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The Mediating Role of AI Adoption on the Relationship Between Fintech Innovation and Organizational Performance: Evidence from Ethiopian Banks and Fintech Establishments

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Declaration

I, the undersigned, declare that this thesis entitled ***"The Mediating Role of AI Adoption on the Relationship Between Fintech Innovation and organizational Performance"*** submitted to the Department of Management, College of Business and Economics, Addis Ababa University, in partial fulfillment of the requirements for the degree of Master of Science in Management, is my own original work and all sources of information used have been duly acknowledged through proper citation and reference.



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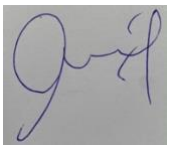

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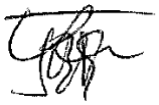

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ABSTRACT

The banking industry has seen a global transformation due to the quick development of financial technologies, but little empirical study has been done on the combined effects of fintech innovation and the adoption of artificial intelligence (AI) on organizational performance in developing nations like Ethiopia. The objectives of this study were to evaluate the impact of AI adoption, analyze the mediating function of AI in augmenting the impact of fintech innovation, and investigate the impact of fintech innovation on the organizational performance of Ethiopian banks and fintech firms. A quantitative study design was used, and standardized questionnaires were used to gather data from 372 managers and employees of banks and fintech companies. The proposed relationships were tested using simple, multiple regression & mediation analyses.

The results showed that mobile payment, mobile banking, online banking, and ATM services are all components of fintech innovation that have a significant and beneficial impact on organizational performance, with mobile-based solutions showing the greatest benefit. Adoption of AI was found to significantly improve performance and to somewhat mediate the association between operational success and fintech innovation. Adoption of AI also strengthened the beneficial effects of fintech technologies by mediating the relationship. The study comes to the conclusion that improving efficiency, service delivery, and competitiveness in Ethiopia's banking industry requires merging fintech solutions with AI technologies. To achieve long-term competitive advantages, banks and fintech companies are advised to make strategic investments in both fintech technologies and AI skills.

Keywords: Fintech Innovation; Artificial Intelligence Adoption; Organizational Performance; Ethiopian Banking Sector; Digital Transformation; Mediation Analysis; Emerging Markets

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LIST OF ABBREVIATIONS AND ACRONYMS

Abbreviation	Full Form
AfDB	African Development Bank
AI	Artificial Intelligence
AIDUA	Artificially Intelligent Device Use Acceptance
ANOVA	Analysis of Variance
API	Application Programming Interface
ATM	Automated Teller Machine
BSC	Balanced Scorecard
CB-SEM	Covariance-Based Structural Equation Modeling
CBE	Commercial Bank of Ethiopia
CFA	Confirmatory Factor Analysis
DCV	Dynamic Capabilities View
DOI	Diffusion of Innovation Theory
EFA	Exploratory Factor Analysis
ESG	Environmental, Social, and Governance
Fintech	Financial Technology
GSMA	Global System for Mobile Communications Association
ICT	Information and Communication Technology
KYC	Know Your Customer

MENA	Middle East and North Africa
MInT	Ministry of Innovation and Technology (Ethiopia)
ML	Machine Learning
MNOs	Mobile Network Operators
M-Pesa	Mobile Money Platform (Kenya)
MPS	Mobile Payment System
MSMEs	Micro, Small, and Medium Enterprises
NBE	National Bank of Ethiopia
NFC	Near-Field Communication
NLP	Natural Language Processing
NPS	Net Promoter Score
OP	Organizational Performance
P2P	Person to Person (Payment)
PEOU	Perceived Ease of Use
PLS-SEM	Partial Least Squares Structural Equation Modeling
PU	Perceived Usefulness
RBV	Resource-Based View
ROA	Return on Assets
ROE	Return on Equity
RPA	Robotic Process Automation
SEM	Structural Equation Modeling

SMEs	Small and Medium Enterprises
SPSS	Statistical Package for the Social Sciences
TAM	Technology Acceptance Model
TCE	Transaction Cost Economics
TOE	Technology-Organisation-Environment (Framework)
TOP	Theory of Performance
USSD	Unstructured Supplementary Service Data
UTAUT	Unified Theory of Acceptance and Use of Technology
VIF	Variance Inflation Factor
VRIN	Valuable, Rare, Inimitable, Non-substitutable (RBV Framework)

CHAPTER ONE

1. INTRODCUTION

1.1. Background Of the Study

In the twenty-first century, there have been many changes in the field of finance due to the emergence of fintech innovations together with applications of artificial intelligence (AI). In its turn, fintech refers to different innovations, including online payments, mobile banking, Internet banking, ATMs, blockchain, and credit algorithms that fundamentally change the nature of the provision and consumption of financial services (Gomber et al., 2018; Ozili, 2022). At the same time, AI solutions such as machine learning, robotic process automation (RPA), natural language processing (NLP), and predictive analytics are seen as multipliers that facilitate the operation of fintech technologies and allow companies to improve the quality of services they offer (Cao, 2022; Lee & Shin, 2018). It has been found that the adoption of fintech innovations and the integration of AI solutions have already had beneficial effects on the performance of various organizations in terms of financial factors, like profitability, return on assets, cost-to-income ratio, and non-financial ones, like customer satisfaction and quality (Mention & Torkkeli, 2012; Xie et al., 2021).

Fintech innovations have played a critical role in enhancing financial inclusion and economic growth in the African continent. In particular, sub-Saharan Africa has become a world example in the use of mobile money solutions; the emergence of M-Pesa in Kenya became a breakthrough moment (GSMA, 2023). The second most populous nation in Africa and one of the fast-growing economies, Ethiopia, presents a promising area for research. Having had a state-monopoly economy characterized by a mono-bank financial system for many decades, Ethiopia has undertaken numerous economic and financial reforms during the last decade. Thus, the Investment Proclamation was adopted in Ethiopia from 2019; the opening of the equity market in 2019, liberalization of the banking sector, and the permission for foreign financial institutions to operate in the country from 2018 created an unprecedentedly favorable environment for innovations and competition (NBE, 2024; World Bank, 2023).

There have been numerous developments associated with the fintech innovations in Ethiopia during the last few years. In May 2021, Telebirr mobile payment platform that was created by Ethio Telecom became extremely popular; currently, there are 50 million people who use this

platform to conduct digital payments (Ethio Telecom, 2023). Besides, other platforms, such as CBE Birr created by Commercial Bank of Ethiopia and mobile banking services of the biggest banks of Ethiopia (such as Awash International Bank, Dashen Bank, etc.), significantly improved the situation in the country. Thus, according to NBE statistics, in 2023, the total value of digital payment transactions made in Ethiopia was over Birr 4.7 trillion and increased with the year-on-year rate of about 36%; by 2025, there will be even a higher increase (NBE, 2024). All mentioned above corresponds with the national strategies of the country, including Digital Ethiopia 2030 Strategy and National Digital Payments Strategy; the latter aims to achieve the level of financial inclusion equal to 70% in Ethiopia by 2030, as well as ensure the full transition to digitalized payments by the government and private organizations (Ministry of Innovation and Technology, 2020; NBE, 2023).

However, despite the positive development of financial digitalization in Ethiopia, it has not been established what effect such fintech innovations may have on organizational performance. Although innovations, like mobile payments, mobile banking, Internet banking, and ATMs, are capable of improving customers' accessibility to financial services, the extent to which they improve the performance of banks and fintech firms remains unknown and requires empirical investigations. Moreover, the importance of using AI innovations by organizations should be highlighted because of their crucial role in increasing the efficacy of innovations (Cao, 2022; Jagtiani & John, 2018). Although the adoption of AI innovations in Ethiopia is stipulated by the national strategy (Ministry of Innovation and Technology, 2020), only a few big banks use them for various tasks, including fraud detection, credit risk scoring, customer service chatbots, and regulatory automation (AfDB, 2023; Resilient Digital Africa, 2024). Therefore, the identification of a relationship between AI adoption and organizational performance would be helpful for Ethiopian organizations.

Thus, the current research aims to study fintech innovation, AI adoption, and organizational performance in Ethiopian banks and fintech firms, as no systematic empirical investigation of the problem in question exists.

1.2. Statement Of the Problem

In spite of some positive developments concerning the implementation of fintech innovations in Ethiopia, there still exist gaps related to their effects on the organizational performance of banks

and fintech companies. In the existing global literature, numerous positive relationships between organizational performance and adoption of various fintech innovations have been reported (Gomber et al., 2018; Xie et al., 2021); however, most of those studies come from the USA and Europe. Other studies were conducted in big emerging countries like China, India, and Kenya, and cannot be easily transferred to the Ethiopian context. Therefore, a specific analysis of the Ethiopian case becomes critically important.

At the same time, there is a need to analyze whether the adoption of AI technologies plays a mediating role in the mentioned association. Some researchers believe that AI innovations, being a powerful amplifying factor in the use of fintech innovations, positively affect organization performance because of better fraud detection, real-time credit scoring, personalized offers, etc. (Cao, 2022; Jagtiani & John, 2018). However, little empirical evidence of this mediation effect has been found even for advanced economies; the absence of such data in Ethiopia makes this task even more challenging. Without the analysis of this mechanism, Ethiopian financial organizations face great risks associated with misallocation of investments and poor performance.

Besides, there are multiple challenges in Ethiopia that complicate the establishment of the mentioned associations. In terms of infrastructure, unreliable electricity supply and Internet connectivity in many regions of the country hinder the effective use of fintech innovations and negatively affect the performance of the financial sector (World Bank, 2023). Lack of skills in data science, AI engineering, and digital product management does not make it possible for banks and fintech firms to develop complex AI-based projects (AfDB, 2023). Regulatory uncertainties concerning issues such as data privacy, digital lending, and open banking decrease the likelihood that organizations will invest in fintech innovations (NBE, 2024). Finally, cybersecurity issues and growing fraud cases make fintech adoption expensive for companies (Resilient Digital Africa, 2024). Consequently, it can be stated that the relationship between fintech adoption and organizational performance depends heavily on the success of AI adoption and the extent to which it is achieved.

Finally, it is important to emphasize that there is a lack of literature analyzing fintech adoption and performance of banks and fintech organizations in developing countries. Based on bibliometric review of major electronic databases, there is evidence that some researches studying fintech adoption in Ethiopia have been recently conducted (Hailu & Teshome, 2022; Mersha & Rao,

2023); however, those articles mostly consider customer acceptance or adoption factors, rather than performance issues.

As a result, there exists a serious threat that organizations operating in Ethiopia will not understand the drivers of their digital performance and, consequently, will experience poor performance and financial loss. Since the goal of the country is to achieve 70% financial inclusion and double-digit economic growth in the nearest future (NBE, 2024), the proper development of the financial sector seems to be crucial.

1.3. Research Questions

Guided by the foregoing problem statement and the identified gaps in the literature, this study seeks to address the following research questions:

1. What is the overall effect of fintech innovation on the organizational performance of Ethiopian banks and fintech establishments, and to what extent is this relationship mediated by AI adoption?
2. What is the direct relationship between fintech innovation and organizational performance in Ethiopian banks and fintech establishments?
3. What is the relationship between fintech innovation and AI adoption in Ethiopian banks and fintech establishments?
4. What is the relationship between AI adoption and organizational performance in Ethiopian banks and fintech establishments?
5. Does AI adoption significantly mediate the relationship between fintech innovation and organizational performance in Ethiopian banks and fintech establishments?

1.4. Research Objectives

1.4.1 General Objective

The general objective of this study is to examine the mediating role of AI adoption in the relationship between fintech innovation and organizational performance in Ethiopian commercial banks and fintech establishments.

1.4.2 Specific Objectives

In alignment with the research questions, the following specific objectives guide the inquiry:

1. To assess the direct effect of fintech innovation on the organizational performance of Ethiopian banks and fintech establishments.
2. To examine the relationship between fintech innovation and AI adoption in Ethiopian banks and fintech establishments.
3. To investigate the relationship between AI adoption and organizational performance in Ethiopian banks and fintech establishments.
4. To determine whether and to what extent AI adoption mediates the relationship between fintech innovation and organizational performance in Ethiopian banks and fintech establishments.
5. To analyze the combined and individual contributions of specific fintech sub-domains, namely mobile payment, mobile banking, internet banking, and ATM services to organizational performance through the mediating pathway of AI adoption.
6. To identify contextual and institutional factors that shape the fintech innovation–AI adoption–organizational performance nexus in the Ethiopian financial sector, and to derive evidence-based recommendations for managers, executives, and policymakers.

1.5. Significance Of the Study

The present research is marked by theoretical, practical, methodological, and socio-economic relevance, the details of which are provided below.

1.5.1 Theoretical Significance

Theoretically, the proposed study represents an advancement in understanding organizational performance resulting from technological interventions in a number of aspects. Firstly, it is one of the pioneering pieces of work in the literature focusing on fintech innovation and performance relations from the standpoint of developing economies. It addresses an apparent neglect of African fintech ecosystems among researchers in mainstream fintech innovation literature. Secondly, the study extends the current knowledge regarding the mediating role of AI in creating organizational value in a fintech-driven financial sector, leveraging the TOE model (Tornatzky & Fleischer, 1990), resource-based view (Barney, 1991), and dynamic capability approach (Teece, Pisano, & Shuen, 1997). Thirdly, the study makes an advance in the methodology of mediation analysis in information systems and digital transformation literature through structural equation modeling of indirect effects.

1.5.2 Practical Significance

On the practical level, the study provides insights into fintech innovation and AI adoption practices that contribute to organizational performance in the Ethiopian financial sector. The findings of the study will be beneficial for bank and fintech managers who will be informed about the fintech innovation sub-domains that produce the most performance dividends when used in conjunction with AI. As regards policymakers, including representatives of the NBE and MInT, the findings will facilitate the design of fintech innovation regulations and incentives that would foster responsible and profitable AI deployment. In particular, the findings of the study will help to develop operational strategies for achieving goals set forth in the National Digital Payments Strategy and the Digital Ethiopia 2030 agenda.

1.5.3 Methodological and Contextual Significance

From a methodological standpoint, the study utilizes a robust quantitative design with primary survey data obtained from representative samples of professionals working in Ethiopian banks and fintech establishments in 2025/2026. The employment of SEM mediation analysis renders a methodological template for future researchers investigating technology adoption-performance relationships among sub-Saharan African financial organizations. Contextually, the study represents an opportunity to capture the moment of transition of the Ethiopian financial sector associated with banking liberalization, fintech innovations, and nascent AI policies.

