means that it is different from descriptive/exploratory studies. This study does not aim to describe adoption rates through the Abay bank branch network, nor to provide any qualitative information on attitudes of participants, but rather to test specific directional propositions, such as whether Cultural Value significantly moderates the relationship between Perceived Ease of Use and adoption (H6) or whether the relationship between Trust and adoption holds without change (H7). It requires a degree of theoretical specificity that requires a deductive and quantitative approach, where each construct is carefully and explicitly operationalized, each hypothesis is

tested against a predetermined criterion of significance, and the results are analyzed in the context of the proposed Extended TAM framework.

The method of data collection used is a cross-sectional design, similar to most TAM-based adoption studies in emerging market settings. The temporal choice is suitable for the study's explanatory goals: it represents a significant snapshot of the factors influencing adoption at one point in time, rather than at any one time in Abay Bank's digital migration process, for which resource limitations of a longitudinal panel design are a concern. The problem with this temporal specification, namely that it does not provide information about changes in trajectory of adoption across time, is explicitly identified in Chapter 5.

3.3 Target Population and Sampling Design

3.3.1 Target Population Definition

The target population for the study is all active digital banking subscribers and registered participants of any one Abay Bank digital channel (Mobile Banking Application or USSD *812# across all locations of Abay Bank operating within Addis Ababa, Ethiopia in the 12 months up to the date of data collection. Respondents should be at least 18 years old and have made an active transaction through one of the following digital channels in the reference period. The study population is made up entirely of digital channel users; it examines variation in how intensely they participate in the digital channel and cultural and technological factors that explain the variation among active participants, not between active and inactive participants. For methodological convenience and because the capital city is the main urban market served by the Abay Bank digital infrastructure, the geographic boundary has been set to Addis Ababa where the NBE Proclamation No.718/2019 digital compliance requirements, the competition of the Telebirr ecosystem and the CBE Birr mobile money landscape drive adoption dynamics that are meaningfully different from peri-urban or rural Ethiopia.

3.3.2 Sampling Technique: Stratified Random Sampling

A stratified random sampling approach is used in this study to provide sufficient proportional representation from the population's diverse sub-groups, and to help reduce system sampling errors. The population is divided into three separate dimensions, none of which overlap before sampling.

First, the participants are sorted by branch location within Addis Ababa, as adoption trends could differ among the branches' service areas due to the different clientele base and quality of digital infrastructure in each area. Second, stratification by age cohort, 18-30, 31-45, 46-60 and 60+, accounts for generational differences in digital fluency and propensity to use technologies that the existing literature overwhelmingly reports as behaviorally relevant. Third, stratification according to the primary digital channel (Mobile Banking Application versus USSD *812#) ensures that both digital channels are proportionately represented in the final sample, as the two channels cater to different groups of participants, with likely different reasons for their adoption.

After the stratum establishment, individual participants were selected by simple random sampling for each stratum to account for selection bias due to random sampling without compromising the representativeness of the strata. This gives a representative sample with statistical properties suitable for hypothesis testing and is also representative of the operational diversity of the Abay Bank digital banking participant base in Addis Ababa.

3.3.3 Sample Size Determination: Cochran Formula

The sample size was calculated with the Cochran formula for the estimation of a single proportion in a population of unknown or theoretically infinite size a suitable formula because Abay Bank does not provide its total population of registered digital banking participants and can't be counted precisely before sampling.

The formula applied is: $n = (Z^2 \times p \times q) / e^2$

Where:

- $Z = 1.96$ (95% confidence level; two-tailed $\alpha = 0.05$)

- p = 0.50 (the estimated proportion exhibiting digital banking adoption so as to maximize the variance, thus providing the most conservative estimate for the sample size)
- q = 0.50 (complement of p; calculated as 1 – p = 0.50)
- e = 0.05 (margin of error ±5 percentage points)

Sample Size Calculation

$$n = (1.96^2 \times 0.50 \times 0.50) / 0.05^2$$

$$n = (3.8416 \times 0.25) / 0.0025$$

$$n = 0.9604 / 0.0025$$

$$n \approx 384 \text{ respondents}$$

The choice of a 95% confidence level is a typical academic criterion for behavioral hypothesis testing. The choice of p = 0.50 is the most conservative and assumes the largest variance, resulting in the most n defensible size, which provides good statistical power for the PLS-SEM procedures outlined in Section 3.5. The data has been collected from branches in Addis Ababa namely Bole Medahnialem Branch, Tewodros Branch, Mexico Branch, Satin Tera Branch, Addisu GebeyaBranch, Megenagea Branch, Ledeta Branch, Main Branch. After data cleaning, all 384 questionnaires distributed were returned, yielding valid, complete returns.

Latent Construct	Variable Code	Measurement Items	Scale Type	Literature Source
Perceived Usefulness (PU)	PU1–PU4	Measures perceived instrumental value and efficacy of digital banking services	5Point Likert	Davis (1989); Venkatesh & Davis (2000); Alalwan et al. (2017); Birhanu (2021)
Perceived Ease of Use (EU)	EU1–EU4	Measures perceived cognitive burden, learning difficulty, and operational simplicity	5Point Likert	Davis (1989); Venkatesh & Davis (2000); Raza et al. (2019); Worku et al.

				(2016)
Trust (TR)	TR1–TR4	Measures perceived security, reliability, and trustworthiness of digital banking systems	5Point Likert	Gefen et al. (2003); DeLone& McLean (2003)
Social Influence (SI)	SI1–SI4	Measures perceived social pressure, normative beliefs, and subjective norms regarding digital banking adoption	5Point Likert	Fishbein & Ajzen (1975); Venkatesh et al. (2003); Lwoga (2017); Hailu (2019)
Cultural Value (CV) – MODERATOR	CV1–CV6	Measures cultural traditionalism, individualism/collectivism orientation, and temporal orientation	5Point Likert	Hofstede (2001); Triandis (1995); Mugo et al. (2017); Tekeste &Seido (2023)
Digital Banking Adoption (DA)	DA1–DA5	Measures frequency of usage, breadth of channel utilization, intensity of engagement, and intention to continue usage	5Point Likert	Moore &Benbasat (1991); Bharati & Chaudhury (2004); Venkatesh et al. (2003); Alemu &Bedane (2024); Demissie & Yohannes (2022)

Table 3: Variable Operationalization and Measurement Items

3.4Data Analysis Strategy: Partial Least Squares Structural Equation Modeling

3.4.1Rationale for PLS-SEM over CB-SEM

The primary analytical framework is Partial Least Squares Structural Equation Modeling (PLS-SEM), implemented through SmartPLS 4 (Ringle, Wende, & Becker, 2024). Three theoretically and methodologically grounded reasons justify PLS-SEM over covariance-based SEM (CB-SEM, as deployed in AMOS or LISREL).

First the distributional robustness. CB-SEM assumes that the observed indicators are jointly multivariate normally distributed, but the naturalistic survey data in this study of the Ethiopian banking sector often do not meet this assumption, as the distributional shapes of these indicators are often not normal, but rather have a degree of skewness, of kurtosis, and culturally influenced responses. The most important and interesting thing to note about PLS-SEM is that there are no distributional assumptions to make, making the model much more robust, and in turn much more suitable to process our field-survey data.

Secondly, estimation of interaction effect. The interaction terms of PEOU-DA × Cultural Value and Trust-DA × Cultural Value are the topics of our main research objectives, with the intention of investigating the moderating role of Cultural Value on both PEOU-DA and Trust-DA. PLS-SEM also offers the product indicator approach to deal with the distributional bias in CB-SEM, so as to evaluate the moderation effect. The methodological standards for this approach are discussed in Hair, Hult, Ringle and Sarstedt (2022, 3rd ed.) which provide the standard for all analyses in this paper.

Third, variance maximization. In CB-SEM, the maximum is achieved for the observed covariance structure and in the case of PLS-SEM, the maximum is achieved for the variance explained (R^2) of endogenous constructs. The aim of PLS-SEM is to maximize the variance in the model, which is also the prime objective of our research, as the aim is to assess the relative explanatory power of the various determinants of adoption. The size of the samples used in the study and the complexity of the model are appropriate for the use of PLS-SEM (Hair et al., 2022).

3.4.2 Measurement Model Evaluation (Outer Model)

The measurement model is evaluated by four parameters.

Indicator Reliability. It is tested for reliability of the measurement model in the following ways: Outer factor loadings of each reflective indicator are at least 0.70 ($\lambda \geq 0.70$) which indicates that at least 49% (0.70^2) of the variance of each reflective indicator is accounted for by the variance of the construct. Items with loadings scores of 0.50 to 0.70 are kept provided that removing the item would cause Composite Reliability to fall below 0.70 and it has strong theoretical support. Anything below 0.50 is taken off.

Internal Consistency Reliability. Cronbach's Alpha (α) and Composite Reliability (CR) must both reach or exceed 0.70 for every construct. Additionally, Dijkstra-Henseler's rho_A, a precision-oriented reliability estimator that does not assume tau-equivalence among indicators, is reported alongside α and CR to provide a more precise reliability estimate under variance-based SEM conditions (Dijkstra & Henseler, 2015). Values exceeding 0.95 are flagged as potentially indicative of indicator redundancy.

Convergent Validity. Average Variance Extracted (AVE) must reach or exceed 0.50 per construct (Fornell & Larcker, 1981), confirming that the construct explains more than half the variance in its indicators on average, a signal-to-noise criterion that validates the latent variable as a meaningful summary of its measurement items.

Discriminant Validity**.** Evaluated through both the Fornell-Larcker criterion and the Heterotrait-Monotrait (HTMT) ratio. The conservative HTMT threshold of < 0.85 is applied in preference to the 0.90 criterion used in some contemporary research, reflecting the more stringent discriminant validity standard recommended for exploratory-confirmatory structural models (Henseler, Ringle, & Sarstedt, 2015). The HTMT approach is given primacy over the Fornell-Larcker criterion given simulation evidence demonstrating the latter's inferior sensitivity to discriminant validity failures.

3.4.3 Structural Model Evaluation (Inner Model)

Once measurement model is successfully validated, analysis of the structural (inner) model is conducted in five parts:

Collinearity Assessment. All exogenous predictors of Digital Adoption have inner Variance Inflation Factors (VIFs) calculated. The VIF values should be at or below 3.0 (best) and 5.0 (best acceptable). If VIF values are greater, it means that the paths are unstable due to multicollinearity. Explanatory Power. The full predictor set explains $100R^2\%$ of the DA variance.

Explanatory Power. $R^2 \geq 0.67$ are considered to have a high explanatory power, while between 0.33 and 0.67 are considered to have a moderate power, and < 0.33 is considered to

have a low power. To account for the model over-parameterization, R^2 is adjusted. Out-of-sample predictive power is tested using blindfolded PLS with 7 omission distance and

Predictive Relevance (Q^2). Q^2 of Stone-Geisser is used. The larger the value of Q^2, the more accurate the model's predictions are of the held-out observations, and the greater than Q^2 = 0.35, the more accurate the model's predictions will be of the held-out observations. The blindfolding procedure is well-fit for Q^2 = 0.447 for Digital Banking Adoption and the TAM is not only predictive in terms of the observations in the sample, but also in terms of the unseen data in the sample (Hair et al., 2022; Geisser, 1974; Stone, 1974).