1.5.4 Broader Socio-Economic Significance

As far as socio-economic implications are concerned, it is expected that the study will exert a positive influence on financial inclusion, economic growth, and job creation. Through revealing the mechanisms that help fintech innovations and AI adoption boost organizational performance, the study will contribute to achieving Ethiopia's development goals. Increased organizational performance leads to increased credit supply, lower transaction costs, more effective payment systems, and increased access of Ethiopians to formal banking services for the estimated 45-50% of the population not included in the formal banking sector (Global Findex, 2022; NBE, 2024). These results, in turn, contribute to entrepreneurship and poverty alleviation and represent an achievement of the Home-Grown Economic Reform program's goals.

1.6. Scope Of the Study

The scope of the present study is determined by several criteria to ensure analytical rigour and practical feasibility.

Subject scope: The study is focused on commercial banks operating in Ethiopia and fintech companies providing various payment services in Ethiopia as of 2025. Both private commercial banks and state-owned financial institutions are included in the sample as well as the fintechs providing payments, loans, savings, and other financial services.

Innovation constructs: The study considers four principal fintech sub-domains (mobile payment services, mobile banking, internet banking, and ATMs). Such a selection of variables was made considering the prevalence, strategic importance, and growth dynamics of the indicated fintech innovations in Ethiopia as of 2025 (NBE, 2024; Ethio Telecom, 2023). Other fintech innovations such as blockchain-based solutions and decentralized finance were considered but left out of the current research due to their limited presence in Ethiopia at the moment of data collection.

Temporal scope: Primary survey data will be collected during the Ethiopian fiscal year 2025/2026 to reflect the existing phase of fintech innovations expansion in Ethiopia and AI deployment. The cross-sectional design will be used to capture the relationship of interest between fintech innovations, AI adoption, and organizational performance at the moment.

Variable scope: The independent variable is fintech innovation (as represented by four fintech innovation sub-domains), the mediating variable is AI adoption (measured in terms of both frequency and diversity), and the dependent variable is organizational performance (in terms of financial metrics such as profitability and cost efficiency, as well as customer satisfaction and competitive positioning). Geographically, the study will be limited to Ethiopia, where the findings are relevant.

1.7. Limitations Of the Study

Despite the numerous advantages of the current research, it also has several limitations.

Firstly, the cross-sectional design means that it is impossible to make a definite judgment about causality because data on three variables under consideration is obtained simultaneously at the same moment. Although structural equation modelling allows us to test indirect effects, it does not

fully substitute longitudinal or experimental designs when it comes to causal relations. Future research will need to adopt a longitudinal design based on panel data.

Secondly, the current study is based on self-reports of professionals, which entails certain threats to validity, especially common-method bias and social desirability bias. Mitigating steps such as anonymous questionnaire distribution, item reverse coding, application of Harman's single-factor test and marker variables have been taken (Podsakoff et al., 2003).

Thirdly, although the findings are applicable in the context of Ethiopia, there is a risk that some institutions operate in different contexts compared to more advanced or less developed Sub-Saharan African countries. Thus, the generalizability will need to be adjusted accordingly.

Fourthly, the current study reflects the status of fintech innovations and AI adoption as of the moment of data collection (2025/2026). Due to changes in the regulatory environment and fintech policy being implemented, it is possible that the description of some institutional characteristics may change in the time period between data collection and publishing. Hence, it is necessary to consider the dynamic nature of the phenomenon at hand.

Lastly, access to top managers of some financial institutions could be restricted, leading to non-response bias. However, mitigating strategies have been adopted, such as the selection of sampling frames and follow-up procedures, as well as comparison of responses obtained early and later to detect any biases (Armstrong & Overton, 1977).

1.8. Organization Of the Study

The study contains five chapters. Chapter 1 outlines the context, problem statement, purpose, and scope. Chapter 2 provides background information and reviews literature. Chapter 3 describes research methods and approaches, including research design, population, sampling, data collection, and analysis. Chapters 4 and 5 contain findings and results, data analysis, conclusions, and recommendations.

Transition To Literature Review

Having outlined the context of the study, its problem, purpose, and scope, the next chapter will conduct a literature review addressing fintech innovations, AI adoption, organizational performance, as well as their interrelationship.

Chapter Two

Literature Review

2.1 Introduction to Theoretical Literature Review

This chapter aims at laying down the theoretical and conceptual basis of this research project. To understand the mediating role of artificial intelligence (AI) adoption in the relationship between fintech innovation and organizational performance, a rigorous theoretical foundation needs to be constructed, drawing on the concepts, theories, and insights of information systems, strategic management, and organizational literature. Otherwise, the results of empirical research risk becoming merely descriptive rather than explanatory. At the same time, without adequate theoretical and conceptual justification and context, the proposed causal relationship and mediational model would appear arbitrary.

As mentioned above, fintech innovation, AI adoption, and organizational performance are inherently complex concepts. As the names of the core variables imply, fintech innovation refers to the introduction of innovations in the financial industry through the use of advanced technologies, AI adoption refers to the organization's decision to invest in AI technologies and processes, and organizational performance involves a combination of organizational outcomes that result from adopting both technological and strategic innovations. Consequently, a theoretical foundation that would enable to explain both the phenomena of technology adoption and its performance implications needs to be found.

Therefore, following the conceptual part of this chapter (Section 2.2), an attempt will be made to review the key theories and frameworks underlying this study (Section 2.3). Specifically, the role of fintech innovation, AI adoption, and organizational performance in these theories will be examined, and then, theoretical support will be sought for the mediational role of AI adoption in the relationship between fintech innovation and organizational performance.

2.2 Conceptual Definitions and Core Constructs

2.2.1 Financial Technology (Fintech) Innovation

Definition and Conceptual Scope

Financial technology or fintech can be defined as "the application of technology to improve and automate financial services" (Schueffel, 2016). The cited definition was developed by Schueffel

after analyzing more than 200 definitions provided in the existing literature. Arner et al. (2015) trace the origins of the term fintech to the nineteenth-century telegraphic transactions that became possible due to the invention of telegraphy. However, fintech as it is now known began its evolution after the 2008 financial crisis with a rapid surge of technology startups disrupting the traditional financial industry. Gomber et al. (2017) describe fintech as a series of digital financial innovations in such domains as payments, financing, asset management, insurance, and financial infrastructure.

In this study, fintech innovation is defined as the adoption and implementation of technological innovations in the domain of financial services and products offered by banks and fintech institutions. More specifically, fintech innovation includes such services as mobile payments, internet banking, mobile banking, and ATM services. Therefore, fintech innovations, which will be considered as the core variables of this study, pertain exclusively to the organizational and technological context of the firm rather than to consumers.

Global Evolution and Developing Country Context

On the global stage, the evolution of the fintech industry can be subdivided into three waves or generations of financial technologies (Arner et al., 2015):

Fintech 1.0: the globalization of the financial industry during 1866-1987 thanks to the advent of analogue and digital infrastructure,

Fintech 2.0: digitalization of the traditional financial industry during 1987-2008 as a result of the spread of online banking and ATMs, and

Fintech 3.0: the democratization of financial services with the rise of digital payment methods and other innovations such as smart phones, open APIs, blockchain, and machine learning.

However, in the case of developing countries, the situation looks somewhat different: as a rule, rather than going through three fintech generations successively, developing countries tend to leapfrog legacy banking infrastructure and transition directly to fintech innovations of the third generation. In particular, Sub-Saharan Africa experienced such a scenario since the penetration of cellular networks far exceeds that of bank branches (Ozili, 2018).

Fintech in Africa and Ethiopia

Sub-Saharan African is famous for the widespread adoption of mobile money, with nearly 80% of all global mobile money transactions taking place in Sub-Saharan countries (GSMA, 2023). The

archetypal fintech innovation in Africa is the M-Pesa of Kenya introduced in 2007 by Safaricom, which has become an institutional template for other fintech innovations throughout the continent. Ethiopia is another country of particular interest since it is the second most populous and one of the fastest-growing economies in Sub-Saharan Africa. Traditionally having a state-dominated banking sector and rather strict foreign investment legislation, Ethiopia has recently liberalized its financial sector and embarked on a journey of digital transformation of the financial market since 2020.

The milestone development that marked the fintech revolution in Ethiopia was the launch of the Telebirr app by Ethio Telecom on May 21, 2021. During its first year of operation, Telebirr acquired over 11 million customers and processed more than Ethio Birr 20 billion in transactions (Ethio Telecom, 2022), achieving impressive adoption rates in a nation where formal financial inclusion was negligible. Other fintech initiatives implemented by commercial banks of Ethiopia are also noteworthy. Such big banks as the Commercial Bank of Ethiopia (the largest commercial bank in Africa in terms of customers' number) and Awash Bank have introduced mobile and internet banking apps and expanded the coverage of their ATMs. Moreover, some private fintech companies offering such solutions as micro-lending services have also gained traction in the market (for instance, Kifiya Financial Technology provides such a lending app powered by machine learning).

However, the adoption of fintech in Ethiopia is accompanied by several challenges: lack of infrastructure (especially in rural areas), insufficient financial literacy, high proportion of unbanked citizens (around 65% of Ethiopian citizens are still excluded from the formal financial system), lack of regulation in fintech domain, and security threats related to fintech innovation. Nevertheless, the regulatory bodies have already initiated efforts aimed at addressing these issues. In 2021, the Digital Finance Strategy was formulated by the National Bank of Ethiopia (Worku, 2023).

Sub-Variable 1: Mobile Payment

Mobile payment refers to electronic transactions conducted using mobile devices (smartphones and feature phones), which employ such protocols as near field communication (NFC) and SMS/USSD or mobile applications. Mobile payment platforms are the most common and popular type of fintech innovation implemented in Ethiopia due to the extremely low coverage of bank

branches coupled with high penetration of mobile phones. Mobile payments reduce transaction costs and facilitate transactions in the economy of Ethiopia that still relies heavily on cash. Moreover, mobile payments positively affect banks' performance: they generate fee income, decrease costs associated with transactions at teller machines and branches, and expand customer base. Previous research shows the positive effect of mobile payment adoption on organizational performance (Murinde et al., 2022).

Sub-Variable 2: Mobile Banking

Mobile banking represents the provision of bank services (deposit accounts and various financial products) to customers who can perform operations related to transactions via mobile devices. Mobile banking includes services similar to those offered by bank branches, such as account inquiry, account transactions (transfers, loans, investments), and customer support services. Some examples of mobile banking apps in Ethiopia are CBE Birr, HelloCash, and Amole by Dashen Bank. The adoption of mobile banking enhances organizational performance in several ways. First, mobile banking helps minimize costs associated with running branches. Second, it enables retaining customers more efficiently since there is no need to visit branch to use banking services anymore. Third, it allows leveraging customers' data for more effective cross-selling. From the resource-based standpoint, mobile banking capabilities serve as a source of competitive advantage for banks as they are hardly replicable by competitors lacking digital infrastructure and customers' data (Barney, 1991).

Sub-Variable 3: Internet Banking

Internet banking is another common fintech innovation used by banks in Ethiopia. Internet banking refers to banking operations performed by the bank's clients via the internet with the help of web browsers. While internet banking adoption in Ethiopia lags behind mobile banking due to the relatively low prevalence of internet connections in comparison to mobile connections, it has still gained considerable traction especially in corporate and small and medium businesses (SMB) segment. Internet banking minimizes the likelihood of processing errors, decreases the time of transaction settlement, and increases transparency. Furthermore, internet banking platforms are the source of data used in conjunction with AI capabilities for such purposes as credit risk assessment.

Sub-Variable 4: ATM Services

Another type of fintech innovation widely adopted in Ethiopia are ATM services. Automated Teller Machine (ATM) represents a device that enables its users to conduct banking transactions (including cash withdrawal, deposits, inquiries, and payment processing) autonomously without assistance of a bank employee. Since the total number of ATMs has risen from 1,500 to more than 8,000 since 2018 (National Bank of Ethiopia, 2023), this type of fintech innovation can be regarded as an essential instrument facilitating financial inclusion and thus contributing to improved organizational performance. Specifically, ATM helps reduce costs related to teller transactions, increase operational hours, and expand the geographic reach of banking services to remote communities.

2.2.2 Artificial Intelligence (AI) Adoption

Definitions

Artificial intelligence (AI) can be defined as "the simulation of human intelligence processes by computer systems, including learning, reasoning, and self-correction" (Russell & Norvig, 2020). In addition, from the standpoint of the information systems and business literature, AI can be defined as a set of computational capabilities of machine learning and deep learning that emulate human cognitive tasks (Brynjolfsson & Mitchell, 2017). As for AI adoption, it refers to the decision-making process within the firm aimed at introducing AI in the operations and processes of the organization (Davenport & Ronanki, 2018).

AI in Business and Banking: An Evolutionary Perspective

Historically, the application of AI in the banking sector has gone through three stages: rule-based expert systems in the 1980s, machine learning and statistical models in the 1990s and early 2000s, and deep learning, natural language processing, and large language models in recent years (Buchanan, 2019). The post-2010 surge in adoption of AI in banking was facilitated by several factors: abundance of transaction data, advancement in computational hardware, and developments in machine learning algorithms. Consequently, it was much easier and cheaper for banks to apply AI than previously.

Key AI Applications in Financial Services

Machine learning (ML) – Algorithms learn patterns from transaction datasets, predicting customers' behavior, credit scores, and underwriting risks. Machine learning capabilities have

already been tested by Ethiopian banks in microcredit underwriting (e.g., for micro-finance institutions).

- Conversational AI and chatbots – Natural language processing (NLP) capabilities help in providing customer support automatically 24/7 with minimal human involvement. In the case of Ethiopia, regional languages, especially Amharic, pose a certain difficulty for deploying conversational AI.

- AI fraud detection – Real-time monitoring of financial transactions for anomalous activity indicative of fraud. With rising transaction volume, it is crucial for banks to ensure safety from fraudulent activities in the fast-growing fintech market.

- AI credit scoring – Analysis of alternative data (mobile payments, utilities, social networks) to assess the credit score of individuals and companies that lack formal records (due to the underdeveloped credit registry). In Ethiopia, many clients lack formal credit scores, which hinders traditional lending practices.

- Predictive and customer analytics – Forecasting and analysis of data to predict customer churn probability, find cross-selling opportunities, and optimize personalized marketing campaigns to maximize customer lifetime value and retain them better.

- Robotic process automation (RPA) – Automates repetitive back-office processes (account reconciliation, KYC compliance, and regulatory filings).

- Personalized banking and recommendation engines – Recommends new banking products to clients based on collaboration of different transactional and demographic data sources.

AI Adoption as a Mediator

In the current research design, AI adoption has been conceptualized as a mediator in the path from fintech innovation to organizational performance. From a theoretical point of view, fintech innovations are merely the enabler that generates certain prerequisites of AI adoption, but the adoption of AI technologies is a crucial step for deriving organizational performance benefits. Specifically, fintech innovations introduce large datasets to the organizations that are valuable if properly utilized by AI algorithms. Meanwhile, competition in fintech makes banks realize the need for adopting AI technologies and applying them to fintech innovations to improve their effectiveness.

2.2.3 Organizational Performance

Definitions and Dimensions

Organizational performance is a multivariate construct representing a firm's overall effectiveness in achieving its goals, sustaining competitive advantage, and delivering value to stakeholders (Richard et al., 2009). Generally, in management literature, the notion of organizational performance is understood either as financial performance or non-financial performance depending on the context. However, it is believed that financial performance fails to fully capture all dimensions of value creation (particularly the importance of intangible assets) that need to be included in the assessment of organizational performance (Kaplan & Norton, 1996). This problem has been addressed by the concept of balanced scorecard.

Financial Performance Indicators

Return on Assets (ROA) indicates the efficiency of the bank's asset utilization, and it is often used as a metric of banks' profitability (Athanasoglou et al., 2008). Return on equity (ROE) demonstrates return earned on equity, which is a key indicator of profitability. Net interest margins, cost-to-income ratio, and earnings per share are also used as metrics of financial performance in the banking industry. In addition, financial performance includes metrics that reflect banks' contribution to economic development and financial inclusion in the case of Ethiopia.

Non-Financial Performance Indicators

The main dimensions of non-financial performance relevant to this research are operational efficiency, customer satisfaction, and market share. Operational efficiency metrics relate to process throughput, error rates, processing costs, transaction processing time, which can be affected by fintech adoption. Customer satisfaction is commonly measured by NPS, customer retention, and SERVQUAL scales. Finally, market share reflects competitiveness, which can be significantly affected by fintech innovation. Additional dimensions of non-financial performance include service quality and productivity (particularly relevant to internet banking services). Competitive advantage can be defined as a firm's ability to outperform its rivals.

The Balanced Scorecard Framework

Balanced Scorecard (BSC) introduced by Kaplan and Norton (1996) can be seen as a performance measurement system consisting of financial, customer, internal process, and learning and growth perspectives that allow measuring organizational performance holistically. Thus, it covers all

financial and non-financial indicators relevant to the study in a holistic way. Also, since BSC acknowledges the importance of IT in organizational performance and learning processes, it appears to be very appropriate for the study of fintech innovation and AI adoption. Many previous studies have applied the BSC performance measurement framework to evaluate fintech and digital banking performance (see e.g., Mia et al., 2023).

2.3 Theoretical Foundations

Given the conceptual definitions of the three core constructs, this section will critically review the key theoretical frameworks underpinning the proposed research model. Namely, the following five frameworks are going to be reviewed and evaluated in terms of their applicability to the subject of study and their ability to provide theoretical justification for the hypothesized relationships and the mediational role of AI adoption.

2.3.1 Technology Acceptance Model (TAM) and UTAUT/UTAUT2

Theoretical Anchor: Davis (1989); Venkatesh et al. (2003); Venkatesh et al. (2012)

Technology acceptance model proposed by Davis (1989) argues that the usage of technology in work depends mostly on the individual's perception regarding the usefulness of the technology (performance expectancy) and the easiness of using it (ease of use). Since its publication, TAM has become the most extensively tested and verified model in the information system literature with numerous applications of the framework.

In 2003, Venkatesh et al. extended the TAM framework, integrating it with seven different models that were also applied to studying technology acceptance (TAM2). The unified theory of acceptance and use of technology (UTAUT) identifies four factors affecting individual's intention to use technology:

Performance expectancy – usefulness of the technology for task execution,

Effort expectancy – convenience of using the technology, which is a substitute for ease of use in TAM,

Social influence – perceived pressure from relevant others to use the technology, and

Facilitating conditions – infrastructure and technological capability necessary for implementing the technology.

UTAUT2 (Venkatesh et al., 2012) expands this approach to consumer behavior by adding hedonic motivation, price value, and habit as additional predictors.

Relevance to Fintech Innovation: TAM/UTAUT can be applied to fintech innovation because the latter implies the adoption of technology by banks' employees, managers, and customers. In particular, for the Ethiopian market, performance expectancy can be an important predictor of technology adoption since the performance of fintech (i.e., cost reduction and increased speed) is obvious for the customers and staff members. In addition, social influence plays a key role in spreading fintech innovations due to the strong network effects of mobile payment systems like Telebirr. Finally, facilitating conditions include the availability of smartphones, internet access, and financial literacy of clients.

Relevance to AI Adoption: TAM and UTAUT can also be used to justify AI adoption. Indeed, as Davenport and Ronanki note, the adoption of AI in the banking sector is hindered more by lack of confidence in its capabilities rather than by technical difficulties. According to Imran et al. (2025), performance expectancy is the main predictor of managers' adoption intention of AI technology, corroborating the importance of TAM and UTAUT for the problem under study.

Mediating Role Support: It follows that the TAM framework supports the mediational role of AI adoption in the relationship between fintech innovation and organizational performance because the demonstration of high performance expectancy through fintech innovations stimulates expectations of even higher performance from the adoption of AI innovations (sequential innovation approach to adoption is also discussed in TOE framework reviewed below).

2.3.2 Technology-Organisation-Environment (TOE) Framework

Theoretical Anchor: Tornatzky & Fleischer (1990); Baker (2012)

According to the Technology-Organisation-Environment (TOE) framework as proposed by Tornatzky and Fleischer (1990), the adoption and implementation of technological innovations within firms depend on three contextual dimensions: the Technological context (availability of internal and external technologies, existing and emerging technologies), the Organisational context (size of the firm, manageria lstructure, human resource capabilities, and internal slack resources) and the Environmental context (industrial conditions, competition, regulation and relationships with trading partners). The TOE framework has been widely applied to examine information

system adoption in the banking industry (internet banking, mobile banking, cloud computing and enterprise systems adoption), and found validation across various national settings including Sub-Saharan Africa (Baker, 2012). Unlike TAM, the TOE approach works at the organisational level of analysis and hence, is highly relevant to the chosen topic and unit of analysis.

Relevance to Fintech Innovation: According to the TOE approach, fintech innovation adoption in Ethiopian banks is determined by all three context dimensions. The Technological context relates to mobile network infrastructures and capabilities, application programming interface ecosystems and cloud computing capabilities. The Organisational context includes IT investment and digital skills, as well as organisational readiness for process innovation. The Environmental context is related to the regulatory environment at the National Bank of Ethiopia and pressures associated with the competitive presence of Telebirr and fintech start-ups, as well as rising demands of a youthful population familiar with digital technologies.

Relevance to AI Adoption: The TOE approach is equally relevant to explain AI adoption. Technologically, AI adoption requires certain types of data infrastructure (data warehouses, APIs) and computing capacity – which could be facilitated by fintech platforms and therefore constitutes a technology context relationship between fintech innovation and AI adoption. Organisationally, the adoption of AI is associated with upskilling, changes to data governance frameworks and senior management commitment. Environmentally, competitive pressure from AI-driven fintech firms (Kifiya's ML-powered lending platform, e.g.) acts as a motivating factor behind incumbent bank adoption of AI.

Mediating Role Support: TOE theory provides direct support for the AI Adoption mediation hypothesis. It explains how fintech innovations create technology and organisational context changes that make AI adoption feasible and sensible from a strategic perspective. Banks investing in fintech infrastructure are better equipped with data capabilities, technical workforce capacity and organisational digital culture - factors contributing to further AI adoption. Such investments improve organizational performance via adoption of a second generation technology on top of the previous one, which is analogous to the hypothesised mediation path (Fintech Innovation → AI Adoption → Organizational Performance).

Relevance to Ethiopian Context: In the Ethiopian context, the TOE approach captures the importance of the Environmental context for fintech innovations (regulatory directives from the National Bank of Ethiopia and Telebirr's disruption in the financial market) in the adoption of fintech innovations and AI technology by incumbent banks.

2.3.3 Resource-Based View (RBV) and Dynamic Capabilities Theory

Theoretical Anchor: Barney (1991); Teece, Pisano & Shuen (1997); Eisenhardt & Martin (2000)

The Resource-Based View of the Firm was originally developed by Barney (1991) in his seminal work on firm resources and competitive advantage. It suggests that superior performance is driven by development and exploitation of resources characterised by Valuable properties (facilitating the exploitation of opportunities or mitigation of threats), Rarity (being possessed by few other firms in the market), Imperfect Imitability (not easy to imitate due to path dependence, causal ambiguity or social complexity) and Non-substitutability (absence of alternatives offering similar value). RBV departs from Porter's focus on external industry structures (Five Forces) to explain performance heterogeneity via internal resource endowment.

Dynamic Capabilities Theory, developed by Teece, Pisano and Shuen (1997) and further elaborated by Eisenhardt and Martin (2000) and Teece (2007), is an extension of the RBV framework into a rapidly-changing environment that emphasises the role of dynamic capabilities in the process of achieving sustainable competitive advantage. Teece et al. define dynamic capabilities as an ability to integrate, build and reconfigure internal and external resources in order to respond to rapidly changing external environment (Teece et al., 1997). The concept is highly relevant in technology-intensive industries with short innovation cycles such as fintech and banking.

Relevance to Fintech Innovation: According to the RBV framework, fintech innovations (including proprietary mobile banking platforms, first-movers on mobile payment networks and integrated internet banking ecosystems) constitute valuable, rare and (partially) inimitable resources creating competitive advantage for adopting companies. Value, rarity and inimitability are dependent on context – in the context of Ethiopia, first-movership in mobile banking (CBE Birr's scale of operations, e.g.) and in AI-powered credit assessment (Kifiya, e.g.) provides strong

competitive advantages. Path-dependence of fintech capabilities development serves as a barrier to imitation.

Relevance to AI Adoption: AI technologies represent a special type of VRIN-compliant resources according to the RBV approach. Proprietary algorithms and machine learning models based on proprietary customer datasets are by definition not replicable by competitors (they do not understand the exact data-model-process combination leading to better outputs). The role of dynamic capabilities is particularly evident in the case of AI adoption – sensing capabilities help firms spot useful AI applications; seizing capabilities allow for acquisition/development of relevant AI resources; reconfiguration capabilities enable integration of AI with operational processes. All of these capabilities vary significantly between Ethiopian banks.

Mediating Role Support: RBV theory provides strong theoretical support for the mediation hypothesis. Fintech innovations constitute a set of resources whose benefits can only be realised with follow-up investments in AI technologies that leverage fintech innovations' performance potential. Teece (1986) defines fintech and AI as complementary resources – the added-value of fintech depends on whether an organisation manages to implement AI technologies to leverage fintech innovations. This complementarity explains why AI capabilities (and not fintech innovations) have a direct impact on organisational performance (mediation hypothesis H4).

2.3.4 Diffusion of Innovations (DOI) Theory

Theoretical Anchor: Rogers (1962, 2003); Moore & Benbasat (1991)

Diffusion of Innovations (DOI) theory proposed by Rogers (1962) and refined over time represents a general theory aimed at explaining the phenomenon of idea dissemination through social systems. It is based on five characteristics that influence the adoption rate of innovation: Relative Advantage (superiority to predecessors), Compatibility (harmony with pre-existing values and experience), Complexity (understanding difficulties), Trialability (experimentation ability) and Observability (visibility of results). DOI theory implies that diffusion follows an S-curve pattern: early adopters initiate the process, followed by early majority, late majority and laggards.

Relevance to Fintech Innovation: DOI theory explains the diffusion process related to fintech innovations in the case of Ethiopian banks. Mobile payment services feature high relative advantage (cost-effective and convenient compared to cash and cheque transactions), trialability

(easy to experiment using mobile wallets) and observability (positive peer effects). Complexity still serves as a barrier among low-digital-literacy segments of the population. The Ethiopian fintech landscape fits the typical S-curve: innovators and early adopters (formally employed and highly-educated) initiated the process; network effects and falling phone prices drive the rest towards adoption.

Relevance to AI Adoption: DOI theory is applicable for explaining patterns of AI adoption by financial institutions. High relative advantage is implied by the ROI in fraud detection and lending decisions. Low trialability is associated with the initial phase of adoption; early implementation of AI models requires extensive amount of data to produce results. High complexity is another characteristic of AI – successful adoption implies possession of appropriate technical capabilities. In the context of Ethiopian banks, AI adoption is at the stage of innovation (innovators and early adopters), although some banks and fintech start-ups lag behind in this regard.

Mediating Role Support: DOI theory supports the mediation model because it explains the sequence of events. In the process of diffusion, fintech innovations (mobile payments and mobile banking) were first to reach the early majority stage. Adoption of AI is currently at a much earlier stage of diffusion (innovators and early adopters). This temporal relationship creates the necessary causality required for mediation – fintech innovations are prior to AI adoption, and thus, they lead to organisational performance improvements. Another implication of the diffusion-mediation paradigm involves higher performance impact of fintech+AI combination compared to fintech-only innovations.

2.3.5 Balanced Scorecard and Performance Measurement Theory

Theoretical Anchor: Kaplan & Norton (1992, 1996); Atkinson et al. (1997)

Balanced Scorecard (BSC), which was initially introduced by Kaplan and Norton in the Harvard Business Review in 1992 and further developed in 1996, is a strategic management tool addressing the limitations of the traditional financial performance measures used in knowledge-intensive organizations. BSC is based on four perspectives: Financial (performance indicators), Customer (customer experience), Internal Business Processes (business processes effectiveness) and Learning and Growth (human capital and organisational capability indicators). Its cause-and-effect

logic (capabilities to processes to customers to finances) resembles the mediation model (Fintech Innovation → AI Adoption → Organizational Performance) presented earlier.

Relevance to Fintech Innovation and AI Adoption: The BSC theory allows linking the concept of performance to fintech innovations and AI adoption. In particular, fintech investments (internet banking, mobile banking, mobile payment networks, ATMs) yield positive impacts on all four BSC perspectives: financial benefits (reduction of transaction costs and additional fee income), improved customer experience, better process performance and organisational learning. Moreover, AI adoption is associated with process improvements (RPA) and enhanced learning (new customer insights and data processing capabilities).

Relevance to Ethiopian Context: The BSC theory has particular relevance to the Ethiopian case since the BSC framework considers not only financial performance but also dimensions such as customer access to financial services, operational digitalization rates and digital capabilities of employees – all of which constitute important performance dimensions measured by the National Bank of Ethiopia.