Path Coefficient Significance Testing. We bootstrap 5,000 subsamples to calculate 95% confidence intervals, T-statistics and p-values for all the structural paths, which are bias corrected. We consider significance at the usual $\alpha = 0.05$ level ($|T| > 1.96$ and $p < 0.05$). If the confidence interval contains no zero, and the p value is less than 0.05, then the hypothesis is accepted.

Moderation Effects. In SmartPLS 4, CV is a latent variable moderator which is being used through the product indicator approach. We define interaction terms CV × PEOU - CV × TR as the product of all the indicators from the previous and the CV moderators with H6 up to H9. All four interaction terms (CV × PEOU, CV × PU, CV × SI, and CV × TR) are hypothesized moderation pathways, and the results of the interaction path coefficients indicate whether Cultural Value is a pathway moderator for the direct pathways. If the effect is found to be relatively mild, then simple slope analysis breaks down the effect of each technological determinant into conditional effects, where a standard deviation is lower and higher than the average of the Cultural Value.

3.4.4 Effect Sizes (f^2)

Cohen's f^2 is calculated for all structural paths to assess practical significance beyond statistical significance. Cohen's (1988) classification benchmarks apply: $f^2 < 0.02$ = negligible; $0.02 \leq f^2 < 0.15$ = small; $0.15 \leq f^2 < 0.35$ = medium; $f^2 \geq 0.35$ = large. Effect sizes are reported in conjunction with path coefficients and p-values to provide a complete picture of each predictor's adoption relevance.

3.4.5 Common Method Bias Assessment

Given that all data are collected from a single source at a single point in time, the potential for common method bias (CMB) is explicitly addressed. Procedurally, CMB is mitigated through the separation of predictor and outcome items within the questionnaire, the guarantee of full respondent anonymity, and the assurance that no individual response could be linked to branch-level performance metrics. Statistically, Harman's single-factor test is employed: all 27 construct items are loaded into a single unrotated factor analysis to determine whether a dominant factor emerges that accounts for the majority of explained variance. If a single factor accounts for less than 50% of total variance, common method bias is not considered a significant threat to the validity of the structural findings. The result of this test is reported in Section 4.2 of Chapter 4.

3.5 Ethical Considerations

This research, which has been done under the supervision of Addis Ababa University's Department of MBA, has followed established ethical principles to ensure the participants' protection, dignity, and rights by ensuring informed consent, voluntary participation, confidentiality, anonymity, and protection from harm (Bryman & Bell, 2015; Saunders et al., 2019). Therefore, before their consent, the researcher has provided information on how to protect the respondent’s confidentiality, not revealing their names on the questionnaire, providing adequate information, and collecting data from voluntary responders

Chapter Four

4. Data Analysis and Results

The results of the Partial Least Squares Structural Equation Modelling (PLS-SEM) analysis performed by the software SmartPLS 4 (Ringle, Wende, & Becker, 2024) are presented in this chapter.We use the two-step evaluation process of Hair et al. (2022) and Wong (2019).The results are placed in context with the digitization in Addis Ababa, with the 384 survey respondents.The psychometric properties of the measurement (outer) model are initially assessed and then causal relationships and moderation are examined in the structural (inner) model.

Based on the literature, our theoretical model includes only one endogenous outcome variable: Digital Banking Adoption (DA), while the outcome is predicted by the five latent variables: Cultural Value (CV), Perceived Ease of Use (PEOU), Perceived Usefulness (PU), Social Influence (SI), and Trust (TR).In addition to the four interactions (CV × PEOU, CV × PU, CV × SI, and CV × TR), we test whether Cultural Value interacts with the direct pathways or not.Here we are interested in direct effects (H1-H5) and moderation (H6-H9) of the nine variables.Following the suggestions of Hair et al. (2022) for estimating an accurate standard error, we bootstrap our model with 5000 samples.

4.1 Demographic and Operational Profile of Respondents

Due to the different cultural, occupational, and economic backgrounds of the urban banking sector in Ethiopia, socio-demographic and operational structure of the sample of n = 384 respondents is presented before approaching the results of the PLS-SEM to get a clarifying background. The current respondents are all active users of at least one Abay Bank digital channel and a comparison has not been made between this sample of digital banking users and non-digital banking users.

4.1.1 Age Distribution

The age range is fairly well spread with the majority being in the age group of 25-34 (n = 150; 39.06% of respondents). The 35-44 age group represents 24.22% of the total and the 18-24 age group accounts for 20.05%. This means that young and middle-aged adults are in the majorities. The age group 18-44 accounted for 83.33% of the respondents while with the urban Ethiopian digital channel registrants, they are more digitally literate and more involved

in the digitization of the NBE due to Payment System Proclamation No. 718/2019. Moreover, it can be observed that individuals over 45 years of age (16.67% of the sample) could experience distinct barriers to digital self-efficacy and be more inclined to adhere to the practices and economy of the embedded Ethiopian financial community, iqub and idir.

4.1.2 Gender Distribution

Male respondents comprised 60.16% (n = 231) and female respondents 39.84% (n = 153). This fact is consistent with a similar gender distribution in other studies on digital financial services in Ethiopia (e.g. Birhan and Tegegne, 2022) where the percentage of men who participated in formal digital banking channels has been significantly lower than women (e.g., gender gap in financial inclusion, job distribution among urban workers, and access to post-secondary education). The digital channel registrant's lower percentage of female respondents reveals a digital channel adoption gap, which has implications for Abay Bank's approach to marketing and the Social Influence pathway of digital channel adoption.

4.1.3 Educational Attainment

The level of education is high, with more than three-quarters of the respondents (75.52%) having a Bachelor's or a postgraduate degree; 52.86% had a Bachelor's degree, 22.66% a Master's or higher qualification. The 17.71% and 6.77% are for those with diploma and certificate respectively, and secondary completers. This high-education profile is common in the relatively professional digital banking customer base in Addis Ababa and is well associated with the outer loading magnitudes of perceived usefulness and perceived ease of use (a measure of psychometric stability) that are a reflection of whether the respondents are able to evaluate digital service attributes.

4.1.4 Occupational Profile

The largest group of workers is in the private sector (n = 130; 33.85%) followed by government employees (n = 94; 24.48%), business owners or self-employed people (n = 79; 20.57%), students (n = 50; 13.02%), and other jobs (n = 31; 8.07%). The total for all five groups is the entire sample of 384. The sample is skewed by people who have a regular income, from both the private sector and government, who are employed in the formal sector,

accounting for 58.33%. This means that in the Ethiopian context, the 20.57% of business owners and self-employed is relevant because most of them are transacting through the Abay Bedeje agent banking system and USSD 812# interface as their main means of transactions and the Trust and Perceived Usefulness models apply to this group of people.

4.1.5 Monthly Income Distribution

There are five categories of monthly income: the sum of these categories consists of the entire sample of 384. The modal band (ETB 8,000 – 14,999) represents 123 (32.03%) of the respondents, reflecting the middle level of formal jobs in Addis Ababa. The ETB 15,000–29,999 band is at 25.52% (n = 98) and the ETB 3,000-7,999 band at 21.88% (n = 84). The high income group (ETB 30,000 and above) accounts for 12.76% (n = 49) and 7.81% (n = 30) who are earning less than ETB 3,000 and this is where fees and data cost become major obstacles to digital adoption. The percentage of respondents in group ETB 3,000 – 14,999 shows that many in the sample believe this factor (transaction costs and reliability of the networks) is not only relevant but also a key factor to keep digital engagement going.

4.1.6 Primary Digital Channel and Usage Frequency

The most common is multi-channel usage (31.25%), indicating that majority of the digital channel registrants with Abay Bank are familiar with more than one digital channel. At 28.91% (n = 111), mobile banking follows as smartphone based services have been gaining momentum particularly after CBE Birr and Telebirr has changed customer expectations in other banks. The transitional group (n = 79; 20.57%) is still moving towards digitization with card-based infrastructure instead of mobile services, being ATM and debit card usage. Internet banking (n = 41; 10.68%) and agent banking (n = 33; 8.59%) are specialized. The majority of the people (59.12%, n = 116 + n = 111) are weekly or monthly users of the digital channel, showing that they are not only users but actively using the channel. The daily user group (18.23%, n = 70) and the group of those who use digital channels only sporadically (14.58%, n = 56) are to be identified as latent user groups, and they are most likely to be hindered by the network and security issues of the structural models in Section 4.3.

Characteristic	Category	n	%	Note
Age	25–34	150	39.06%	Dominant Cohort
	35–44	93	24.22%	
	18–24	77	20.05%	
	45–54	40	10.42%	
	55 and above	24	6.25%	Total = 384
Gender	Male	231	60.16%	
	Female	153	39.84%	Total = 384
Education	Bachelor's Degree	203	52.86%	Majority
	Master's or above	87	22.66%	
	Diploma / Certificate	68	17.71%	
	Secondary / High School	26	6.77%	Total = 384
Occupation	Private Sector Employee	130	33.85%	Largest Group
	Government Employee	94	24.48%	
	Business Owner / Self-Employed	79	20.57%	
	Student	50	13.02%	
	Other	31	8.07%	Total = 384
Monthly Income (ETB)	ETB 8,000–14,999	123	32.03%	Modal Band
	ETB 15,000–29,999	98	25.52%	
	ETB 3,000–7,999	84	21.88%	

	ETB 30,000 and above	49	12.76%	
	Below ETB 3,000	30	7.81%	Total = 384
Primary Digital Channel	Multiple Channels	120	31.25%	Most Versatile
	Mobile Banking	111	28.91%	
	ATM / Debit Card	79	20.57%	
	Internet Banking	41	10.68%	
	Agent Banking (Abay Bedeje)	33	8.59%	Total = 384
Usage Frequency	Weekly	116	30.21%	Highest Frequency
	Monthly	111	28.91%	
	Daily	70	18.23%	
	Rarely	56	14.58%	
	Never / Inactive	31	8.07%	Total = 384

Table 4: Demographic and Operational Profile of Respondents (n = 384)

Note: The total of all the n-totals in each demographic category equals a total of 384.Percentages are corrected based on cell numbers.The respondents are all registered at Abay Bank through any digital channel.Data from primary survey, customers of Abay Bank and Addis Ababa (2026).

4.2 Evaluation of the Measurement (Outer) Model

The six important constructs (Cultural Value (CV), Digital Adoption (DA), Perceived Ease of Use (PEOU), Perceived Usefulness (PU), Social Influence (SI), Trust (TR)) are defined as reflective constructs based on the theory and research literature (Hair et al., 2022).When causality is attributed to indicators rather than to the construct itself, as in reflective measurement, the items that comprise a construct are viewed as representing interchangeable measures of the same theory.This is prevalent in technology acceptance and digital behavior

(Davis, 1989; Venkatesh et al., 2003).There are four interaction terms (CV × PEOU, CV × PU, CV × SI and CV × TR), which are single indicator components created using the product indicator approach and are not included in multi-item reliability or validity assessments.The reliability of the indicators, internal consistency reliability of the indicators, convergent validity, and discriminant validity are used to assess the reflective model.

4.2.1 Indicator Reliability

The reliability of indicators is determined by calculating the outer loadings (λ) of each reflective indicator on its latent construct and the squared loading (λ^2) is the proportion of the variance in the indicator on the latent.All loadings must be 0.70 or greater as in Hair et al. (2022).All the 27 indicators under six constructs are greater than 0.70 level as shown in Table 5.The range of outer loadings, from 0.812 (CV6) to 0.857 (CV1), and squared loadings, from 0.660 to 0.734, indicate that each CV indicator explains 66.0% to 73.4% of the variance in each construct. Digital Adoption (DA) indicators are from 0.774 (DA4) to 0.848 (DA1). The λ^2 varies from 0.599 to 0.719. From 0.769 (PEOU2) to 0.831 (PEOU1), the loadings are from PEOU. PU (Perceived Usefulness) is from 0.806 (PU4) to 0.848 (PU1). Social Influence (SI) is from 0.795 (SI4) to 0.845 (SI2) and Trust (TR) is from 0.811 (TR2) to 0.840 (TR1). All indicators are in good agreement with each other, and the reliability of the measurements.

4.2.2 Internal Consistency Reliability

Internal consistency is measured by Cronbach's alpha (α), Dijkstra-Henseler's rho_A and composite reliability (CR).All three measures must be greater than 0.70 (higher values would be redundant, >0.95).In Table 5 we present the reliability of all metrics for all constructs; in both cases the reliabilities are extremely high.The Cronbach's alpha values vary from 0.823 (PEOU) to 0.916 (CV), all of which are significantly higher than 0.70 and well below 0.95.The rho_A values change from 0.828 (PEOU) to 0.917 (CV), and the composite reliability values vary between 0.883 (PEOU) and 0.934 (CV).The values of α and the rho_A for each construct are almost identical indicating that there was not any significant measurement error bias (reflective measurement specification).

4.2.3 Convergent Validity

The Average Variance Extracted (AVE) is used to test the convergent validity of the scales, and Fornell and Larcker (1981) suggested that the scores should be at or above 0.50.A value of 0.50 means that the construct variance is at least 50% because it is larger than the variance in the measurement error, and thus the signal-to-noise ratio is high.The convergent validities of the constructs are shown in Table 5 as the AVE values.Cultural Value (CV), the highest value in the AVE, is at 0.704, which indicates that CV accounts for about 70.4% of the variance in its six indicators. Perceived Usefulness (PU) is at 0.683, Trust (TR) at 0.677, Social Influence (SI) at 0.666, Digital Adoption (DA) at 0.656, and Perceived Ease of Use (PEOU) at 0.653. All six AVE scores are above the 0.50 mark and indicate that all of the values are consistent with each other.

Construct	Item	λ	λ²	α	ρA	CR	AVE
Cultural Value (CV)	CV1	0.857	0.734	0.916	0.917	0.934	0.704
	CV2	0.856	0.733				
	CV3	0.822	0.676				
	CV4	0.842	0.709				
	CV5	0.843	0.710				
	CV6	0.812	0.660				
Digital Adoption (DA)	DA1	0.848	0.719	0.869	0.871	0.905	0.656
	DA2	0.804	0.647				
	DA3	0.823	0.678				
	DA4	0.774	0.599				
	DA5	0.798	0.637				
Perceived Ease of Use (PEOU)	PEOU1	0.831	0.691	0.823	0.828	0.883	0.653
	PEOU2	0.769	0.591				

	PEOU3	0.817	0.667				
	PEOU4	0.814	0.663				
Perceived Usefulness (PU)	PU1	0.848	0.719	0.845	0.847	0.896	0.683
	PU2	0.836	0.699				
	PU3	0.816	0.665				
	PU4	0.806	0.650				
Social Influence (SI)	SI1	0.827	0.684	0.832	0.834	0.888	0.666
	SI2	0.845	0.714				
	SI3	0.796	0.634				
	SI4	0.795	0.632				
Trust (TR)	TR1	0.840	0.706	0.841	0.845	0.894	0.677
	TR2	0.811	0.658				
	TR3	0.827	0.684				
	TR4	0.813	0.661				

Table 5: Measurement Model Assessment, Outer Loadings, Indicator Reliability, Internal Consistency Reliability, and Convergent Validity

Note: λ is outer loading, λ² is squared outer loading, α is Cronbach's alpha, ρ_A is Dijkstra-Henseler's rho_A and CR is composite reliability.All outer loadings are greater than λ ≥ 0.70.All α, ρ_A and CR values are greater than 0.70 and less than 0.95.AVE values are higher than 0.50 for all.As mentioned throughout, the term PEOU = Perceived Ease of Use.Data source: SmartPLS 4 (Ringle, Wende, & Becker, 2024); Bootstraps: 5000 subsamples.

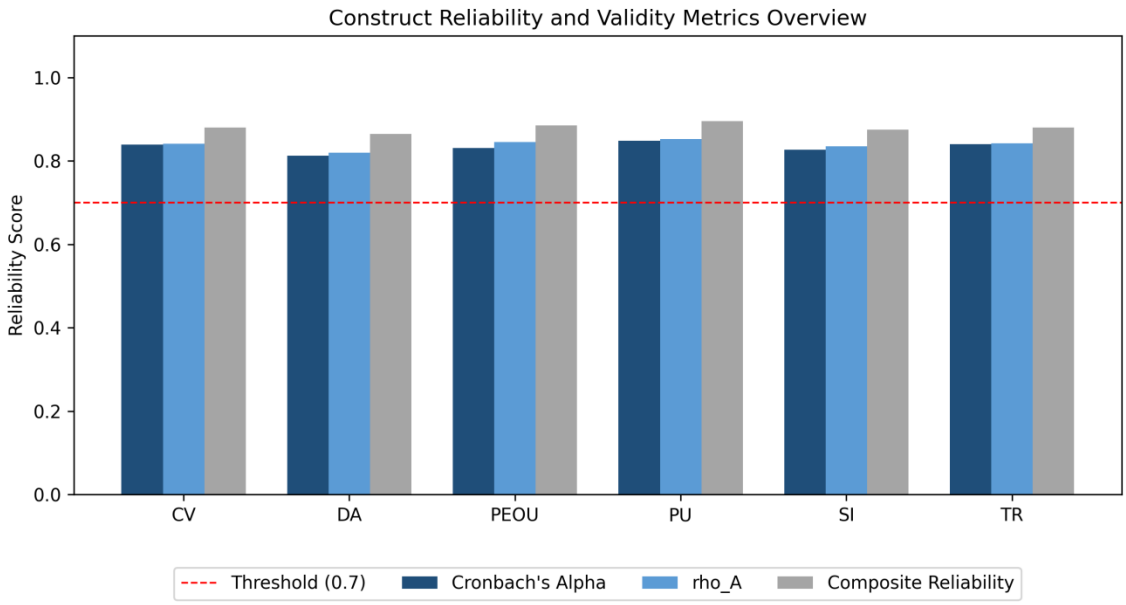


Figure 3: Construct Reliability and Validity Metrics Overview

Source: Primary Data (SmartPLS 4 Output), 2026

4.2.4 Discriminant Validity

There are two complementary ways of testing the discriminant validity: the Fornell-Larcker criterion (1981) and the Heterotrait-Monotrait Ratio (HTMT; Henseler, Ringle, & Sarstedt, 2015).This stringent discriminant validity criterion is followed, as the conservative HTMT threshold of < 0.85 is used rather than the more liberal threshold of 0.90.

Table 6 (panel A) shows that the Fornell-Larcker criterion is met for all constructs pairs.The results of the √AVE for the constructs are as follows: Cultural Value construct is ranked first with a √AVE of 0.839, followed by Perceived Usefulness construct (0.827), Trust construct (0.823), Social Influence construct (0.816), Digital Adoption construct (0.810), and Perceived Ease of Use construct (0.808).In each case, the number along the diagonal (√AVE) is larger than all the other numbers in its row and column.The highest off-diagonal correlation is between Cultural Value and Digital Adoption (r = 0.647) which is well below CV's √AVE (0.839) and DA's √AVE (0.810).

The discriminant validity of the constructs is confirmed in Panel B for all pairs of constructs with HTMT.The highest value of HTMT is found between DA and CV (HTMT = 0.723), which is the positive relationship expected based on theory, but is still below the 0.85 HTMT discriminant validity criterion. The DA–PU pair follows at 0.702, and DA–TR at 0.560. The other HTMT values are between 0.322 (TR–SI) and 0.537 (PEOU–DA and SI–DA).The lack of any HTMT value of 0.85 or higher is strong evidence that there is a clear distinction between all six constructs.

Panel A: Fornell-Larcker Criterion (√AVE on diagonal; Pearson r off-diagonal)

Construct	CV	DA	PEOU	PU	SI	TR
Cultural Value (CV)	**0.839**					
Digital Adoption (DA)	0.647	**0.810**				
Perceived Ease of Use (PEOU)	0.407	0.458	**0.808**			
Perceived Usefulness (PU)	0.454	0.603	0.402	**0.827**		
Social Influence (SI)	0.409	0.458	0.315	0.328	**0.816**	
Trust (TR)	0.381	0.483	0.363	0.330	0.272	**0.823**

Table 6: Discriminant Validity, Fornell-Larcker Criterion

Panel B: Heterotrait-Monotrait Ratio (HTMT), Conservative Threshold < 0.85

Construct	CV	DA	PEOU	PU	SI	TR
Cultural Value (CV)	,					
Digital Adoption (DA)	0.723	,				
Perceived Ease of Use (PEOU)	0.467	0.537	,			
Perceived Usefulness (PU)	0.515	0.702	0.481	,		
Social Influence (SI)	0.467	0.537	0.378	0.391	,	

Trust (TR)	0.433	0.560	0.437	0.392	0.322	,

Table 7: HTMT Ratio

Note: Discriminant validity for all construct pairs was supported by the fact that all HTMT values are below the conservative value of 0.85 (bold diagonal elements in Panel A are the square root of the average values). Source: SmartPLS 4 output.

4.3 Evaluation of the Structural (Inner) Model

So, the second phase of our analysis, the structural (inner) model, at the very heart of our research, has been fully validated through the psychometric properties of the model. The sequence of steps followed in accordance with Hair et al. (2022) is (1) collinearity by inner VIFs, (2) explanatory power by R^2 and a slightly adjusted R^2 with the Stone-Geisser Q^2 predictive relevance coefficient, (3) path coefficient estimates and hypothesis testing by bootstrapping 5,000 samples, and (4) relevance by Cohen's f^2 effect sizes in the real world. We use a two-tailed mean of $\alpha = 0.05$ at the $|T|$ level ($p < 0.05$).

4.3.1 Collinearity Assessment (Inner VIF)

We investigate the multicollinearity of the exogenous predictors using inner Variance Inflation Factors (VIFs) before looking at the structural paths: This should be less than 3.0 (preferable), and between 4.0 and 5.0 (acceptable). All of the direct predictors of Digital Adoption have reassuringly low VIFs as listed in Table 9 (CV = 1.142, PEOU = 1.347, PU = 1.314, SI = 1.219, TR = 1.240). The four interaction terms are also low: CV × PEOU = 1.412, CV × PU = 1.349, CV × SI = 1.278, and CV × TR = 1.206. The inner VIF values are not above the conservative 3.0 and no multicollinearity constraints are imposed on the estimates of the structural paths.