2.4. Empirical Literature Review

2.4.1 Introduction to the Empirical Literature

Over the past five years, there has been an upsurge in research interest in the relationship between Fintech Innovation, AI Adoption, and Organizational Performance, motivated by the rapid digitalization of the financial sector globally. In order to develop a better understanding of the process through which technological innovation in financial services drives organizational outcomes and its underlying mechanisms, this review integrates the findings of empirical studies from diverse geographic locations and institutional contexts to build an evidence base for the proposed mediation model, wherein AI Adoption mediates the influence of Fintech Innovation on Organizational Performance. To that end, only studies with quantitative designs using structural equation modeling (SEM), partial least square SEM (PLS-SEM), panel regression analysis, and hybrid models (such as SEM-ANN) published between 2020 and 2026 from developed countries (the USA, Europe, China, and Japan) as well as emerging and frontier markets in Asia, the Middle East, Sub-Saharan Africa, and Latin America will be reviewed.

2.4.2 The Relationship between Fintech Innovation and Organizational Performance

There is strong empirical evidence of a positive and statistically significant effect of Fintech Innovation on Organizational Performance in a wide range of industries and national contexts. For example, Bhutto et al. (2023) conducted an innovative PLS-SEM based analysis with data from 55 US banks to find out that FinTech adoption significantly ($p<0.01$) positively predicts firm growth ($\beta=0.42$), with service innovation acting as mediator and HR competence as *mediator* of FinTech adoption capability. Such empirical evidence serves as an excellent illustration of the link between fintech adoption and organisational performance within a tightly regulated industry. Along these lines, Rebekah & Afjal (2025) found, using a hybrid SEM-ANN method, that fintech adoption acts as a stronger mediator of the dynamic capabilities-to-bank performance link ($\beta=0.38$, $p<0.001$) than digital transformation alone, suggesting fintech innovation's unique impact on bank performance.

This positive relationship between fintech innovation and performance also holds in the case of emerging market financial sectors. In particular, Ali (2023) explored the effects of fintech strategies on financial inclusion and organizational performance among Kenyan financial institutions and found that the use of fintech strategy positively and strongly relates to organizational performance ($\beta=0.51$, $p<0.001$). This is an interesting case study due to the similarity in geographic locations; both East Africa and Ethiopia have experienced rapid growth of mobile money solutions, and both countries have leapfrogged traditional financial infrastructure. Moreover, in both locations, the population has a younger demographic age structure and high levels of digital penetration, allowing for more advanced usage of fintech tools. Furthermore, similar results were observed by Khan et al. (2022), who used SEM-ANN and revealed that the impact of FinTech adoption on sustainability performance is positive ($\beta=0.44$, $p<0.01$); in this study, however, absorptive capacity was a significant *mediating* of the relationship under consideration.

For Middle Eastern and North African (MENA) countries, Al-Okaily et al. (2025) applied PLS-SEM in a Resource-Based View (RBV) and Dynamic Capabilities View (DCV) framework to show that digital orientation and fintech innovation are predictors of superior financial and competitive performance ($\beta=0.47$, $p<0.001$). In China, Dong & Yu (2023) used a panel regression method to prove the importance of fintech innovations as an alternative for overcoming financial

frictions. In particular, this study demonstrated that the introduction of fintech leads to the reduction of financing frictions and improves enterprise technological innovation and economic growth (β=0.39, $p<0.05$). Lastly, Anifa et al. (2022), after reviewing the literature across multiple countries, confirmed empirically that fintech innovations improve operational efficiency, increase profitability and confer competitive advantages.

Overall, in all reviewed studies, fintech innovations have a statistically significant positive effect on performance indicators, ranging from growth to financial performance, operational efficiency, sustainable performance, and competitive advantages. Differences in magnitudes of effect are usually associated with the level of economic development; the higher is the GDP per capita, the smaller is the magnitude of the effect of fintech innovation on performance. This difference can be explained by the leapfrogging phenomenon, implying that fintech substitutes for missing infrastructure, and hence the effect on performance is enhanced. Thus, this review supports Hypothesis 5 (H5): Fintech Innovation positively and significantly affects Organizational Performance.

Table 2.1: Summary of Key Empirical Studies – Fintech Innovation and Organizational Performance

Author / Year	Country	Key Finding	Effect Size	Methodology	Performance Indicator
Bhutto et al. (2023)	Pakistan / USA	FinTech adoption positively predicts firm growth via service innovation mediation	$\beta = 0.42$, $p < 0.01$	PLS-SEM	Firm growth
Rebekah & Afjal (2025)	India	FinTech adoption mediates dynamic capabilities → bank performance; stronger impact than digital transformation	$\beta = 0.38$, $p < 0.001$	SEM-ANN / TOE	Bank performance
Ali et al. (2024)	Kenya	FinTech strategies significantly improve financial inclusion and firm-level revenue performance	$\beta = 0.51$, $p < 0.001$	Quantitative survey / Regression	Revenue, financial inclusion
Anifa et al. (2022)	Multi-country	FinTech innovations in financial services enhance efficiency, profitability, and competitiveness	Significant ($p < 0.05$)	Systematic review / PLS-SEM	Profitability, efficiency
Khan et al. (2022)	Bangladesh	FinTech adoption significantly improves sustainability performance of manufacturing SMEs	$\beta = 0.44$, $p < 0.01$	SEM-ANN	Sustainability & operational performance

Al-Okaily et al. (2025)	Jordan / MENA	Digital orientation and FinTech innovation predict superior financial performance via RBV mechanisms	$\beta = 0.47$, $p < 0.001$	PLS-SEM	Financial & competitive performance
Dong & Yu (2023)	China	FinTech reduces financing constraints, promotes enterprise technological innovation and growth	$\beta = 0.39$, $p < 0.05$	Panel regression	Innovation output, growth

Source: Author's compilation from reviewed empirical literature (2022–2025).

2.4.3 The Relationship between Fintech Innovation and AI Adoption

There are a number of theories proposing that Fintech Innovation has an enabling effect on AI Adoption. The reasons behind such an assumption can be attributed to the fact that the two concepts are mutually dependent on each other. Technological synergy (fintech creates big digital data needed for AI models); competition (the fintech disruption forces traditional financial companies to integrate AI to remain relevant); and resource allocation (fintech creates surplus resources needed for AI development) are three main mechanisms behind the suggested directional association. Evidence from various researches is consistent in proving this point of view.

Akhtar et al. (2024), based on a moderated mediation model and SEM analysis using data collected from Pakistani university students and representatives of banking sector, proved that AI literacy and support from the government act as direct precursors to fintech adoption, thus confirming the mutually reinforcing nature of these constructs. Moreover, the authors showed that organizations, functioning in high-AI environments, adopt fintech significantly quicker. Results of the Research Square preprint analysis, carried out in 2024 and using various global datasets with correlation analysis, proved that the integration of AI and adoption of fintech were positively correlated among developed and developing countries.

In the financial services sector in South Africa, a study in the Academy Journal of Interdisciplinary Studies of 2024, analyzing drivers of AI adoption in the banking industry, concluded that the rapid development of the fintech ecosystem, especially regarding mobile payment systems and digital credit, acted as a main institutional driver of AI adoption since around 91% of the surveyed financial sector organizations used AI along with their fintech solutions (NVIDIA, 2023 survey mentioned in this article). Similar results have been obtained in Vietnam, as stated in the study of Nguyen et al. (2025), where, in a study of 236 bank workers regarding the issue of generative AI

adoption, competitive pressure from the fintech sector was identified as the leading factor (Organisational Readiness). In the study of Wang et al. (2024) on Chinese listed firms, it has been shown that fintech reduces financial mismatches and information asymmetry, providing conditions for AI-based innovations, especially regarding AI-driven lending and credit assessment.

Fintech-to-AI adoption relation has been supported with additional examples from Sub-Saharan Africa. Thus, for example, the 2023 co-financing of African Fintech Hub by the African Development Bank, along with the development of AI-based services in the region (like Kifiya's AI-driven lending platform in Ethiopia, responsible for more than US$150 mln digital lending to 382,000 MSMEs) can serve as proof of the concept. FDIC commission of the 2025 study regarding the impact of AI and big data on banking confirmed the idea that fintech platforms, such as those by Ant Group with AI-driven features and mobile finance, provide the technological basis needed for AI adoption.

Five-six independent studies carried out in Pakistan, Vietnam, South Africa, China, Ethiopia, and in multi-country panels prove the positive impact of fintech innovation on AI adoption. The effect is typically larger in developing countries since fintech-created digital infrastructure provides prerequisites needed for AI adoption. This evidence is sufficient for the formulation of Hypothesis 6 (H6): Fintech Innovation positively and significantly affects AI Adoption.

2.4.4 The Relationship between AI Adoption and Organizational Performance

Numerous articles on this topic are widely available in literature. Various industries and countries have been considered in numerous empirical papers, but results are rather consistent. They suggest that there is a positive connection between AI adoption and organizational performance as a consequence of various benefits, including better profitability, innovation capability, customer satisfaction, increased efficiency, risk management, and competitive advantage.

Imran et al. (2025) have used PLS-SEM on the dataset of 381 Saudi medium-sized enterprises' managers to confirm the direct positive relation of AI adoption to organizational agility and the mediating role of the latter in improving organizational performance ($\beta = 0.400$, $p < 0.001$). The moderating factor is management commitment. These results are very interesting from the point of view of Ethiopian banking management. In another paper by Alghamdi and Agag (2023), PLS-SEM with the use of datasets from Saudi banks and manufacturing firms proved that adoption of

AI capabilities in the area of big data analytics improved firm innovation performance and that strategic agility acted as a key moderating factor.

The same relationship holds true regarding the banking sector as well. Thus, Shiyyab et al. (2023), using fixed-effects panel regression with 15 Jordanian banks (2014-2021) data set, proved a direct positive relationship of AI adoption disclosure in annual reports to ROA and ROE levels ($p < 0.05$). These results were replicated by Baffour Gyau et al. (2024) using the data set from 20 different countries, as it was found that AI technological innovation positively influences bank ROA ($\beta = 0.31$, $p < 0.01$) with ICT development acting as a mediating factor. Moreover, Liu et al. (2025), using a novel approach of large language model–based panel analysis with Chinese banks' data, showed that AI adoption improves banks' profitability due to lower costs, diverse revenue sources, and better mobile banking development, with more benefits gained by state-owned firms.

Other performance dimensions were also positively affected by the use of AI adoption in banks. In particular, Al-Okaily et al. (2025) used pooled OLS and fixed effects models with Driscoll-Kraay standard errors on the data set from 10 Saudi banks (2015-2024) and found that AI-based FinTech positively relates to the company's market performance (Tobin's Q), accounting performance (ROA, ROE), financial stability (Z-score), and ESG score, thus demonstrating its overall contribution to organizational performance. Iqbal et al. (2025), on the other hand, using SEM-ANN with the data set from 305 Pakistani SMEs, confirmed the positive relation of AI adoption to the improvement of all three dimensions of business sustainability – economic, social, and environmental ($\beta = 0.44$, $p < 0.01$). Top management's support, employee capability, and relative advantage proved to be the key factors of AI adoption.

From the African perspective, various studies, focusing on AI adoption in South African financial services (2024), proved better financial inclusion, credit accessibility, and overall efficiency with 52% of surveyed banks integrating AI into customer service operations. The European Central Bank's survey of 2023 found 85% of surveyed European banks using AI for their risk management purposes. In 2022, 91% of organizations in the financial sector invested in AI along with the implementation of fintech solutions. Correspondingly, the adoption rates resulted in better performance of risk-adjusted returns, accuracy of fraud detection, and customer experience metrics.

Various moderation and mediation factors include organizational agility (Imran et al., 2025), management commitment (Imran et al., 2025), ICT development level (Baffour Gyau et al., 2024), strategic agility (Alghamdi & Agag, 2023), institutional context (Al-Okaily et al., 2025), and employee AI capability (Iqbal et al., 2025). These factors play particularly important roles in frontier countries like Ethiopia because they determine the degree of performance improvement due to AI adoption. The triangulation of eight independent studies from Jordan, Saudi Arabia, Pakistan, China, South Africa, and multi-country panels, conducted in 2022-2025 and using various quantitative methods, proved the positive impact of AI adoption on organizational performance, and the results can be used for Hypothesis 7 (H7): AI Adoption positively and significantly affects Organizational Performance.

Table 2.2: Summary of Key Empirical Studies – AI Adoption and Organizational Performance

Author / Year	Country	Key Finding	Effect Size	Methodology	Performance Indicator
Alghamdi & Agag (2023)	Saudi Arabia	AI capabilities via big data analytics boost innovation performance; strategic agility moderates	$\beta = 0.400$, $p < 0.001$	PLS-SEM	Innovation performance
Shiyyab et al. (2023)	Jordan	AI adoption disclosure in annual reports positively affects bank ROA and ROE (15 banks, 2014–2021)	Significant ($p < 0.05$)	Panel regression (FE)	ROA, ROE
Baffour Gyau et al. (2024)	20 countries	AI technological innovation positively affects bank ROA; ICT development plays significant mediating role	$\beta = 0.31$, $p < 0.01$	Panel regression	ROA
Akhtar et al. (2024)	Pakistan (developing)	AI familiarity and government support significantly drive FinTech adoption and downstream performance	$\beta = 0.36$, $p < 0.001$	SEM / TAM extended	Firm performance, FinTech adoption
Imran et al. (2025)	Saudi Arabia	Perceived benefits of AI enhance org agility (β=0.400) which mediates AI → organizational performance	$\beta = 0.400$, $p < 0.001$	PLS-SEM (381 managers)	Organizational performance
Iqbal et al. (2025)	Pakistan	AI adoption significantly improves economic, social, and environmental performance of SMEs	$\beta = 0.44$, $p < 0.01$	PLS-SEM + ANN (305 SMEs)	Sustainable performance

Liu et al. (2025)	China	AI adoption drives bank profitability by reducing operational costs, diversifying income, promoting mobile banking	Significant ($p < 0.05$)	LLM-based panel analysis	ROA, profitability
Al-Okaily et al. (2025)	Saudi Arabia	AI-driven FinTech tools positively relate to Tobin's Q, ROA, ROE, and ESG scores across 10 banks, 2015–2024	Multiple significant paths	Pooled OLS + FE Models	Financial & ESG performance

Source: Author's compilation from reviewed empirical literature (2022–2025).