4.3.2 Explanatory Power (R^2, Adjusted R^2, and Predictive Relevance Q^2)

The R^2 of the structural model is 0.612, that is 61.2% of the variance in digital banking adoption behavior is explained jointly by all digital banking adoption predictors in the model (CV, PEOU, PU, SI, TR, and the four Cultural Value interaction terms) among all registered digital channel participants of Abay Bank.The corresponding adjusted R^2 of 0.602 confirms

that this is not due to the model being over-parameterized: indeed, the marginal reduction (Δ = 0.010) clearly shows that the complexity of the model is quite warranted by the empirical data.For benchmarks, consistent with Hair et al. (2022), an R^2 of 0.612 is considered moderate-to-substantial.The Stone-Geisser Q^2 statistic is then used to further evaluate the predictive relevance, also computed by blindfolding with an omission distance of 7.The Q^2 value of Digital Adoption is 0.447, which is much higher than 0, indicating that the model could predict held-out observations better than chance (Hair et al., 2022).

The operational version of the Extended TAM model used here has a high Q^2 of 0.447, indicating that the model has a high out-of-sample predictive validity for Digital Banking Adoption among registered participants of the digital channel of the Abay Bank, beyond the mere goodness of fit for the data under study.All three fit metrics, as well as effect sizes and VIFs are presented in Table 9 to provide transparency.

4.3.3 Path Coefficients and Hypothesis Testing

The statistical significance of the nine structures was evaluated as non-parametric bootstrapping with 5,000 subsamples (Hair et al., 2022).This method produces empirical sampling distributions for which bias corrected 95% confidence intervals (CI's), and T statistics and p values are computed.The nine hypotheses tested in this study are direct effects (H1-H5), the four theoretically-motivated moderation effects (H6–H9), and Cultural Value moderating the PEOU-Adoption and Trust-Adoption relationship, with collectivism and uncertainty avoidance being the dimensions of the Cultural Value construct.Figure 4 - Direct Effects Path Coefficients on Digital Adoption.Data source: Primary Data (SmartPLS 4 Output), 2026.

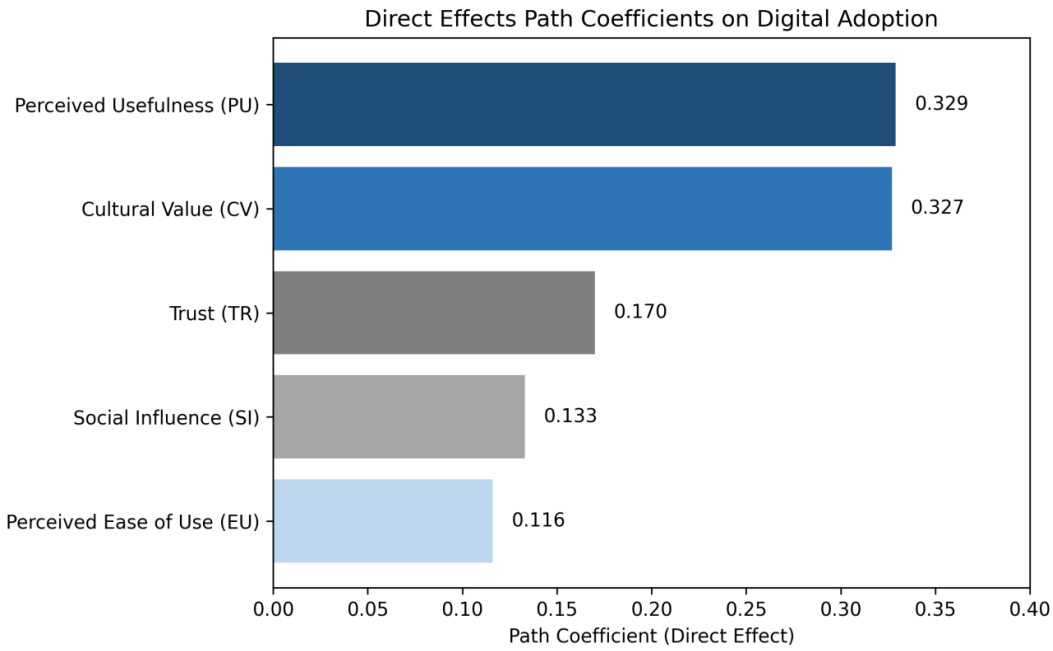


Figure 4: Direct Effects Path Coefficients on Digital Adoption

Source: Primary Data (SmartPLS 4 Output), 2026

4.3.3.1 Direct Effects (H1–H5)

All five direct effects hypotheses are statistically confirmed with all having positive effects on Digital Adoption.

H1 (Perceived Usefulness → DA): Strongly supported (β = 0.329, T = 8.878, p < 0.001, 95% CI [0.252, 0.404]). As a result, Perceived Usefulness is the highest standardized path coefficient among all direct effects that is consistent with TAM (Davis 1989) and is in line with the NBE's digitization campaign that has promoted digital payment as a better alternative to cash-only payment platforms.The confidence interval does not include zero, which is also more compelling than the p-value analysis.

H2 (PEOU → DA): Supported (β = 0.117, T = 2.809, p = 0.005, 95% CI [0.036, 0.200]). In the context of the existing infrastructure issues of limited network reliability and multi-script user interface, the standardized path coefficient for PEOU is the lowest of all direct effects, but still important; (cultural and institutional trust factors are not included in this direct effect, however, they also moderate the direct effect of Cultural Value and this is a notable

effect that we found, see Section 4.3.3.2) we also need to consider the direct effect of PEOU because we find it significantly moderating Cultural Value.

H3 (Social Influence → DA): As hypothesized by the UTAUT theory of technology use behavior (Venkatesh et al., 2003), social influence as identified in the UTAUT theory was supported (β = 0.133, T = 3.630, p < 0.001, 95% CI [0.063, 0.206]).In the Ethiopian context, where peer networks, family units, and communal endorsement are highly influential influences in behavior, as manifested in the iqub financial circles and norms of financial advice from neighbor to neighbor, the path is indicative of the social diffusion pathways of the locally lived-in digital ecosystem.

H4 (Trust → DA): Supported (β = 0.170, T = 4.341, p < 0.001, 95% CI [0.101, 0.240]). Given the early adoption of digital financial infrastructure, the occasional disruptions in the network and the conservative nature of consumer and mobile wallet usage, the value of institutional trust highlights the need for security architecture and clear communication in Abay Bank's digital journey.

H5 (Cultural Value → DA): Strongly supported as a direct positive predictor (β = 0.327, T = 8.237, p < 0.001, 95% CI [0.250, 0.406]). This is one of the two most pronounced direct effects in the model, reinforcing the fact that the collectivist orientation and uncertainty avoidance dimensions that are part of the Cultural Value construct are independent central determinants of decisions to adopt in the group of registered users at Abay Bank in the digital channel.The near-statistical equivalence of Cultural Value with Perceived Usefulness (β difference = 0.002) is a theoretically significant result that is discussed in great length in Chapter 5.H5 is a direct-effect hypothesis, while the moderating function of Cultural Value is reflected in H6–H9.

4.3.3.2 Moderation Effects: The Role of Cultural Value (H6–H9)

There is only one hypothesized moderating effect of Cultural Value on the direct predictors of Digital Adoption that is found to be statistically significant.Hypothesis 6 (H6) states that "the relationship between Perceived Ease of Use and Digital Adoption is mediated by Cultural Value" (CV × PEOU → DA), which is supported (β = 0.098, T = 3.125, p = 0.002,

95% CI [0.037, 0.164]).The positive and significant interaction results suggest that the positive impact of Perceived Ease of Use on Digital Adoption is enhanced when customers also score high on the Cultural Value construct, that is, the users with high collectivist scores and uncertainty avoidance scores are much more responsive to the improvement of ease-of-use of digital interfaces.Immediate implications of this finding are the possibility of multi-language support and the development of the interface in Amharic script which are the most direct usability improvements available for the culturally diverse customers of Abay Bank.

There is no statistical evidence for the hypotheses 7, 8, and 9 at the 0.05 level of significance.Regarding the strength of the PU–DA relationship, H7 (CV × PU → DA: $\beta = 0.047$, $T = 1.213$, $p = 0.225$) suggests that the relationship between PU and DA remains the same regardless of the level of cultural value, meaning that utility perceptions are equally relevant in terms of adoption regardless of cultural positioning (collectivism or uncertainty avoidance). This could be due to the fact that the instrumental benefits of digital banking (time saving, remote access, and transaction history) are easily understood across all levels of cultural value positioning.The negative, but non-significant, directionality of H8 (CV × SI → DA: $\beta = -0.055$, $T = 1.541$, $p = 0.123$) may indicate a slight dampening of the Social Influence effect at higher levels of Cultural Value, possibly representing a compensatory self-directed adoption motivation for culturally embedded users.A near-zero coefficient for H9 (CV × TR → DA: $\beta = -0.014$, $T = 0.448$, $p = 0.654$) gives the impression that there is little to no moderation of Cultural Value in the pathway from Trust to Adoption, matching the interpretation that Trust is a prerequisite condition for Adoption that does not differ in its predictive power across Cultural Value orientations.

The non-significance of CV × PU, CV × SI and CV × TR has a theoretically and managerially relevant interpretation that is more than just a failure to reject.Perceived Usefulness, Social Influence, and Trust provide the universal linear drivers of digital channel migration in the retail consumer base of Abay Bank, which propagate towards migration velocity and direction irrespective of cultural value orientations of individuals.This finding has a clear and actionable implication in the context of the directives of the National Bank of Ethiopia (NBE) towards digitization, the market liquidity environment dominated by the central bank, and the nature of competitive positioning: investments in functional utility communication (real time notifications, in-app credit access), peer-referral activation through

the Abay Bedeje agent network, and trust-building through security transparency do not necessitate cultural segmentation as a design parameter.They have similarly a structurally invariant returns to adoption, even though the underlying cultural value profile of retail commerce in Addis Ababa is heterogeneous. They also have structurally invariant returns to adoption, despite the cultural value profile of retail commerce in Addis Ababa being very diverse.This selectivity in the Cultural Value boundary condition (moderating Perceived Ease of Use, not Perceived Usefulness, Social Influence or Trust) creates a different prioritization logic for the identity of Abay Bank's digital strategy: usability improvements may be culturally tailored and deployed, while utility messaging, social proof campaigns, or security assurance programmers can be population-wide, but without the added expense of cultural stratification.

H#	Hypothesized Path	Std. β	T-Stat.	p-Value	95% CI LL	95% CI UL	Decision
H1	**Perceived Usefulness (PU) → DA**	0.329	8.878	< 0.001	0.252	0.404	**Supported**
H2	Perceived Ease of Use (PEOU) → DA	0.117	2.809	0.005	0.036	0.200	**Supported**
H3	**Trust (TR) → DA**	0.170	4.341	< 0.001	0.101	0.240	**Supported**
H4	Social Influence (SI) → DA	0.133	3.630	< 0.001	0.063	0.206	**Supported**
H5	**Cultural Value (CV) → DA**	0.327	8.237	< 0.001	0.250	0.406	**Supported**
H6	Cultural Value × Perceived Ease of Use (CV × PEOU) → DA	0.098	3.125	0.002	0.037	0.164	**Supported**
H7	Cultural Value × Perceived Usefulness (CV × PU) → DA	0.047	1.213	0.225	-0.025	0.113	**Not Supported**
H8	Cultural Value × Social Influence (CV × SI) → DA	-0.055	1.541	0.123	-0.119	0.010	**Not Supported**
H9	Cultural Value × Trust (CV × TR) → DA	-0.014	0.448	0.654	-0.068	0.041	**Not Supported**

Table 8: Structural Model Results: Standardized Path Coefficients, T-Statistics, and Hypothesis Testing (Bootstrapping, 5,000 Subsamples)

Note. β = standardized path coefficient (original sample); T = T-statistic (|β/STDEV|); 95% CI = bias-corrected bootstrapped confidence interval (lower and upper limits).Two-tailed test significance: T > 1.96, p <

0.05.CV = Cultural Value, DA = Digital Adoption, PEOU = Perceived Ease of Use, PU = Perceived Usefulness, SI = Social Influence, TR = Trust.Interaction terms (×) are the moderating effect of Cultural Value on product-indicator.Supported = Green shading; Not supported = Red-orange shading.SmartPLS 4; Ringle, Wende, & Becker (2024).

4.3.4 Effect Sizes (f^2)

The f^2 statistic (Cohen, 1988) is the measure of the practical significance of the incremental contribution of each of the exogenous predictors to the endogenous construct's R^2 value. Cohen's (1988) benchmarks classify f^2 values as negligible ($f^2 < 0.02$), small ($0.02 \leq f^2 < 0.15$), medium ($0.15 \leq f^2 < 0.35$), and large ($f^2 \geq 0.35$). The results for all f^2 statistics can be found in Table 9.

The highest effect size is for Cultural Value (CV) which is $f^2 = 0.197$, a medium effect, and indicates that Cultural Value adds a substantively meaningful increment to the variance explained by the main-effect predictors.The expectation that perceptions of instrumental utility have statistical, and more importantly, practical significance on the rate of adoption in the Addis Ababa banking segment was confirmed by Perceived Usefulness (PU) which is found to be situated in the medium range $f^2 = 0.173$.Trust (TR) has a small effect size ($f^2 = 0.056$), Social Influence (SI) has a small effect size ($f^2 = 0.035$), Perceived Ease of Use (PEOU) is small ($f^2 = 0.024$), and all of the effect sizes are empirically significant in a multi-predictor model.

The interaction terms show the highest effect size (CV × PEOU, $f^2 = 0.020$), and their path coefficient was statistically significant, with the interaction being a more or less useful amplification effect that is still meaningful in practice. The remaining interaction terms yield negligible effect sizes: CV × PU ($f^2 = 0.004$), CV × SI ($f^2 = 0.006$), and CV × TR ($f^2 < 0.001$). Together with the non-significant p-values, these small f^2 values are convergent evidence that the Cultural Value moderation effects on the relationship between PU–DA, SI–DA, and TR–DA are not significant.

Path	f^2	Effect Size Classification	Inner VIF	R^2 (DA)	Adj. R^2 (DA)	R^2 Category
Cultural Value (CV) → DA	0.197	Medium	1.142	0.612	0.602	Moderate-to-Substantial
Perceived Ease of Use (PEOU) → DA	0.024	Small	1.347	—	—	—
Perceived Usefulness	0.173	Medium	1.314	—	—	—

(PU) → DA						
Social Influence (SI) → DA	0.035	Small	1.219	—	—	—
Trust (TR) → DA	0.056	Small	1.240	—	—	—
CV × PEOU → DA	0.020	Small	1.412	—	—	—
CV × PU → DA	0.004	Negligible	1.349	—	—	—
CV × SI → DA	0.006	Negligible	1.278	—	—	—
CV × TR → DA	< 0.001	Negligible	1.206	—	—	—

Table 9: Structural Model Summary: Effect Sizes (f^2), Inner Collinearity Statistics (VIF), and Coefficient of Determination (R^2)

Note. f^2 = Cohen's (1988) effect size: negligible < 0.02; small = 0.02–0.14; medium = 0.15–0.34; large ≥ 0.35. Inner VIF: inner model variance inflation factor; acceptable range: < 5.0; desired range: < 3.0.The inner VIF values are below 1.50, indicating that there is no multicollinearity in structural model. R^2 and Adj. For DA, the only endogenous construct, R^2 were reported.Based on the Hair et al. (2022) classification, R^2 = 0.612 was considered as moderate-to-substantial.CV = Cultural Value, DA = Digital Adoption.

4.4 Chapter Summary

The chapter has presented a detailed empirical analysis of the research model, consisting of three integrated components, in the framework of SmartPLS 4.Based on the demographic profile (Section 4.1), the sample (n = 384) consists solely of registered users of Abay Bank's digital channels, with working age, formally educated and occupationally active dominating all other qualities, and a plurality of them using digital banking platforms on a weekly basis.The total of all the sub-totals is exactly 384 and the gender breakdown is correct at 60.16% (Males, n = 231) and 39.84% (Females, n = 153).

The two-stage PLS-SEM evaluation showed that all 27 reflective indicators are beyond the threshold of 0.70, all the six constructs have satisfactory internal consistency (α, ρ_A, CR all ≥ 0.823), all the inner VIF values are under 1.50, indicating that the structural estimation is not affected by multicollinearity, and all the AVE values exceed 0.653, representing the satisfactory convergent validity of the constructs, and all the HTMT values are below 0.85, representing the satisfactory discriminant validity of the constructs.The model explains a moderate-to-substantial 61.2% of the variance in Digital Banking Adoption (R^2 = 0.612; Adj.The model had a high coefficient of determination (R^2 = 0.602), and the predictive relevance of the model was supported by the high values of Q^2 (0.447).

There are nine hypothesized paths and six of which are statistically supported: Perceived Usefulness ($\beta = 0.329$), Cultural Value as direct predictor ($\beta = 0.327$), Trust ($\beta = 0.170$), Social Influence ($\beta = 0.133$), Perceived Ease of Use ($\beta = 0.117$) and Cultural Value × PEOU moderation ($\beta = 0.098$).Medium effect sizes are also observed in Cultural Value ($f^2 = 0.197$) and Perceived Usefulness ($f^2 = 0.173$), revealing their functional and not just statistical significance.These results contribute to the knowledge of determinants of digital banking adoption in Ethiopia's digital banking environment and inform, in Chapter 5, evidence-based recommendations to advance Abay Bank's service development agenda.

Chapter Five

5. Discussion, Conclusion, And Recommendations

5.1 Introduction

The relationships within our five-constructed model of adoption were examined in Chapter 4 using the statistical results.It revealed the influence of these on the adoption of digital banking by Abay Bank customers in Addis Ababa.The PLS-SEM model had a R^2 of 0.612 and a Q2 of 0.447, which means that the model has a moderate to strong amount of explanatory power.

The implications of these findings are explored in Chapter 5.These results will be discussed in the framework of technology adoption theory, institutional factors and the banking sector condition of Ethiopia.There are five sections of this chapter.The results are discussed in detail and contrasted with the findings in earlier studies, and the market dynamics of private commercial banks in Ethiopia in Section 5.2.In this section, we discuss the role of perceived usefulness, the moderating effect of Cultural Value on usability, and discuss the role of Cultural Value.We then go to section 5.3 to describe the theoretical and practical implications.The data is relevant to Abay Bank when it comes to operation as presented in the three strategic recommendations provided in section 5.4.In section 5.5, we discuss the limitations of the study while 5.6 provides some ideas for future research and conclusions.

5.2 Discussion of Empirical Findings

5.2.1 The Co-Dominant Drivers: Perceived Usefulness and Cultural Value

The two key findings of this study are that both Perceived Usefulness ($\beta = 0.329$, $f^2 = 0.173$) and Cultural Value ($\beta = 0.327$, $f^2 = 0.197$) have a similar effect on digital banking adoption. Davis (1989) TAM, perceived usefulness is the closest predictor of technology adoption. For the majority of researchers who introduce cultural variables into TAM, culture works as a background factor that influences the usefulness/ease of use of the technology indirectly. From our findings, we can see that Cultural Value is similarly important a predictor of digital

banking adoption as usefulness. The difference is 0.002 and the bootstrapping with 5,000 subsample results shows this relationship is stable.

This is due to the institutional arrangement in Ethiopia. The National Bank of Ethiopia's Payment System Proclamation No. 718/2019 led to the digital finance sector being modernized. Non-bank financial institutions would be able to provide financial services, and would be required to interoperate with banks. In the real world of our respondents (75.52%) who are university educated and formal employees, the benefits of digital banking are apparent. Having access to a smartphone-free environment to check balances online, avoid lines at branches, and access USSD codes (*812#) without a smartphone can be good opportunities to use the technology.

Concurrently, the direct effect of Cultural Value is very high, reflecting the social dimension of Ethiopia's financial activities. Rotating savings groups (iqub) and funeral associations (idir) are community-based institutions that are closely associated with financial behavior in urban areas. As far as Hofstede's cultural dimensions are concerned, we are collectively high and uncertainly avoiding. These norms do not go away once one becomes a "digital banker. For instance, people who are members of an iqub can easily access the digital record of their group contributions, which can encourage them to switch to mobile banking. If other people around us know of and trust the new technology then we are more likely to try it. This cultural context is the reason that the direct impact of Cultural Value on adoption has such a high value ($\beta = 0.327$, $f^2 = 0.197$) with no single view of the utility value.

The findings are strategic to Abay Bank. As the Commercial Bank of Ethiopia (CBE) has a large branch network and infrastructure, the private commercial banks need to come up with other methods of competition. The successful execution of this service with its cultural values and usefulness is a great sign of how Abay Bank can stand out by combining its digital services with the traditional financial habits of the people. The bank should not simply re-invent features of the larger competitors' products, but should offer services that can be tailored to the culture of urban populations in Addis Ababa and their savings and transactions.

5.2.2 Trust, Social Influence, and Perceived Ease of Use: Necessary but Not Sufficient Drivers

Trust plays a large role in digital adoption as well ($\beta = 0.170$, $f^2 = 0.056$, $p < 0.001$). There's a long way to go towards digital financial literacy in Ethiopia, and network-related issues or transaction timeouts are often experienced. In this case, trust is extremely significant in order for the user to agree to online banking. Security and system reliability are not only about the technical process; it affects the comfort of the customers' use of Abay Bank's digital channels.

Although the supported paths have the largest direct effect, Social Influence ($\beta = 0.133$, $f^2 = 0.035$, $p < 0.001$) is also significant, albeit more modest. Recommendations by family, friends and co-workers are the most frequent method of information transmission in Addis Ababa. Peer adoption in the workplace, as well as recommendations from family members, facilitates the spread of technology. The small effect size might be because of the high education level of our sample. They are also more likely to use the system and trust their own experience and its usefulness rather than social approval if they are knowledgeable and confident in their digital skills.