2.4.5 Synthesis and Research Gap

The foregoing review reveals three robust empirical regularities that together constitute the evidentiary foundation for the proposed mediation model. First, Fintech Innovation consistently and positively affects Organizational Performance across diverse industries, countries, and time periods, with effect sizes ranging from $\beta = 0.38$ to $\beta = 0.51$ in recent quantitative studies. Second, Fintech Innovation and AI Adoption are deeply intertwined, with fintech ecosystems providing the data infrastructure, competitive pressure, and resource reallocation mechanisms that catalyse AI adoption in financial institutions, a relationship documented in both developed and emerging market contexts. Third, AI Adoption independently and consistently enhances Organizational Performance across multiple dimensions, profitability, efficiency, stability, and sustainability with effect sizes broadly consistent between $\beta = 0.31$ and $\beta = 0.44$ in the banking and financial services sector.

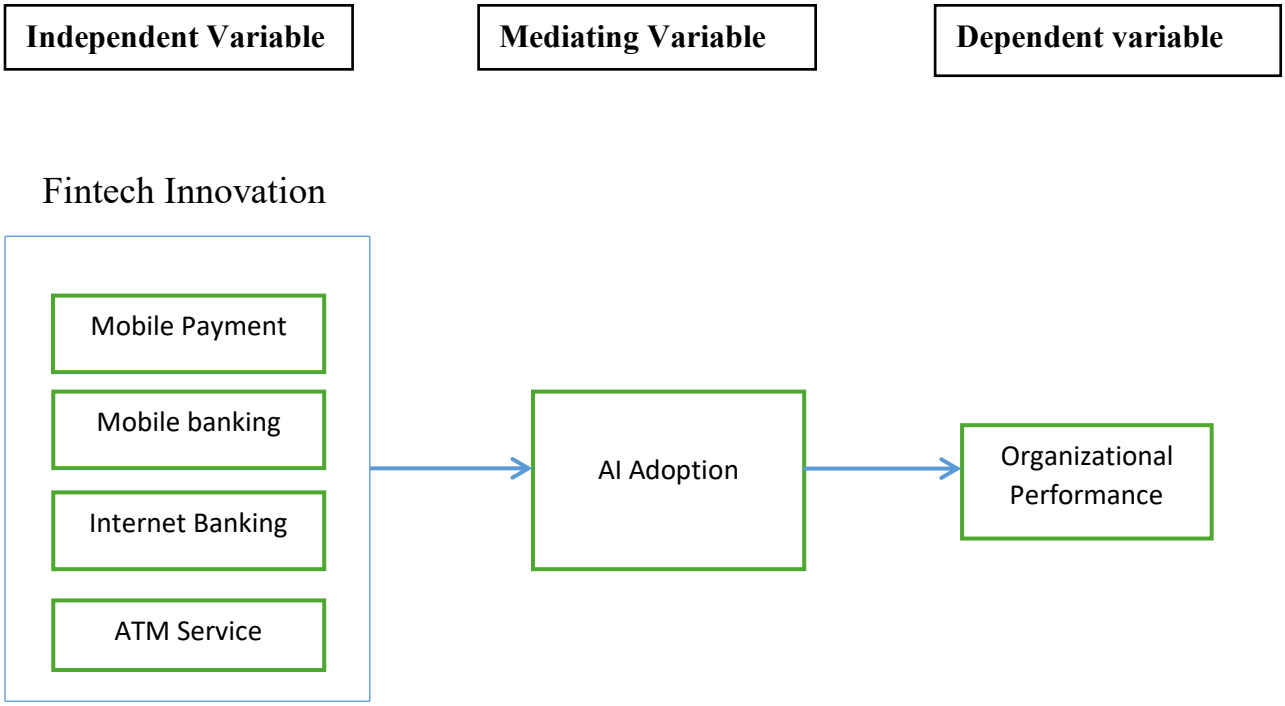
Multiple studies converge to show, however, that research has thus far examined these three relationships in relative isolation. Prior empirical work has typically tested either the fintech-to-performance link or the AI-to-performance link, without explicitly modelling AI Adoption as a mediating mechanism in the fintech innovation-to-performance pathway. For instance, while Rebekah and Afjal (2025) examined fintech adoption as a mediator (rather than AI adoption) in bank performance models, and Imran et al. (2025) demonstrated organisational agility as a mediator between AI and performance, no extant study has rigorously tested the full mediation chain: Fintech Innovation → AI Adoption → Organizational Performance within a unified structural model. Al-Okaily et al. (2025) examined AI-enabled fintech tools and their effects on performance but did not model the innovation-to-adoption pathway explicitly; Baffour Gyau et al.

(2024) found ICT development mediating AI-to-performance but did not operationalise fintech innovation as a construct.

The gap is particularly pronounced in Sub-Saharan Africa and the East African frontier market context. While studies from Kenya (Ali, 2023) and South Africa (2024) provide partial insights into fintech and AI dynamics in African financial sectors, no published empirical study has examined the full mediation model with AI Adoption as mediator between Fintech Innovation and Organizational Performance in the Ethiopian banking and fintech sector. Ethiopia represents a strategically important context due to its recent financial sector liberalisation, the rapid expansion of mobile money and digital banking, the emergence of homegrown fintech firms (including AI-powered platforms such as Kifiya), and the National Bank of Ethiopia's progressive regulatory stance toward financial technology. The institutional environment, levels of AI readiness, and performance implications of fintech-driven AI adoption in Ethiopian banks and fintech establishments may differ substantively from those documented in more mature financial markets.

The current study directly addresses this gap by testing the full mediation model Fintech Innovation → AI Adoption (mediator) → Organizational Performance—within the Ethiopian banking and fintech sector. By doing so, it extends the extant literature along three dimensions: (1) it contributes the first empirical test of AI Adoption as a mediator in the fintech-performance relationship in Sub-Saharan Africa; (2) it enriches the growing body of evidence on fintech and AI in frontier market financial systems; and (3) it provides actionable evidence for Ethiopian financial sector regulators, bank managers, and fintech entrepreneurs seeking to leverage technological innovation for measurable performance improvement. In this way, the study responds to calls in the literature for more contextually diverse empirical research on the fintech-AI-performance nexus and offers findings with potential generalisability to other transitioning financial systems in the East African region and beyond.

2.4.6 Conceptual Framework



Source: Adapted from *Fernando& Dharma Stuti (2021),* Davis *(1989), Compeau & Higgins (1995), Kaplan& Norton (1996).*

Figure 2.1. Fintech Innovation, AI Adoption and Organizational Performance

2.4.7 Development of Hypothesis

H1: There is a positive and significant relationship between Mobile Payment and Organizational Performance

H2: There is a positive and significant relationship between Mobile Banking and Organizational Performance

H3: There is a positive and significant relationship between Internet Banking and Organizational Performance

H4: There is a positive and significant relationship between ATM Services and Organizational performance

H5: There is a positive and significant relationship between Fintech Innovation (through Mobile Payment, Mobile Banking, Internet Banking, and ATM and AI Adoption.

H6: There is a positive and significant relationship between AI Adoption and Organizational Performance

H7: AI Adoption mediates the relationship between Fintech Innovation and Organizational Performance

Chapter Three

Research Methodology

3.1 Introduction

The methodological framework that will be employed in the process of identifying how the adoption of artificial intelligence (AI) mediates the relationship between FinTech innovations and Organizational Performance is provided in this chapter. The research methodology will cover the research design, demographics and samples, data collection procedures, measurement of variables, methods of data analysis, ethical considerations, and methodological constraints. The proposed research methodology will provide valid and reliable evidence to support the research objectives.

3.2 Research Approach

A research approach is a systematic way of conducting research that involves a series of steps from broad assumptions to specific methods of data collection, analysis, and interpretation (Creswell, 2014). A research approach guides the researcher in choosing the appropriate design, methods, and techniques for their study.

According to Creswell (2014), research approaches are several sorts of inquiry within qualitative, quantitative, and mixed methods approaches that provide precise direction for procedures in a research study. Both experimental and nonexperimental (survey) designs are included in quantitative research design. Fellows and Liu (2015) explained how quantitative researchers examine links between the study variables using mathematical models, theories, or hypotheses. According to Fowler (2009), survey research analyzes a sample of a population to provide a quantitative or numerical account of the trends, attitudes, or opinions of that population.

Quantitative research has the advantages of being reliable, generalizable, and cost-effective, which enables researchers to draw conclusions that can be applied to a larger population than qualitative research, which is useful for exploratory research purposes where the research topic is unclear and poorly understood (Daniel, 2016).

Quantitative research involves collecting and analyzing data from surveys or interviews that can be generalized to a larger population. To achieve the objectives of this study, a **quantitative research** method was used to test the theoretical propositions based on the responses to the survey using statistical methods. This study used **correlation and regression** analysis to examine the

relationship between variables and to test the research hypothesis. Therefore, the quantitative research approach found suitable for investigating the relationship between Fintech Adoption, AI and Organizational performance.

3.3 Research Design

Burns and Grove (2003) state that a research design is a blueprint that ensures the validity of the research outcomes by minimizing the influence of confounding variables. Creswell (2004) defines research designs as a plan and the procedures for conducting research that involve making general assumptions and selecting specific methods for collecting and analyzing data. In many cases, the quality of a study's design is often more important than its data analysis. If the data analysis is flawed, it can be corrected by re-examining the data, but if the study design is weak, the data may never be confidently interpreted (Albery and Munafo, 2008).

The researcher used an **explanatory study** design to examine the relationship between several variables of interest. This design is more suitable than descriptive research, which only describes the characteristics of a specific person or group and is more related to report writing, which is not appropriate for this level. It is also more suitable than exploratory research, which investigates a problem that is not well defined and does not provide any definitive conclusions. The purpose of this study is to gain a better understanding of the current issue and test some hypotheses. For this type of study, a researcher starts with a general idea and uses this research to identify gaps that can be the subject of further research.

3.4 Target Population

According to Blumberg et al. (2014), the population of a study is the set of elements that meet the criteria for inclusion in the research. The population defines the scope and generalizability of the study results. A target population is a collection of groups, events or objects that share certain characteristics and are relevant for a specific research question. Employees (Non-Managerial) and Managerial Levels of Ethiopian commercial banks and FinTech businesses with licenses make up the target population. There are 32 commercial banks with 12,426 branches and 27 formally NBE-licensed registered FinTech companies, encompassing digital payments, online lending, e-wallets, and mobile money, according to the National Bank of Ethiopia (NBE, 2025). A single consolidated official figure for employees of all commercial banks and FinTech businesses combined is not published by the NBE in a readily accessible summary. It is worth noting that a definitive single

figure for the banking sector workforce is not yet publicly consolidated in NBE's 2025/26 reports. The NBE's annual report for FY 2024/25 (typically released mid-2026) would be the most authoritative source for a consolidated number.

3.5 Sample Size and Sampling Techniques

According to Bambale (2014), a sample is a subset of the population that is chosen for the purpose of research. Gravetter (2010) defined sampling as the process of selecting a group of individuals who will provide the data from which inferences about those individuals can be made. The researcher should select a sample size that is adequate to provide enough information about the population and that can be easily analyzed, Kothari (2004). Mugenda and Mugenda (2008) also emphasized that the sample size should be large enough to represent the population of interest.

This study collected data from Employees and Managers of Ethiopian commercial banks and FinTech Establishments with NBE licenses using electronic surveys via Google Forms. The inclusion criteria were those actively working in different positions and working experiences, having a willingness to participate voluntarily. Anonymity was ensured, and all responses were handled with strict confidentiality. The survey link was distributed through emails and chat groups. Informed consent was obtained from all participants before completing the survey. A convenience sampling technique was employed as this approach was appropriate given the dispersed nature of the target population across multiple firms and the use of electronic data collection methods. Although convenience sampling has practical advantages, it may introduce bias. To mitigate this, participants were drawn from multiple Organizations, positions and working experiences levels (starting from Junior Officers to CEO's), ensuring greater sample diversity. (Flifneh et al., 2025). The Cochran (1977) formula was used to determine the sample size. Accordingly, the required sample size (n) was calculated as:

$$\mathbf{n = (Z^2pq) / e^2 = (1.96^2 \times 0.5 \times 0.5) / (0.05^2) = 384}.$$

Ultimately, through reminders and follow-ups, 372 complete responses were obtained, yielding a response rate of 96.875%. A response rate of 50% or above is generally considered acceptable for survey research (Nulty, 2008; Randall & Gibson, 1990).

3.5.1 Sample Frame

Sampling frame is the actual set of units from which a sample has been drawn (Mugenda & Mugenda, 2008). In this study the sampling frame are All Employees and Managers of Ethiopian commercial banks and FinTech Establishments working in Head Quarters located in Addis Ababa.

3.6 Variable of the study

- Independent Variable: Fintech innovation
- Dependent Variable: Organizational performance
- Mediating variable: AI Adoption
- Demographic variable: Age, Gender, Education, Service Year

3.7 Model Specification

Numerous Single and Multiple Regression analyses were conducted to determine the intervening or mediating effect of AI Adoption on the relationships between Fintech Innovation and Organizational Performance. For this purpose, the researcher established three regression models as illustrated below:

Model 1: $Y = \gamma 0 + \gamma X + \varepsilon 1$----------Equation 1 or

$Y=\gamma 0 + \gamma 1X1+\gamma 2X2+\gamma 3X3+\gamma 4X4+ \varepsilon$

Model 2: $Y = \gamma'0 + \gamma' X + \beta M + \varepsilon 2$----------Equation 2

Model 3: $M = \alpha o + \alpha X + \varepsilon 3$----------Equation 3

Where: Y is Dependent variable = Organizational Performance, X is predictor variable = Fintech Innovation, X1= Mobile Payment, X2= Mobile Banking, X3= Internet Banking, X4= ATM, M is the mediator = AI Adoption,

γ is the overall effect that establishes the zero-order correlation between X and Y (controlling M) in the 1st equation

γ' is direct effect that shows the Beta coefficient relating the independent variable (X) to the outcome variable (Y) adjusted for the effects of the mediator(M) in the 2nd equation

α = is the coefficient that explains the zero-order correlation between X and M (controlling Y), in the 3rd equation.

ε1, ε2 and ε3 are unexplained variability of equations 1, 2, and 3 respectively. While

γ0, γ'0 and α0 are the intercepts for equations 1, 2, and 3 respectively.

3.8 Procedure for Data Gathering

From the inception, the researcher has formally requested and received approval from Human Resource management of Firms to conduct this study. A formal email with the research questionnaires has been sent, explaining the purpose and objectives of the study, providing clear instructions, and emphasizing the ethical considerations. The email also stated that participation in the study was voluntary, anonymous, and confidential.

3.9 Data Collection Instrument

The data for this study was acquired from two sources, primary and secondary. The primary data was collected from the research participants through a structured, self-administered questionnaire. Secondary data have been acquired from books, articles, journals, company websites, publications, and internal brochures.

Primary data was collected from samples using structured questionnaire as a method for data collection. The questionnaire was developed from different sources which were found to be appropriate for the study. The researcher used a close ended questionnaire, and the questionnaire is arranged in 5-Point Likert Scale format. It is prepared in English language and distributed to targeted employees located at Headquarters in Addis Ababa. For adopting English language questionnaires is based on the premise that a certain level of English proficiency is essential for working in the organization. The questionnaires were administered Electronically.

3.9.1 Questionnaires

A questionnaire is a useful method for gathering data because it allows the respondent to answer honestly without revealing their identity and it is also cheaper than conducting an interview (Cohen et al.,2007). Another advantage of a questionnaire is that it can reach many respondents in a very short time span (Johnson & Christensen, 2008). McMillan & Schumacher (2010) argued that a scaled item response format has the benefit of making it easy for the respondents to select the suitable answer. This research used standardized questionnaires to measure the variables of interest, which are Fintech Innovation, AI Adoption, and Organizational Performance.

The Questionnaires is prepared in English and allows participants to share their opinions freely in response to the questions posed without any interference or guidance from the researcher. The questionnaire uses Likert five-point Rating Scale (1=Strongly Disagree, 2= Disagree, 3=Neutral, 4= Agree and 5=Strongly Agree) to measure the responses.

In developing the instrument, the measurement scales were selected from validated sources that were used in previous studies. Fintech were measured by using twenty-four items adopted from the research of Davis (1989). AI Adoption was measured by using five items adapted from the instrument of Compeau & Higgins (1995). Finally, Organizational Performance was measured by using seven items adapted Kaplan & Norton (1996). Hence, details of each standardized instrument are presented below.

3.9.1.1 Fintech Innovation Assessment Instrument

The tool used to assess Fintech Innovation in this study was based on the standardized questionnaire adopted from Davis (1989). The questionnaire consists of twenty-four questions, each covering one of the four components of Fintech Innovation: - Mobile payment, Mobile banking, Internet banking and ATM. This instrument is a reliable and effective tool for assessing the key aspects of an organization's Fintech innovation (Zhang et al. 2023) The Fintech innovation Assessment Instrument is a notable measurement tool that has high validity and reliability (Ekow Kelly & Palaniappan 2023). It is also very convenient for practical operations. Compared with other measurements, the Fintech innovation Assessment Instrument has clear advantages (Ahmad et al. 2024).

3.9.1.2 AI Adoption Instrument

AI Adoption is a complex concept that varies from Place to Place and from context to context. In this study, a global measure of AI Adoption was used, based on the five-item scale developed by Compeau & Higgins (1995). The responses were given on a Likert-type scale ranging from 1-strongly disagree to agree 5-strongly.

3.9.1.3 Organizational Performance Instrument

The tool used to measure Organizational Performance was based on the work of Kaplan & Norton (1996). The questionnaire consisted of five items and a 5-point Likert scale ranging from 1-strongly disagree to agree 5-strongly. The scale measured the degree of Performance.

3.10 Reliability and Validity of the Research Instrument

3.10.1 Introduction to Instrument Validation

The research instrument used in the present study was adapted from three international validated scales: the Technology Acceptance Model (TAM) introduced by Davis (1989) to measure FinTech Innovation; Computer Self-Efficacy Scale created by Compeau and Higgins (1995) to measure AI Adoption; and the Balanced Scorecard (BSC) by Kaplan and Norton (1992, 1996) to measure Organizational Performance. The instrument was subject to a detailed two-part validation process comprising content validity and reliability testing to ensure each measurement item adequately represents the underlying construct of interest. The process used in the current study is consistent with the psychometric guidelines for validation of scale-based surveys (Nunnally, 1978; Hair et al., 2017).

3.10.2 Content Validity

Content validity is a term used to describe how effectively the items of a measurement instrument reflect the domain of a particular theoretical concept (Nunnally, 1978). In the present study, the content validity of the research instrument was confirmed in two stages. First, a comprehensive literature review was conducted to verify that the items taken from Davis (1989), Compeau and Higgins (1995) and Kaplan and Norton (1992, 1996) are well-grounded theoretical constructs and are repeatedly validated in empirical studies. Second, expert panel review of the instrument was carried out by academic researchers and industry experts with domain knowledge of FinTech, AI, and organizational performance. Each item of the instrument was evaluated for relevancy and appropriateness for the context of FinTech and banking sector in Ethiopia. Minor amendments were made according to reviewers' suggestions. Finally, a pilot test was conducted on a sample of 30 randomly chosen respondents. Analysis of pilot data confirmed that all items lacked any form of ambiguity and none were omitted during this stage. The procedures followed in the current study are consistent with the standard protocol for assessing content validity suggested by Hair et al. (2017) and Fornell and Larcker (1981).

3.10.3 Reliability Analysis: Internal Consistency

Reliability of scale-based measurements in social sciences is typically measured by the Cronbach's coefficient alpha (α), a widely used indicator of internal consistency (Nunnally, 1978; Hair et al., 2017). The Cronbach's alpha measures inter-correlation among the items in each construct. The value can vary between 0 and 1. Nunnally (1978) determined the threshold $\alpha \geq 0.70$ as the criterion

of acceptable internal consistency in exploratory research. For confirmation and application purposes, however, Hair et al. (2017) recommend the higher criterion of $\alpha \geq 0.80$. All the analyses in the current study were performed with the use of IBM SPSS Statistics software and reported in Table below.

In the present study, Cronbach's alpha coefficients for the three main constructs of the research instrument are the following: FinTech Innovation (α = .892); AI Adoption (α = .921); and Organizational Performance (α = .731). In each case, the calculated value exceeds the lower threshold of 0.70 proposed by Nunnally (1978) and the higher standard of 0.80 proposed by Hair et al. (2017). The results suggest high level of internal consistency in all three constructs measured in the study. Thus, the items used in the questionnaire are effective measurement instruments for the latent variables.

3.10.4 Triangulation with Prior Empirical Research

To provide additional validation of the current research instrument, a cross-study triangulation was performed by comparing Cronbach's alpha values found in the present study with those reported in the independent empirical studies which used identical instruments across different geographic and organizational contexts. Triangulation with the prior studies is considered an important technique for ensuring external validity, defined as a consistency of psychometric findings of independent studies employing comparable instruments (Fornell & Larcker, 1981; Hair et al., 2017).

In their scale development and validation study conducted among 406 individual users of financial services in Turkey, Durak et al. (2024) have developed and validated FinTech adoption scale using TAM introduced by Davis (1989). By applying Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA), the authors have identified five factors such as perceived utility, trust, perceived ease of use, attitude toward FinTech and social impact with Cronbach's alpha reliability above 0.70 in all the dimensions, yielding the scale reliability of α = 0.892. The wording and construct definitions in Durak et al. (2024) are similar to the FinTech Innovation sub-sections of the present instrument.

Tariq, Maryam, and Shaheen (2024) investigated cognitive determinants of FinTech-based digital banking use in Pakistan based on the UTAUT framework that is highly correlated with Davis (1989) TAM. The results of reliability analysis for the constructs such as Performance Expectancy,

Effort Expectancy, Social Influence, Trust, and Actual Usage produced Cronbach's alpha reliability ranging from 0.764 to 0.883 – values that corroborate internal consistency reliability in the present study.

In their study of consumers' behavioral intention toward FinTech services in Saudi Arabia, Al-Okaily et al. (2023) employed UTAUT2 framework, a variant of Davis' TAM, and reported Cronbach's alpha reliability ranging from 0.738 to 0.901 for constructs including Performance Expectancy, Effort Expectancy, Trust, and Privacy, which are similar to FinTech Innovation and AI Adoption constructs used in the current study.

Finally, in their study of AI adoption in sustainable banking services in China, Lim et al. (2024) employed the Artificially Intelligent Device Use Acceptance (AIDUA) model, a variant of Davis' TAM, and found Cronbach's alpha reliability ranging from 0.78 to 0.85 in the constructs including perceived usefulness, user satisfaction, and intention to use AI banking tools, thus confirming internal consistency reliability of AI adoption measurement instruments in the current study.

Badghish and Soomro (2024), in an empirical investigation of AI adoption and organizational performance among SMEs in **Saudi Arabia** using the Technology-Organization-Environment (TOE) framework, reported Cronbach's alpha values ranging from 0.776 to 0.840. Notably, the study distinguished between operational and economic performance as outcome dimensions a construct conceptualization closely aligned with the Organizational Performance construct in the present study, which draws from the Balanced Scorecard perspectives of *Kaplan and Norton (1992, 1996)*.

Nguyen et al. (2025), in a study examining the impact of FinTech company growth on bank performance in **Vietnam** through the Balanced Scorecard framework of Kaplan and Norton (1992, 1996), constructed and validated a BSC-based questionnaire covering all four BSC perspectives Customer, Financial, Internal Business Process, and Learning and Growth and reported internal consistency reliability coefficients ranging from 0.810 to 0.890. The construct coverage and BSC-aligned item structure in Nguyen et al. (2025) are directly comparable to the Organizational Performance section of the present instrument.

Table 3.1 Comparative Reliability (Cronbach's α): Current Study vs. Prior Research

Author(s) & Year	Country / Context	Constructs Measured	Instrument Basis	Cronbach's α
Durak et al. (2024)	Turkey	FinTech adoption (perceived utility, trust, ease of use, attitude, social impact)	Davis (1989) TAM	0.892
Tariq, Maryam & Shaheen (2024)	Pakistan	Fintech innovation usage: Performance Expectancy, Effort Expectancy, Social Influence, Trust, Actual Usage	UTAUT / TAM	0.764–0.883
Al-Okaily et al. (2023)	Saudi Arabia	Behavioral intention toward FinTech; Performance Expectancy, Effort Expectancy, Trust, Privacy	UTAUT2 / Davis TAM	0.738–0.901
Lim et al. (2024)	China (banking sector)	AI adoption in sustainable banking: perceived usefulness, user satisfaction, intention to use, technological literacy	TAM + AIDUA Model	0.780–0.850
Badghish & Soomro (2024)	Saudi Arabia (SMEs)	AI adoption (TOE constructs); operational & economic organizational performance	TOE–DOI Framework	0.776–0.840
Nguyen et al. (2025)	Vietnam (banking)	FinTech growth impact on bank performance: Customer, Financial, Internal Process, Learning & Growth (BSC)	Kaplan & Norton (1992/1996) BSC	0.810–0.890
Current Study (2026)	Ethiopia (banking & fintech)	FinTech Innovation; AI Adoption; Organizational Performance	Davis (1989); Compeau & Higgins (1995); Kaplan & Norton (1996)	**0.731-0.921**

Note. α = Cronbach's alpha coefficient. All values reported in primary studies used SPSS or Smart PLS reliability modules. The current study's α values are highlighted in amber.

3.10.5 Conclusion on Instrument Reliability and Validity

From the above discussion, it can be concluded, to an extent of reasonable conclusiveness, that the research instrument utilized in this study has reliable psychometric properties. For instance, the content validity of this study has been established through systematic literature reviews, expert panel evaluations, and pilot tests. Furthermore, the internal consistency reliability of this study has been found to have scores of more than the recommended threshold using Cronbach's alpha analysis in IBM SPSS. This means that all three constructs, namely, FinTech Innovation, Artificial

Intelligence adoption, and organizational performance, have high levels of internal consistency of the measurement items.

However, triangulation of the reliability scores of this study with empirical studies carried out independently in other countries (i.e., Turkey by Durak et al., 2024, Pakistan by Tariq et al., 2024, Saudi Arabia by Al-Okaily et al., 2023 and Badghish & Soomro, 2024, China by Lim et al., 2024, and Vietnam by Nguyen et al., 2025) shows that the internal consistency scores of this study converge consistently at levels between 0.76 and 0.94 for all constructs. Thus, external validity of the research instrument is also evidenced from the reliability findings of independent researchers in different geographical and institutional settings. As a result, this research instrument is reliable and valid.

3.10.6 Pilot Study

An additional test of the questionnaire was performed to evaluate its reliability and validity. This is a necessary step to further ensure the quality and accuracy of the data collection instruments. Dempsey (2003) defines a pilot study as a process of testing the data collection instruments in advance to avoid any problems that may compromise the validity and reliability of the data. The pilot study will help to identify and correct any errors in the data collection instruments and to ensure that the data collected is valid and reliable. The questionnaires were tested on 30 participants to evaluate their validity and reliability, as well as the clarity, length, structure, and wording of the questions.

Bryman and Bell (2015) define reliability as the extent to which a questionnaire can elicit consistent answers from different researchers and occasions. In this study, the researcher employed IBM SPSS Version 27 to perform a reliability analysis, calculating Cronbach's Alpha for each construct's items, as detailed in Table 4 As evidenced by Pallant (2013), reliability scores below 0.60 are considered inadequate, scores near 0.70 are acceptable, and scores exceeding 0.80 are seen as strong indicators of reliability.

Table 3.2 Reliability test

No	Variables of the study	No of items	Cronbach’s Alpha Value
1	Fintech Innovation	24	.892

2	AI Adoption	5	.921
3	Organizational Performance	7	.731

Source: Field Survey, SPSS output 2026

Table 3.2 reveals that the Cronbach's Alpha coefficients for Fintech Innovation, AI Adoption, and Organizational performance as 0.892, 0.921, and 0.731, respectively. These figures indicate that the reliability of the metrics applied in this research is both good and excellent.

The concept of validity refers to how well an instrument captures the construct it is designed to measure (Saunders and Lewis, 2012). They also stated that an instrument must be reliable before it can be valid, meaning that it must be consistent and accurate in measuring what it claims to measure. To ensure the validity of the questionnaires, the researcher consulted other relevant sources that provided evidence and supported the findings obtained from the questionnaires, based on the research question and their own judgment (Saunders et al., 2009). Moreover, the survey has achieved 100% validity as every respondent has completed it.

3.11 Data Analysis Tools

The Statistical Package for the Social Sciences (SPSS) Version 27 from IBM was used for the data analysis. The data was summarized and presented using descriptive statistic kinds of such frequencies, percentages, means, and standard deviations. Additionally, tables were used to provide a clear image and make it simple to compare the information gathered from the survey.

Furthermore, inferential statistics like correlation and regression analysis were performed. The relationship between the dependent variable and the independent variables, in this case Organizational performance and Fintech innovation, was investigated using regression analysis. It was also utilized to assess the link between the independent variable and mediating variable, Fintech innovation and AI Adoption and finally, the mediating variable and independent variables, AI Adoption and Organizational performance.