The model's best direct path is perceived Ease of Use ($\beta = 0.117$, $f^2 = 0.024$). This is not to say that usability is not important, given the results of the moderation, but that for those who know what they're doing and have experience with technology, a somewhat more cumbersome interface isn't the end of the world if the service has a lot of value and is extremely safe. But as we will see in the next section, the effects of ease of use are only part of the picture; culturally relevant effects are much moderated.

5.2.3 The Selective Moderator: The Moderating Effect of Cultural Value on Perceived Ease of Use

The moderation path (CV × PEOU → DA) was positive and significant ($\beta = 0.098$, $f^2 = 0.020$, $p = 0.002$). Interestingly, Social Influence, Trust and Perceived Usefulness were not moderated by Cultural Value. A major discovery is this selective moderation. It demonstrates that users' perception of utility and safety of a system is not a function of cultural orientation,

but that interaction with the system is. The pattern shows some difference between what you might consider as the basic requirements and boosters.

Trust seems to be a basic requirement. No matter what cultural norms users may have, they must trust a system and trust is the foundation of a system. Since trust is a precondition for all of us, its effect is not much different across various cultural values. So, cultural values do not have an impact on the need for trust to get users to begin using digital banking.

Peu is an adoption facilitator. Its effect will be contingent upon the user's ability to use the system. That's where cultural values are involved. Users that have high cultural orientation scores (who are more collectivist and risk-averse), usability is key. If the terms used or icons are not familiar or the navigation path is not simple, there is friction. A simple and clear layout is not only comfortable for people who are risk-averse, but it's a must, as it makes them feel safe on the platform. So cultural values moderate ease of use as the interface is where users face cultural or linguistic barriers.

This explanation is supported by the fact that the interaction between Cultural Value and Trust was not significant ($\beta = -0.014$, $p = 0.654$). Trust is often a dichotomy in the changing financial market in Ethiopia: customers trust the bank with their money online or not. This is still very high across the sample as risk averse users must have a high level of trust to get involved at any point. Of course, cultural values can have an impact on the rate of gaining a customer's trust, but as soon as a bank has achieved that level of trust, it's crucial

5.3 Implications of the Study

5.3.1 Theoretical Implications

Our study makes a number of contributions to the body of technology adoption studies.We first show that cultural values (six items, AVE = 0.704) explain the variance in adoption with a coefficient of impact ($\beta = 0.327$) that is statistically comparable to perceived usefulness ($\beta = 0.329$).This is important as it reveals that culture can be an important determinant in adoption and not just an indirect (or moderator) one as is commonly believed in Western technology adoption models.

Second, ease of use is found to be moderated by Cultural Value; however, the other factors of user behavior, such as trust, usefulness, and social influence are not moderated by Culture

Value. The results yield a clearer understanding of how culture affects user behavior.Rather than to assume that culture is a general factor in adoption, we draw attention to a single mechanism: cultural orientation is the mechanism that causes users to observe and make use of an interface in a certain way.

Third, we provide an example of TAM in developing financial markets, in Sub-Saharan Africa.Cultural orientation is used as one of the predictors in terms of its usefulness and it has also been evaluated as a moderator of ease of use.This model could be further tested in other emerging mobile money markets like Kenya, Nigeria, or Ghana, to determine its generalizability.

5.3.2 Managerial Implications for Abay Bank

The structural results have specific implications for bank management.Based on the moderation results, digital banking investments can be divided into 2 categories, which would be in different strategies.

The first is trust, perceived usefulness, is the foundation of the bank's basic system.These variables have no impact on cultural score and are improvements which are available to all users; for example, the additional security of biometric login to the system is available to all customers and real-time transaction notifications are available to all users.Similarly, there can be promotions of agent banking using the Abay Bedeje network where word-of-mouth can go out in the workplace and social groups in a way that is culturally sensitive.

The second layer is the user interface layer, the one that is affected by the culture.The cultural values of the user shape the effect of the design choices made such as prompts' language, icon style and depth of navigation.Collectivist and risk averse users expect to know their way around the interface and feel comfortable with it.Thus, the design should be customized based on the preferences of various customer segments.

5.4 Evidence-Based Strategic Recommendations

The three below are specific to certain combinations of structural path coefficients, effect sizes, and operational aspects of the Abay Bank digital ecosystem.They range from the most innovative to the most basic.

5.4.1 Vernacular Interface Localization Programmed

(Targeting CV × PEOU; H6: $\beta = 0.098$, $p = 0.002$)

The size of the interaction path (CV × PEOU) is well suited for the implementation of localization of user interfaces.It is not just about having the English app translated into Amharic, it is about making the Amharic version the app equivalent.Usability improvements have the greatest impact on these groups with higher collectivist and risk-averse scores, namely older age groups (45-54) and first generation of banking users.

Local languages, such as Amharic, Afaan Oromoo, and Tigrinya, are encouraged to be utilized on all platforms including USSD prompts, push notifications and error messages.It's a direct localization to overcome usability barriers.In addition, the bank needs to launch voice activated USSD services on the 812# platform.This will benefit customers who may not own a smartphone, especially for the 20.57% of self-employed and small business users who use agent banking services regularly but may encounter problems with the English-based menus in the text services.

5.4.2 Backend USSD and API Resilience Optimization

(Targeting PEOU and Trust; H2: $\beta = 0.117$; H3: $\beta = 0.170$)

One of the biggest challenges to adoption is system instability.The network dropouts and USSD timeouts increase the difficulty of using the system (PEOU: $\beta = 0.117$) and decrease trust (Trust: $\beta = 0.170$).If a transaction fails at a merchant location, that's not just a minor problem for a risk averse user who values reliability, it could be something so important to the point that he or she stops using mobile banking for good and goes back to cash.

It's recommended to upgrade the back-end servers supporting the USSD gateway and mobile APIs, particularly during the busiest trading times of the day (9:00–12:00 and 14:00–17:00).These hours are similar to the busiest hours of markets such as Merkato.Technical improvements could be Session persistence controls to avoid USSD timeouts and load balancing to distribute traffic.An on-the-fly dashboard will also enable the IT team to identify bottlenecks early.This is particularly the case with the majority of respondents, 53.91%, who earn between 3,000 and 14,999 ETB per month, as they are prone to switching from the system if they experience transactions failures.

5.4.3Automated Digital Micro-Credit for SME Segments

(Targeting Perceived Usefulness; H1: $\beta = 0.329$, $f^2 = 0.173$)

Perceived Usefulness ($\beta = 0.329$, $f^2 = 0.173$) is the strongest direct motivator to use a digital loan in our model, which is consistent with the high demand for digital loans.A significant target group are the small business owners and the self-employed (20.57% of our sample).Such users typically have income volatility and require short-term loans.Currently, when someone goes to the branch of a bank, they fill out paperwork, wait for a while, and then travel to obtain a loan, which digital micro-loans could eliminate.

We propose introducing an automated micro-credit service in the mobile app.It would rely on the transaction history of the Abay Bedeje agent banking network to determine credit risk.Agent banking users produce transaction data such as frequency of transactions, volume, payment history, etc.This information can be used to populate a credit scoring engine and for approval of credit limits.These loans were available in the app, and were not available at branches or required paper documents to be submitted.It would enhance the effectiveness of digital banking service to small enterprise, boost agent transactions and provide interest and fee income for Abay Bank, while complying with the National Bank of Ethiopia rules.

5.5 Limitations and Future Research Directions

There are three main limitations in this study that should be noted when interpreting the results:

Firstly, the geographic and demographic coverage of our sample (n = 384) is somewhat limited.It is composed of all Abay Bank's digital channel users in Addis Ababa.The profile is very well educated (75.52% of the population university educated) and is mainly formally employed (58.33%).This is a measure of conditions in urban capital, not the nation's population or rural customers.Compared to urban areas, rural areas are subject to other issues, including lower levels of literacy, limited smartphone penetration, and weaker networks.Rural customers may also have different attitudes towards risk and community.As such, the results regarding usefulness and cultural value are applicable mainly to the urban educated segment and might not be applicable to a broader financial inclusion target set by the rural population of Abay Bank.

Second, the study is cross sectional.The survey only collects data at one time, so we are not able to see the changes in digital banking over time.For instance, we don't know if users revert to cash transactions following system failure.Ethiopia is still in the early stages of digital banking, and a longitudinal study will help monitor and track the sustainability of user retention and digital banking services in the long run.

Thirdly, the Cultural Value construct is mostly related to collectivism and uncertainty avoidance values of urban communities in Addis Ababa.Other regional cities, such as Hawassa, Dire Dawa, and Bahir Dar, may have different cultural orientations because of the variety of the ethnic groups in Ethiopia (more than 80 ethnolinguistic groups).Future study will be needed to gather data from various regions to assess the impact of regional cultural differences on technology adoption.

Based on these limitations, two areas for future research are suggested.Given that a longitudinal study can follow the progress of self-employed and small business owners over time as they experience the use of the proposed services via mobile micro-credit, the researchers wanted their study to do so.to follow the progression of self-employed and small business owners over time as they experience the use of the proposed services via mobile

micro-credit, the researchers wanted their study to do so.Second, future research could study the impact of the new Ethiopian Securities Exchange (ESX).The introduction of digital trading options via mobile banking will likely push the bar on what customers can expect from mobile banking, creating a new focus to study technology adoption in Ethiopia.

5.6 Concluding Summary

The aim of this study is to explain the reasons of digital banking adoption of Abay Bank customers in Addis Ababa City and to use the findings to enhance the marketing strategic position of Abay Bank.The data collected gives us practical information from the data for the bank.

In our sample, the two primary factors that influence digital banking adoption are perceived usefulness ($\beta = 0.329$) and Cultural Value ($\beta = 0.327$).This reflects the utility of the digital banking offerings by the customers (due to the national digitization policies) and their cultural orientation is no less important.Social endorsement and group trust for adoption is also fostered through collectivism values and traditional financial practices (community-based sharing and auditing).In addition, the model also asserts that trust ($\beta = 0.170$), social influence ($\beta = 0.133$) and perceived ease of use ($\beta = 0.117$) must be included in the model to demonstrate the multi-causality of the process of adopting.It accounts for 61.2% of the variation in adoption.

Cultural values ($\beta = 0.098$, $p = 0.002$) are a clear strategic implication to the softening of ease of use.Abay Bank needs to invest in both in infrastructure (system security, API reliability and new services) and cultural interface (e.g., local languages, voice USSD prompts and clear onboarding guides).These are not distinct routes, but rather distinct layers of a digital strategy required to serve different groups of customers in Addis Ababa.

The digital finance sector in Ethiopia is undergoing a dramatic transformation with new regulation, the growth of ESX, Telebirr and CBE's prominence.Abay Bank needs to concentrate on three things: Improving the backend system stability, beyond translation, making interfaces customized and localized, and establishing automated micro-loans for

small business customers.The empirical results form a database of evidence to support this strategy.

Bank must focus on three areas: improving backend system stability to reduce transaction errors, designing localized interfaces that go beyond basic translation, and introducing automated micro-loans that small business customers need. The empirical findings in this study provide a database of evidence to support this strategy.

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Appendices



College of Business and Economics

Department of Masters of Business Administration

Survey Questionnaires

Dear respondents,

My name is Tsirha Tsegaye a master's student at Addis Ababa University and. I am conducting this survey as part of my master's thesis on determinants of digital banking adoption at Abay Bank and the moderating role of cultural value. Your participation is kindly requested, and the data you provide will be used solely for academic purposes.

The questionnaire will take approximately 15–20 minutes to complete. All responses are anonymous and will be treated with strict confidentiality. If you have any questions, please contact me at tsirhatsegaye@gmail.com

Thank you for your time and contribution.

Sincerely,
Tsirha Tsegaye

Information

Instructions: Please tick (✓) or circle the answer that best describes your situation. Select only ONE answer per question unless otherwise stated.

Q1. What is your age?

□ 18 – 24 years

□ 25 – 34 years

□ 35 – 44 years

□ 45 – 54 years

□ 55 years and above

Q2. What is your gender?

□ Male

□ Female

Q3. What is your highest level of education completed?

□ Below secondary school

□ Secondary school (Grade 10/12)

□ Certificate / Diploma

□ Bachelor's Degree

□ Master's Degree or above

Q4. What is your current occupation?

□ Government employee

□ Private sector employee

□ Self-employed / Business owner

□ Student

□ Farmer / Daily laborer

□ Unemployed / Other

Q5. What is your approximate monthly income (in Ethiopian Birr)?

□ Below ETB 3,000

□ ETB 3,000 – 7,999

□ ETB 8,000 – 14,999

□ ETB 15,000 – 29,999

□ ETB 30,000 and above

Q6. How long have you been a customer of Abay Bank?

□ Less than 1 year □ 1 – 3 years

□ 3 – 5 years □ More than 5 years

Q7. Which Abay Bank digital banking channels do you use?

(Tick ALL that apply)

□ Abay Mobile Banking App □ USSD Code (*812#)

□ Abay Internet Banking (web portal) □ ATM Card

□ POS terminal payment □ QR Code payment

□ I do not use any digital channel

Q8. How often do you use Abay Bank's digital banking services?

□ Never (I have not used any) □ Rarely (once a month or less)

□ Occasionally (2–3 times a month) □ Frequently (once or twice a week)

□ Daily

Q9. What is your PRIMARY reason for using Abay Bank's digital banking? (Select ONE)

□ Money transfer / sending money to family □ Paying utility bills (EEPCO, water, etc.)

□ Buying airtime (Ethio Telecom / Safaricom) □ Checking account balance

□ Paying for goods and services at shops □ I do not yet use digital banking

Q10. Do you own a smartphone capable of running the Abay Mobile Banking app?

□ Yes, and I use the app □ Yes, but I do not use the app

□ No, I use only a basic phone (USSD) □ No smartphone

Section B: Main Construct Statements

Instructions: For each statement below, please indicate the extent to which you agree or disagree by circling or ticking the appropriate number. Please answer ALL statements honestly based on your own experience with Abay Bank's digital banking services.

1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree

Part B1. Perceived Usefulness (PU)

These statements ask how much you believe Abay Bank's digital banking services actually help and benefit you in managing your banking needs.

No.	Statement	1	2	3	4	5
PU1	Using Abay Bank's digital banking services allows me to complete my banking transactions faster than visiting a branch.					
PU2	Abay Bank's digital banking makes it easier for me to manage and monitor my account balance and transaction history at any time.					
PU3	Abay Bank's digital banking allows me to pay utility bills and buy airtime faster and with less effort.					
PU4	Overall, using Abay Bank's digital banking services improves the quality and effectiveness of my personal banking experience.					

Part B2. Perceived Ease of Use (PEOU)

These statements ask how easy or difficult you find it to use Abay Bank's digital banking services.

No.	Statement	1	2	3	4	5
EU1	The steps required to register for and log in to Abay Mobile Banking are clear and					

No.	Statement	1	2	3	4	5
	straightforward.					
EU2	The Abay Mobile Banking application is easy to navigate, and I can find the service I need without confusion.					
EU3	Completing a money transfer or bill payment through Abay Bank's digital channels requires little mental effort from me.					
EU4	I feel confident in my ability to use Abay Bank's digital banking services correctly without making mistakes.					

Part B3. Trust and Perceived Security (TR)

These statements ask about your confidence in the safety, security, and reliability of Abay Bank's digital banking services.

No.	Statement	1	2	3	4	5
TR1	Abay Bank's digital banking system adequately protects my personal and financial information from unauthorized access or fraud.					
TR2	When I transfer money through Mobile Banking, I am confident the transaction will be processed accurately and the correct amount will reach the recipient.					
TR3	I trust that Abay Bank takes the security of digital transactions seriously and has put in place measures to prevent fraud and system failures.					
TR4	I feel comfortable sharing my account details within Abay Bank's digital banking platform because I believe the bank protects my privacy.					

Part B4. Social Influence (SI)

These statements ask about the role of other people and your social environment in shaping your decision to use Abay Bank's digital banking services.

No.	Statement	1	2	3	4	5

No.	Statement	1	2	3	4	5
SI1	Members of my family who bank with Abay Bank encourage me to use the bank's digital banking services.					
SI2	My close friends or work colleagues who are Abay Bank customers have recommended that I use the mobile banking app or USSD service.					
SI3	I feel social pressure to adopt digital banking because most people around me already use it.					
SI4	Abay Bank staff and branch employees actively encourage me to use digital channels instead of waiting in branch queues for routine transactions.					

Part B5. Cultural Value (CV) Moderating Variable

These statements explore your personal values and cultural orientations that may influence how you approach new technology and banking decisions. There are no right or wrong answers please respond based on your genuine beliefs and experiences as someone living in Ethiopia.

Dimension 1. Individualism vs. Collectivism

No.	Statement	1	2	3	4	5
IC1	I am more likely to adopt digital banking if the people around me family, friends, or colleagues also use it.					
IC2	Recommendations from family members or close friends strongly influence my decision to use digital banking services.					
IC3	I feel more comfortable using digital banking when it is widely accepted by people I know and trust.					

Dimension 2. Uncertainty Avoidance

No.	Statement	1	2	3	4	5

No.	Statement	1	2	3	4	5
UA1	I feel uncomfortable using digital banking if I am unsure how it works or what to do when something goes wrong.					
UA2	Security and safety concerns strongly affect my decision to adopt or continue using digital banking services.					
UA3	I hesitate to try new digital banking features without proper guidance or reassurance from the bank.					

Part B6. Digital Banking Adoption (DBA) Dependent Variable

These statements ask about your actual use of, and future intentions regarding, Abay Bank's digital banking services.

No.	Statement	1	2	3	4	5
DA1	I currently use at least one of Abay Bank's digital banking services (mobile app, USSD *812#, internet banking, ATM, or Abay Bedeje agent banking) on a regular basis.					
DA2	I intend to continue using Abay Bank's digital banking services for my routine transactions (transfers, bill payments, balance checks) in the future.					
DA3	I am willing to try new digital banking features that Abay Bank introduces, such as QR code payments or the Unite.et diaspora portal, as soon as they are available.					
DA4	I would recommend Abay Bank's digital banking services to family members, friends, or colleagues who are not yet using them.					
DA5	I prefer using Abay Bank's digital banking channels over visiting a physical branch for most of my routine banking transactions.					



አዲስአበባዩኒቨርሲቲ

የንግድናኢኮኖሚክስኮሌጅ

የቢዝነስአስተዳደር (MBA) ትምህርትክፍል

የጥናትዳሰሳጥያቄዎች

የጥናትመጠይቅ

ውድተሳታፊዎች፣

ጽርሃጸጋዬእባላለሁ።በአዲስአበባዩኒቨርሲቲየማስተርስተማሪስሆን፣በአባይባንክውስጥየዲጂታልባንኪንግተቀባይነትንየሚወስኑምክንያቶችናባህላዊ እሴቶችያላቸውንየተጽእኖሚናበሚመለከትየማስተርስጥናቴንእያካሄድኩነው።በዚህጥናትላይበመሳተፍየሚሰጡትመረጃለትምህርታዊዓላማብቻየ ሚውልሲሆንሙሉበሙሉበምሥጢርይጠበቃል።መጠይቁንለመሙላትከ15–20 ደቂቃያህልጊዜይወስዳል።ጥያቄካለዎትበtsirhatsegaye@gmail.comሊያገኙኝይችላሉ።

ለጊዜዎናለተሳትፎዎከልብእናመሰግናለን።

ከሰላምታጋር፣

ጽርሃጸጋዬ

ክፍልሀ፡የግልመረጃ

መመሪያ

ሐሳብዎንበይበልጥየሚገልጸውንመልስ (✓) ምልክትያድርጉ።በተለይካልተጠቀሰበስተቀርለእያንዳንዱጥያቄአንድመልስብቻይምረጡ።

ጥያቄ 1፡ዕድሜዎስንትነው?

□ 18–24 ዓመት

□ 25–34 ዓመት

□ 35–44 ዓመት

□ 45–54 ዓመት

□ 55 ዓመትእናከዚያበላይ

ጥያቄ 2፡ጸታዎምንድንነው?

□ ወንድ

□ ሴት

ጥያቄ 3፡ያጠናቀቁትከፍተኛየትምህርትደረጃምንድንነው?

□ ከሁለተኛደረጃበታች

□ ሁለተኛደረጃ (10ኛ/12ኛክፍል)

□ ሰርተፊኬት/ዲፕሎማ

□ ባችለርዲግሪ

□ ማስተርስዲግሪወይምከዚያበላይ

ጥያቄ 4፡አሁንሥራዎምንድንነው?

□ የመንግስትሠራተኛ

□ የግልድርጅትሠራተኛ

□ በግልሥራየተሰማራ / የንግድባለቤት

□ ተማሪ

□ ገበሬ / የቀንሠራተኛ

□ ሥራአጥ / ሌላ

ጥያቄ 5፡በወርበግምትየሚያገኙትገቢ (በኢትዮጵያብር) ስንትነው?

□ ከ3,000 ብርበታች

□ 3,000 – 7,999 ብር

□ 8,000 – 14,999 ብር

□ 15,000 – 29,999 ብር

□ 30,000 ብርእናከዚያበላይ

ጥያቄ 6. የዓባይባንክደንበኛከሆኑምንያህልጊዜነው?

□ ከ 1 ዓመት

□ ከ3-5 ዓመት

□ ከ1 – 3 ዓመት

□ ከ 5 ዓመትበላይ

ጥያቄ 7፡የትኞቹንየአባይባንክዲጂታልባንኪንግአገልግሎቶችይጠቀማሉ?

(የሚጠቀሙትንሁሉምልክትያድርጉ)

□ የአባይሞባይልባንኪንግመተግበሪያ

□ መክፈያማሽን (POS)

□ አጭርቁጥር (USSD) ኮድ (*812#) □ ምንምዓይነትየዲጂታልአገልግሎትአልጠቀምም

□ የአባይኢንተርኔትባንኪንግ (ድረ-ገጽ) □ QRኮድክፍያ

□ ኤቲኤም(ATM) ካርድ

ጥያቄ 8፡የአባይባንክንዲጂታልባንኪንግአገልግሎቶችምንያህልጊዜይጠቀማሉ?