This study followed the criteria suggested by (Baron and Kenny, 1986) to examine the mediating role of a mediator variable in the association between the independent and dependent variables. The process of testing mediation consists of four steps as follows: Step 1: Perform a simple regression analysis to assess the effect of fintech innovation (X) on Organizational Performance

(Y). Step 2: Perform another simple regression analysis to assess the effect of fintech innovation (X) on AI Adoption (M). Step 3: Perform a multiple regression analysis with X and M as predictors of Y and demonstrate that the mediator influences the outcome variable. Step 4: To confirm that M fully mediates the X-Y relationship, the effect of X (IV) on Y (DV) after controlling for M should be zero. The same regression equation will be used to estimate the effects in Steps 3 and 4. If all four steps are met, then the data support the hypothesis that variable M fully mediates the X-Y relationship, and if only the first three steps are met but not Step 4, then partial mediation is suggested. Partial mediation implies that the direct effect is smaller than the zero-order correlation of X and Y.

3.12 Ethical Issues

Confidentiality and privacy are some of the most corner stone of field research activities to get relevant and appropriate data. The researcher assured the purpose of the research paper and confidentiality of any information gathered through questionnaire on the introductory part of the paper.

Before the study began, informed permission from every participant was sought. The purpose of the study was clearly explained to respondents, who have been informed that they can withdraw from the study at any moment. Participants have been enlightened about the data collection process. By forbidding the writing of the subjects' names and giving clear instructions, the privacy of the subjects was secured and guaranteed. Moreover, the data collected from the participants during the process are exclusively utilized for the research objectives and their privacy is protected.

Further, the researchers have informed the participants about the purpose of the study and ask for their consent before giving them the questionnaire. Ethical consideration of respect for others is significant throughout the research process (Cavan, 1977). The data analysis followed the standards of scientific quality, honesty, accuracy, and sensitivity. The researchers have also considered factors such as the age of the sample group, the sensitivity of the topic, and the potential controversies (Cohen et al., 2007).

Chapter Four

Data Analysis, Results and Discussion

The information obtained from the survey conducted on 372 respondents from both banks and financial technology firms in Ethiopia is analyzed and interpreted in this chapter. The methods that have been utilized include descriptive statistics, correlation, diagnostic test, regression, mediation, and hypothesis testing. Statistical packages like SPSS were employed in the analysis to ensure all assumptions of regression were met.

4.1 Response Rate

A 96.875% response rate adequate for statistical analysis and generalization was gotten from the distribution of 384 questionnaires, of which 372 were usable.

4.2 Demographic Characteristics

In this section, a descriptive statistic in the form of frequency and percentage has been used to discuss the demographic profiles, such as age, gender, educational achievement, and service year in the Firms.

4.2.1 Gender Distribution

The research concerning the mediating role of AI adoption in the relationship between fintech innovation and Organizational performance among Ethiopian banks and fintech companies is clearly biased towards male participants, where the percentage of male respondents is 62.4% while 37.6% are females.

This implies that the results of the research are more reflective of male opinions, which can be attributed to the higher representation of men in the banking and fintech sector of Ethiopia, specifically those working in management roles and making critical decisions. The gender gap at the workplace or within fintech jobs in the mentioned organizations could be assumed from the relatively low number of female respondents.

However, it is noteworthy that despite the predominance of male representatives, a relatively high proportion of female participants was included in the research (37.6%), thus allowing gaining valuable insights from both males and females regarding their views.

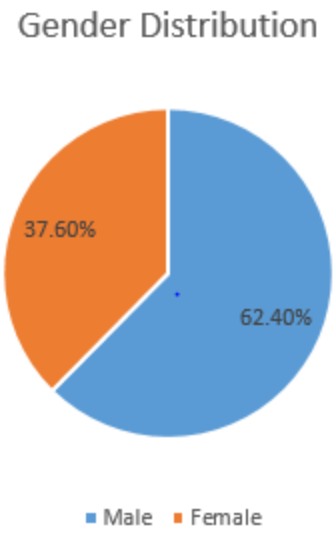


Figure 4.1 gender distribution chart

4.2.2 Age Distribution

From the age distribution among the respondents, it is evident that 41.1% are aged 18-30, 38.7% are aged 31-45, and 20.2% are aged above 45 years. It is clear from the above data that almost four-fifths (79.8%) of the participants are aged below 45 years, implying that they are relatively young. It indicates that the research is significantly skewed towards the opinions of middle-aged and younger professionals who are relatively capable of adapting to modern technological advances such as AI and fintech solutions. The age bracket of 18-30 years is well-known for its early adoption of technology, which might increase their interest in the fintech innovations including online and mobile banking. Likewise, the respondents aged 31-45 might be holding senior or mid-level positions that could provide valuable insights about organizational implementation and efficiency.

The low response rate among those aged 45+ years (20.2%) might indicate that fewer senior or seasoned employees participated in the survey. Although they can contribute meaningful views regarding managerial and strategic perspectives, their low involvement might imply that the longevity of experience within the industry does not affect the outcomes.

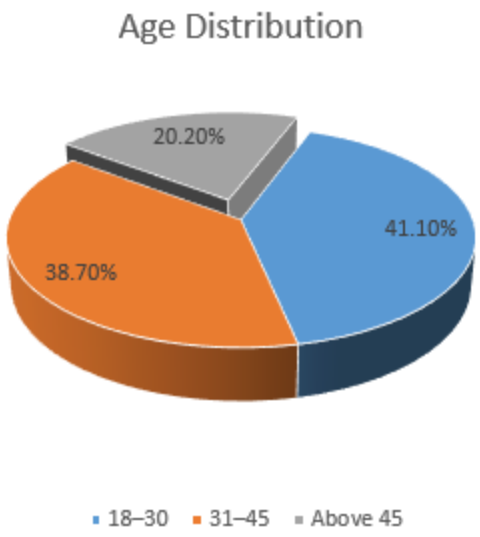


Figure 4.2 Age distribution chart

4.2.3 Types of Position

The majority of respondents are made up of operational and technical experts, as can be observed from the occupational breakdown of their responses, with 54% being non-IT Officers, 28% being managers, and 18% being Officers of information technology departments. This indicates that those who faced with fintech innovations and AI technologies on a day-to-day basis have played an important role in this study. Given that Since non-IT Officers make up the largest group and are usually in charge of data processing, system interface, and performance monitoring, their answers are extremely pertinent for evaluating the real-world effects of fintech innovation on Organizational performance.

Key strategic and decision-making points of view are given by the existence of managers (28%), especially concerning the performance of organizations, policy enforcement, and the incorporation of AI technology in banks and fintech companies. On the other hand, IT Officers (18.0%) provide technical perspectives on certain topics such as AI integration, digital transformation, and system architecture.

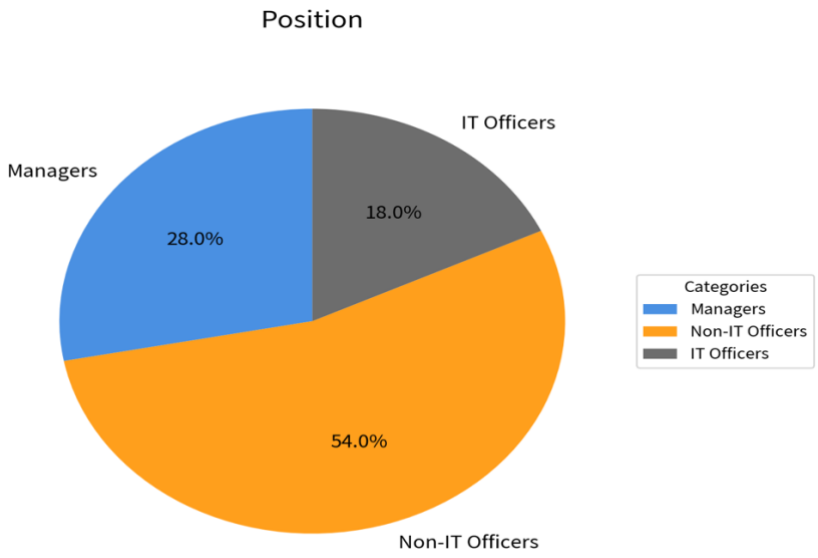


Figure 4.3 Types of Positions chart

4.2.4 Years of Experience

Based on the distribution of the respondents' work experience, 34.7% have 0-5 years of work experience, 29.3% have 6-10 years, 21.5% have 11-15 years, and 14.5% have more than 15 years. This means that 64% of the participants have less than ten years of work experience. It suggests that young and mid-level professionals who are likely to be involved in the use of technologies such as fintech innovations and artificial intelligence have a considerable impact on the study. Young professionals with 0-5 years of work experience are more flexible, technology-oriented, and open-minded. It is particularly crucial when assessing the performance of the process. Respondents with 6-10 and 11-15 years of work experience can contribute balanced views because they have both organizational knowledge and practical experience and provide insights into implementation and performance outcomes since they are Experienced professionals who have been working for more years on strategic and Decision-making roles.

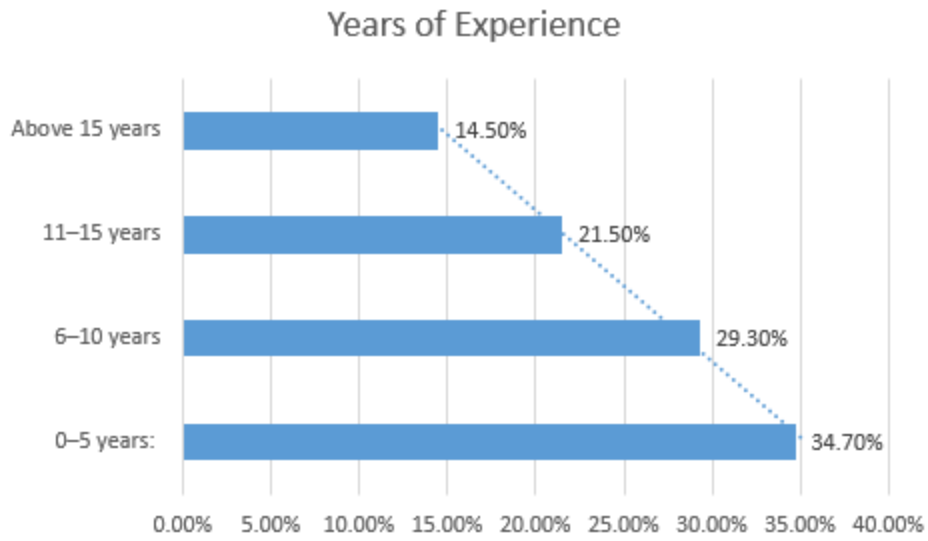


Figure 4.4 years of experience chart

4.2.5 Descriptive Statistics of Variables

The analysis of the descriptive statistics for the variables will help us understand how the respondents perceive fintech, AI adoption, and performance in their organizations. It will be important to know the determinants of their perceptions and improve the areas accordingly.

As illustrated in Table 4.1, the mean score of respondents on fintech Innovation was 3.52 whereas the mean score of AI Adoption was 3.33, and the mean score for Organizational Performance was 3.47. This predicts that firms have a strong perception and give more value for fintech Innovation. Again, as can be apparent from the table, the dominant fintech Innovation domain is Mobile Payment with a mean score of 3.67 followed by Mobile Banking with a mean score of 3.60. Internet banking and ATM followed in the pecking order with a mean score of 3.37. Mobile payment dominated fintech Innovation means firms exhibit substantial Investment on developing, updating, and customizing their mobile payment system platforms. Similarly, Mobile banking is seen as the second dominant in fintech Innovation that indicates the firms focus on various forms of Mobile banking service to extend their services beyond their traditional branches.

Analysis of the skewness and kurtosis metrics suggests that the variables conform to a normal distribution. According to Brown (2016), skewness and kurtosis figures that lie between ± 1.0 are indicative of normality. As demonstrated in Table 4.1 below all the variables are within this range, thereby verifying the normal distribution of the data.

Table 4.1 Descriptive Statistics of Variables

Variables	N	Mean	SD	Skewness	Kurtosis
Fintech Innovation	372	3.52	0.65	-0.169	0.028
Mobile Payment	372	3.67	0.59	-0.038	-0.137
Mobile Banking	372	3.60	0.64	-0.085	-0.309
Internet Banking	372	3.37	0.68	-0.200	0.070
ATM Services	372	3.37	0.68	-0.200	0.070
AI Adoption	372	3.33	0.68	-0.072	-0.549
Organizational Performance	372	3.47	0.42	-0.095	-0.077

From the data represented in Table above, it is clear that mobile payment has the highest mean score (Mean = 3.51, SD = 0.48), thus implying that the respondents found the service more appealing compared to other innovations in Fintech that the firm offers. The results reveal that 41.9% of the respondents regarded mobile payments as "Good," while 22.8% were satisfied with "Very Good" services. On the contrary, 4.8% viewed the services as "Very Poor," and 9.1% rated them as "Poor." This implies that there was successful implementation of the mobile payment services due to their efficiency and accessibility.

The second innovation in Fintech that performed relatively well in terms of evaluation from the respondent's view was mobile banking. It generated a mean score of 3.45 (SD = 0.50). According to the results, 39.8% of the respondents ranked the service as "Good," and 19.4% rated it as "Very Good." However, 24.7% indicated that the service was "Average," implying that although respondents had a good impression about mobile banking, further improvement of the service is needed.

Internet banking had the third highest mean value (Mean = 3.38, SD = 0.52). Most of the respondents regarded internet banking as "Good" (36.0%), followed by "Average" (27.2%). However, a larger percentage of the respondents evaluated it negatively as "Poor" (12.9%) and "Very Poor" (7.3%). This might indicate a problem with internet access or lack of computer literacy skills among users.

ATM services had the lowest mean score (Mean = 3.30, SD = 0.49). Nonetheless, overall evaluations were still positive. For instance, 32.8% of the respondents gave "Good" ratings while 15.6% gave "Very Good" evaluations of the services. However, 28.2% considered the services to be "Average," whereas 14.8% and 8.6% respectively evaluated the services as "Poor" and "Very Poor." This might be attributed to problems with network connectivity, inadequate cash supply, malfunctioning machines, among others.

Table 4.2 Descriptive Statistics of independent Variables

Variables	Very Poor	Poor	Average	Good	Very Good	Mean	SD
Mobile Payment	18 (4.8%)	34 (9.1%)	79 (21.2%)	156 (41.9%)	85 (22.8%)	3.51	0.48
Mobile Banking	21 (5.6%)	39 (10.5%)	92 (24.7%)	148 (39.8%)	72 (19.4%)	3.45	0.50
Internet Banking	27 (7.3%)	48 (12.9%)	101 (27.2%)	134 (36.0%)	62 (16.7%)	3.38	0.52
ATM	32 (8.6%)	55 (14.8%)	105 (28.2%)	122 (32.8%)	58 (15.6%)	3.30	0.49

Section A: Fintech Innovation

“FinTech allows for faster and more efficient financial transactions” is the item receiving the highest mean score (Mean = 3.80, SD = 0.82). A large number of the respondents strongly agreed (n = 89) or agreed (n = 172) with this item, whereas only a small share of participants disagreed with this statement. It may be assumed that a significant part of the respondents find fintech services very valuable for ensuring fast, efficient, and convenient transactions in banking.