□ በጭራሽአልጠቀምም □ አልፎአልፎ (በወርአንድጊዜወይምከዚያበታች)

□ ብዙጊዜ (በሳምንት 1–2 ጊዜ) □ አንዳንድጊዜ (በወር 2–3 ጊዜ)

□ በየቀኑ

ጥያቄ 9፡የአባይባንክንዲጂታልባንኪንግለመጠቀምዋናምክንያትዎምንድንነው? (አንድመልስብቻይምረጡ)

□ ገንዘብለማስተላለፍ /ለቤተሰብገንዘብለመላክ □ የስልክካርድ (Airtime) መግዛት

□ በሱቆችውስጥለእቃዎችናአገልግሎቶችክፍያመፈጸም □ የሂሳብቀሪገንዘብንለማወቅ

□ የአገልግሎትሂሳቦችን (ሙቢራት፣ውሃወዘተ) መክፈል □ እስካሁንየዲጂታልባንኪንግአልጠቀምም

ጥያቄ 10፡የአባይሞባይልባንኪንግመተግበሪያንማስኬድየሚችልስማርትስልክአለዎት?

□ አዎ፣መተግበሪያውንምእጠቀማለሁ □ የለኝም፤መደበኛስልክ (USSD) ብቻእጠቀማለሁ

□ አዎ፣ነገርግንመተግበሪያውንአልጠቀምም □ ስማርትስልክየለኝም

ክፍልለ፡ዋናዋናመግለጫዎች

መመሪያ፡ከታችለቀረበውእያንዳንዱመግለጫየሚስማሙበትንወይምየማይስማሙበትንደረጃበተገቢውቁጥርላይክብበማድረግወይምምልክት (✓) በማድረግይግለጹ።እባክዎሁሉንምጥያቄዎችከአባይባንክዲጂታልባንኪንግአገልግሎትጋርባለዎትተሞክሮመሰረትበታማኝነትይመልሱ።

1 በጣምአልስማማም	2 አልስማማም	3 ገለልተኛ	4 እስማማለሁ	5 በጣምእስማማለሁ

ክፍልለ1. የተጠቃሚነትግንዛቤ (PU)

እነዚህመግለጫችየዓባይባንክደዲጂታልባንኪንግአገልግሎትየባንክፍላጎትዎንለማከናወንምንያህልያግዘኛልወይምይጠቅመኛልብለውእንደሚያምኑ የሚጠይቁናቸው።።

ተ.ቁ..	መግለጫ	1	2	3	4	5
PU1	የአባይባንክዲጂታልባንኪንግአገልግሎቶችንመጠቀምግብይቶቼንቅርንጫፍከመሄድይልቅበፍጥነትእንዳጠናቅቅያስችለኛል።					
PU2	የአባይባንክዲጂታልባንኪንግሂሳቤንእናየግብይትታሪኬንበማንኛውምጊዜለመቆጣጠርያግዘኛል።					

ተ.ቁ..	መግለጫ	1	2	3	4	5
PU3	የአባይባንክዲጂታልባንኪንግየአገልግሎትፍጆታሂሳቦችንለመክፈልእናየስልክካርድለመግዛትቀላልያደርገዋል።					
PU4	በአጠቃላይየአባይባንክዲጂታልባንኪንግአገልግሎቶችንመጠቀምየባንክአገልግሎትጥራትናውጤታማነትልምዴንያሻሽላል።					

ክፍልለ2. የአጠቃቀምቀላልነት (PEOU)

እነዚህመግለጫወዎችየአባይባንክሞባይልአገልግሎቶችንመጠቀምምንያህልቀለልወይምከባድእንደሚሆንብዎየሚጠይቁናቸው::

ተ.ቁ..	መግለጫ	1	2	3	4	5
EU1	ወደአባይሞባይልባንኪንግለመመዝገብናለመግባትየሚያስፈልጉትእርምጃዎችግልጽናቀጥተኛናቸው።					
EU2	የአባይሞባይልባንኪንግመተግበሪያለመጠቀምቀላልነው።የምፈልገውንአገልግሎትግራሳይገባኝአገኛለሁ::					
EU3	በአባይባንክዲጂታልመንገዶችገንዘብለማስተላለፍወይምየአገልግሎትፍጆታሂሳብለመክፈልብዙየአእምሮጥረትአያስፈልገኝም።					
EU4	የአባይባንክዲጂታልባንኪንግአገልግሎቶችንያለስህተትመጠቀምእንደምችልእተማመናለሁ።					

ክፍልለ3. እምነትናደህንነት **(TR)**

እነዚህመግለጫዎችበአባይባንክዲጂታልባንኪንግአገልግሎትደህንነት፣ጥበቃናአስተማማኝነትላይስላለዎትእምነትየሚጠይቁናቸው::

ተ.ቁ..	መግለጫ	1	2
TR1	የአባይባንክዲጂታልባንኪንግየግልናየፋይናንስመረጃዬንካልተፈቀደለትሰውናአጭበርባሪበበቂሁኔታይጠብቃል።		
TR2	ገንዘብበሞባይልባንኪንግሳስተላልፍግብይቱበትክክልእንደሚያዝናትክክለኛውመጠንእንደሚደርስእተማመናለሁ።		
TR3	አባይባንክየዲጂታልግብይቶችንደህንነትበቁምነገርእንደሚወስድናማጭበርበርናየሲስተምመቋረጥንለመከላከልተገቢውንእርምጃእንደወሰደአምናለሁ።		
TR4	ባንኩግላዊምሥጢሬንእንደሚጠብቅስለማምንመረጃዬንበአባይባንክዲጂታልባንኪንግመድረክለማጋራትምቾትይሰማኛል።		

ክፍልለ4. ማህበራዊተፅዕኖ (SI)

እነዚህመግለጫዎችሌሎችሰዎችናማኅበራዊአካባቢዎየአባይባንክዲጂታልባንኪንግአገልግሎትለመጠቀምያደረጉትውሳኔላይስላላቸውሚናየሚጠይቁናቸው::

ተ.ቁ..	መግለጫ	1	2	3	4	5
SI1	አባይባንክየሚጠቀሙየቤተሰብአባሎቼየባንኩንዲጂታልባንኪንግአገልግሎትእንድጠቀምያበረታቱኛል።					
SI2	የአባይባንክደንበኛየሆኑየቅርብጓደኞቼወይምየሥራባልደረቦቼየሞባይልባንኪንግመተግበሪያወይምየአጭርቁጥርኮድእንድጠቀምይመክሩኛል።					
SI3	በዙሪያዬያሉአብዛኛውሰዎችስለሚጠቀሙበትእኔምየባንኩንዲጂታልባንኪንግእንድጠቀምማኅበራዊጫናይሰማኛል።					
SI4	የአባይባንክሠራተኞችለተራግብይቶችበቅርንጫፎችተሰልፈከምጠብቅይልቅዲጂታልአገልግሎትእንድጠቀምበጎይልያበረታቱኛል።					

ክፍልለ5. ባህላዊእሴቶች (CV) ልዩልዩባህርያት

እነዚህመግለጫዎችአዳዲስቴክኖሎጂዎችንእናየባንክውሳኔዎችንበሚመለከትአቀራረብዎላይተጽዕኖሊያሳድሩየሚችሉየግልእሴቶችዎንእናባህላዊዝንባሌዎችዎንይመረምራሉ።ትክክለኛወይምየተሳሳተመልስየለም፤እባክዎበኢትዮጵያእንደሚኖሩሰውበእውነተኛእምነትዎእናተሞክሮዎመሰረትይመልሱ።

ልኬት 1፡ግለኝነትወይስቡድናዊነት

ተ.ቁ..	መግለጫ	1	2	3	4	5
IC1	በዙሪያዬያሉሰዎች -ቤተሰብ፣ጓደኛወይምባልደረባ - ዲጂታልባንኪንግከተጠቀሙእኔምልጠቀምእችላለሁ።					
IC2	የቤተሰብአባላትወይምየቅርብጓደኞችምክርየዲጂታልባንኪንግአገልግሎትየመጠቀምውሳኔዬላይብርቱተፅዕኖአለው።					
IC3	በማውቃቸውናበማምናቸውሰዎችተቀባይነትሲኖረውየዲጂታልባንኪንግለመጠቀምየበለጠምቾትይሰማኛል።					

ልኬት 2፡እርግጠኛአለመሆንንማስወገድ

ተ.ቁ..	መግለጫ	1	2	3	4	5
UA1	እንዴትእንደሚሠራወይምአንድነገርቢበላሽምንእንደማደርግእርግጠኛካልሆንኩዲጂታልባንኪንግአገልግሎቱንለመጠቀምእጨነቃለሁ።					

ተ.ቁ..	መግለጫ	1	2	3	4	5
UA2	የደህንነትናየጥንቃቄስጋቶቸየዲጂታልባንኪንግአገልግሎትየመጠቀምውሳኔሌላይብርቱተፅዕኖአላቸው።					
UA3	አዲስየዲጂታልባንኪንግባህሪያትንያለመመሪያወይምያለባንኩማበረታቻለመሞከርአመነታለሁ።					

ክፍልለ6፡የዲጂታልባንኪንግተቀባይነት(DBA) ጥቅሞችያት

እነዚህመግለጫዎችየአባይባንክንየዲጂታልባንኪንግአገልግሎቶችበተግባርስለሚጠቀሙበትእናወደፊትስለማቀድዎይጠይቃሉ።

ተ.ቁ..	መግለጫ	1	2	3	4	5
DA1	ቢያንስአንድየአባይባንክየዲጂታልባንኪንግአገልግሎት (የሞባልመተግበሪያ፣አጭርቁጥር *812#፣ኢንተርኔትባንኪንግ፣ኤቲኤም፣ወይምአባይበደጂወኪልባንኪንግ) በመደበኛነትአጠቀማለሁ።					
DA2	ወደፊትምለዘወትርግብይቶቼየአባይባንክዲጂታልባንኪንግአገልግሎቶችን (ገንዘብማስተላለፍ፣የፍጆታሒሳቦችክፍያ፣ቀሪሒሳብማየት) መጠቀሜንእቀጥላለሁ።					
DA3	አባይባንክየሚያመጣቸውንእንደ QR ኮድመክፈያወይም Unite.et ዳያስፖራገጽያሉትንአዳዲስየዲጂታልባንኪንግአገልግሎቶችእንደተጀመሩለመሞከርፈቃደኛነኝ።					
DA4	የአባይባንክዲጂታልባንኪንግአገልግሎቶችንየማይጠቀሙየቤተሰብአባላቶቼ፣ጓደኞቼወይምባልደረቦቼእንዲጠቀሙእመክራለሁ።					
DA5	ወደቅርንጫፎችከመሄድይልቅለአብዛኛዎቸየዘወትርየባንክጉዳዮቼየአባይባንክዲጂታልባንኪንግአገልግሎትመንገዶችንመጠቀምእመርጣለሁ።					