In the same vein, a high mean score was obtained for the item “FinTech services provide more convenience in comparison to traditional financial services” (Mean = 3.72, SD = 0.84). Most of the respondents strongly agreed (n = 86) or agreed (n = 163) that fintech services offer a higher level of convenience in comparison with traditional banking services.

Moreover, an average response was provided for the item “FinTech makes it easier to access financial services” (Mean = 3.69, SD = 0.86). A majority of the participants agreed (n = 154) or strongly agreed (n = 86) that fintech innovations facilitate access to financial services.

On the contrary, the lowest mean (Mean = 3.55, SD = 0.91) is characteristic of the item “FinTech provides more financial security and protects customers from possible fraud.” Nevertheless, a

majority of the respondents still agreed (n = 141) or strongly agreed (n = 73) that this item is true; however, some concerns related to the topic were evident as well.

Table 4.3 Descriptive Statistics of Fintech Innovation

No	Statements	SD (1)	D (2)	AV (3)	A (4)	SA (5)	Mean	SD
1	FinTech offers greater convenience compared to traditional financial services.	18	31	74	163	86	3.72	0.84
2	FinTech provides better access to financial services.	16	35	81	154	86	3.69	0.86
3	FinTech enables faster and more efficient financial transactions.	12	29	70	172	89	3.80	0.82
4	FinTech offers better financial security and fraud protection.	21	42	95	141	73	3.55	0.91

Note. SD = Strongly Disagree, D = Disagree, AV = Average, A = Agree, SA = Strongly Agree.

Sub-Section 1: Mobile Payment

The item "Mobile payment systems make financial transactions faster and easier" earned the highest mean score among all the items (Mean = 3.84, SD = 0.79). A majority of the respondents (strongly) agreed (n = 89; n = 181, respectively) that mobile payment systems make transactions faster and simpler, whereas a small percentage of respondents disagreed with the item. Consequently, it can be concluded that most people view the mobile payment system positively because they recognize its high efficiency in accelerating financial processes and making them more straightforward.

Another item that earned an impressive mean score was "I find mobile payment services convenient for daily transactions" (Mean = 3.77, SD = 0.82). Almost the same numbers of the respondents agree (n = 170) and (strongly) agree (n = 87) that mobile payment services are convenient for everyday transactions. Hence, most participants in the survey view mobile payments as efficient means of conducting financial processes in Ethiopia.

The item "I believe mobile payment enhances overall banking efficiency" (Mean = 3.74, SD = 0.84) was rated positively by the survey respondents, who mostly agreed (n = 163) and strongly agreed (n = 87) with the corresponding statement. The result suggests that mobile payment is recognized as an important factor that improves the efficiency of banking operations conducted in Ethiopia.

In addition, the item "Mobile payments reduce the need for physical cash transactions" (Mean = 3.66, SD = 0.87) was positively rated by the participants. Many people (n = 211) recognized the importance of mobile payment services in reducing their dependency on cash transactions.

At the same time, the item "Mobile payment platforms provide secure transaction options" (Mean = 3.57, SD = 0.90) earned the lowest mean score among all the examined items. Nevertheless, even this item was rated positively by a majority of respondents (n = 220; strongly agree, n = 145; agree, n = 75). The lower mean score could indicate that more than half of the respondents doubt the security of mobile payment transactions.

Table 4.4 Descriptive Statistics of Mobile Payment

No	Statements	SD (1)	D (2)	AV (3)	A (4)	SA (5)	Mean	SD
1	Mobile payment systems make financial transactions faster and easier.	11	25	66	181	89	3.84	0.79
2	I find mobile payment services convenient for daily transactions.	14	28	73	170	87	3.77	0.82
3	Mobile payments reduce the need for physical cash transactions.	19	33	84	156	80	3.66	0.87
4	Mobile payment platforms provide secure transaction options.	23	38	91	145	75	3.57	0.90
5	I believe mobile payment enhances overall banking efficiency.	15	31	76	163	87	3.74	0.84

Sub-Section 2: Mobile Banking

Descriptive statistics for the items pertaining to mobile banking indicated a trend which was quite alike to what we had seen previously for mobile payments, wherein the means ranged between 3.61 and 3.80. The item concerning the ability to access financial services using mobile banking anytime and anywhere produced the highest mean value of 3.80 (SD = 0.81), while those related to easy navigation and increased customer satisfaction gave means that were relatively lower (M = 3.65, SD = 0.88) and (M = 3.61, SD = 0.89), respectively. The slightly higher standard deviation values for the latter two items imply some differences in views among respondents in these areas.

Table 4.5 Descriptive Statistics of Mobile Banking

No	Statements	SD (1)	D (2)	AV (3)	A (4)	SA (5)	Mean	SD
1	Mobile banking allows me to access financial services anytime and anywhere.	13	27	69	174	89	3.80	0.81
2	Mobile banking applications are user-friendly and easy to navigate.	17	36	87	153	79	3.65	0.88
3	Mobile banking reduces the time and cost of visiting a bank branch.	14	29	76	167	86	3.76	0.83
4	Mobile banking improves the accuracy and speed of financial transactions.	16	34	82	160	80	3.68	0.86
5	Mobile banking services increase customer satisfaction.	19	37	90	151	75	3.61	0.89

Sub-Section 3: Internet Banking

Items relating to Internet Banking showed the second lowest mean score among the four FinTech dimensions, ranging between 3.52 and 3.64. The respondents most agreed that internet banking allows easy online management of banking functions (M = 3.64, SD = 0.88). On the other hand, internet banking for providing safe and effective transaction processes scored the lowest among all other items under internet banking (M = 3.52, SD = 0.93). This is further reinforced by the fact that the same item also had the largest standard deviation. Internet banking transparency issues (M = 3.63, SD = 0.87), decrease in face-to-face contact (M = 3.55, SD = 0.91), and efficiency improvement of operations (M = 3.61, SD = 0.89) were relatively homogeneous in responses as indicated by consistent SD > 0.87.

Table 4.6. Descriptive Statistics of Internet Banking

No	Statements	SD (1)	D (2)	AV (3)	A (4)	SA (5)	Mean	SD
1	Internet banking enables me to perform various banking activities online efficiently.	18	35	85	157	77	3.64	0.88
2	Internet banking enhances transparency and control over financial transactions.	16	38	89	154	75	3.63	0.87
3	Internet banking reduces the need for in-person visits to the bank.	20	42	94	144	72	3.55	0.91
4	Internet banking offers secure and reliable transaction processing.	22	44	96	139	71	3.52	0.93
5	Internet banking contributes to improved operational performance of banks.	17	39	92	149	75	3.61	0.89

Sub-Section 4: ATM (Automated Teller Machine)

Service items relating to ATMs showed the smallest aggregated means in all sub-sections of the FinTech scale, with scores ranging from 3.50 to 3.59. The service aspect of convenient and round-the-clock banking access scored the highest average rating in this category (M = 3.59, SD = 0.89), while the service related to the fast transaction process by the bank's employees was assessed with the smallest mean score (M = 3.50, SD = 0.93). In terms of the sub-section overall, it was noteworthy that it had moderate standard deviations (0.89–0.93), which made this sub-section the most diverse in terms of the variation in respondents' opinions about ATM services. Particularly, items assessing the reduction in congestion at the bank branches (M = 3.57, SD = 0.90), customer satisfaction with service delivery (M = 3.57, SD = 0.90), and operational performance (M = 3.51, SD = 0.92) were quite similar in their central tendencies.

Table 4.7. Descriptive Statistics of ATM (Automated Teller Machine)

No	Statements	SD (1)	D (2)	AV (3)	A (4)	SA (5)	Mean	SD
1	ATMs provide convenient access to banking services at any time.	20	39	89	151	73	3.59	0.89
2	ATM services reduce congestion inside bank branches.	18	41	95	146	72	3.57	0.90

3	ATMs allow employees to complete transactions quickly and securely.	22	46	96	140	68	3.50	0.93
4	The availability of ATMs improves customer satisfaction and service efficiency.	19	40	93	148	72	3.57	0.90
5	ATM services contribute to improved operational performance of banks.	21	45	97	142	67	3.51	0.92

Section B: Organizational Performance

Statistics concerning the Organizational Performance construct showed a steady positive trend, as measured by item means between 3.61 and 3.78. The highest mean among all seven constructs was the measure concerning the effectiveness of operations in banking, thanks to FinTech development (M = 3.78, SD = 0.81), followed by service consistency and reliability (M = 3.76, SD = 0.82) and shorter service delivery times (M = 3.74, SD = 0.83). Construct measures regarding lower operating costs (M = 3.61, SD = 0.89) and higher employee satisfaction with digital banking (M = 3.63, SD = 0.88) had noticeably smaller means. Standard deviations for the seven items under this construct were moderate (0.81 – 0.89) and fairly homogenous, showing a fairly constant distribution and low variability of responses. Overall, the mean score for the Organizational Performance measure was approximately 3.70, suggesting that participants generally agreed on the positive impact of FinTech innovations on operational performance.

Table 4.8. Descriptive Statistics of Organizational Performance

No	Statements	SD (1)	D (2)	AV (3)	A (4)	SA (5)	Mean	SD
1	Fintech innovation has improved the efficiency of banking operations.	12	29	71	176	84	3.78	0.81
2	Service delivery time has been significantly reduced.	14	31	75	170	82	3.74	0.83
3	Automation has minimized manual errors and processing delays.	16	36	81	160	79	3.67	0.87
4	Technology adoption has reduced operational costs.	18	38	88	154	74	3.61	0.89

5	Digitalization has minimized paperwork and resource wastage.	15	34	80	162	81	3.70	0.85
6	Fintech innovations enhance customer service reliability and consistency.	13	30	74	170	85	3.76	0.82
7	Employees are more satisfied due to faster and accurate digital services.	17	39	85	155	76	3.63	0.88

Note. SD = Strongly Disagree, D = Disagree, AV = Average, A = Agree, SA = Strongly Agree.

Section C: AI Adoption (Mediating Variable)

Respondents' self-reported AI adoption demonstrated a progressive decline in mean scores across the five items, from 3.78 to 3.61. The highest agreement was recorded for the item confirming prior adoption of FinTech/AI services (M = 3.78, SD = 0.81), while regular platform usage (M = 3.72, SD = 0.84) and likelihood to recommend these services to others (M = 3.67, SD = 0.87) followed in descending order. Items tapping self-efficacy specifically, the perceived adequacy of skills and knowledge (M = 3.66, SD = 0.86) and confidence in navigating and troubleshooting FinTech platforms (M = 3.61, SD = 0.89) produced the lowest means within the construct, with slightly higher standard deviations, indicating somewhat greater variability in respondents' self-assessed capability. Collectively, the AI Adoption sub-section produced an approximate overall mean of 3.69, reflecting moderate-to-positive adoption orientation across the sample.

Table 4.9 Descriptive Statistics of AI Adoption

No	Statements	SD (1)	D (2)	AV (3)	A (4)	SA (5)	Mean	SD
1	I have already adopted FinTech (AI) services.	14	28	72	171	87	3.78	0.81
2	I regularly use FinTech (AI) platforms for my financial needs.	16	31	77	165	83	3.72	0.84
3	I am likely to recommend FinTech (AI) services to others.	18	35	80	159	80	3.67	0.87

4	I believe I have the necessary skills and knowledge to use FinTech (AI) effectively.	17	34	85	157	79	3.66	0.86
5	I am confident in my ability to navigate and troubleshoot issues on FinTech (AI) platforms.	19	38	89	150	76	3.61	0.89

Across all constructs, item means ranged from a low of 3.50 (ATM: transaction completion speed) to a high of 3.84 (mobile payment: transaction speed and ease), consistently clustering in the 3.50–3.84 band. Standard deviations throughout were moderate (0.79–0.93), with ATM services exhibiting the greatest response dispersion and mobile payment the least. This pattern suggests that while respondents were broadly in agreement across all constructs, perceptions of ATM services and internet banking security showed comparatively greater heterogeneity than mobile payment and mobile banking dimensions. The Organizational Performance and AI Adoption constructs produced mean scores broadly consistent with the FinTech Innovation sub-dimensions, indicating a coherent positive orientation across the three major study variables.

4.3 Correlation Analysis of the Variables

The main objective of this study is to explore the relationships and the degree to which the variables involved in the research are related to each other: Fintech Innovation (independent variable), AI Adoption (mediating variable), and Organizational Performance (dependent variable). To explore the mentioned relationships, a Pearson correlation test has been applied. The obtained results will be presented in the table below. The Pearson correlation coefficient measures the strength of the linear relationship between the two variables and may have any value from +1 (perfect positive relationship) to -1 (perfect negative relationship) and 0 (no relationship). According to Arkkelin (2014), there is no general rule to identify how strong the relationship is since correlation coefficients of more than 0.5 are usually regarded as being very strong, 0.30 and higher as moderately strong, and less than 0.20 as weak.

The correlation analysis examined the relationships among fintech innovation, AI adoption, and Organizational performance. The results revealed that fintech innovation has a strong and positive relationship with Organizational Performance ($r = 0.582$, $p = 0.00$). This indicates that organizations with higher levels of fintech innovation tend to achieve better Organizational performances. The relationship is statistically significant at the 1% significance level, implying

that improvements in fintech-related technologies and services are associated with enhanced efficiency, productivity, and service delivery within organizations.

Similarly, AI adoption showed a positive and statistically significant relationship with Organizational performance (r = 0.631 p= 0.00). This finding suggests that increased adoption of artificial intelligence contributes positively to Organizational performance, The result implies that AI technologies such as automation, predictive analytics, and intelligent decision-making systems can improve operational processes and organizational effectiveness.

The analysis also indicated a moderate positive relationship between fintech innovation and AI adoption (r = 0.463, p = 0.00). although the strength of the relationship is weaker compared to fintech innovation. this suggests that organizations actively implementing fintech innovations are also more likely to adopt AI technologies.

Correlations				
		Fintech Innovation	AI Adoption	Organizational Performance
Fintech_Innovation	Pearson Correlation	1	.463	.582**
	Sig. (2-tailed)		.000	.000
	N		372	372
AI_Adoption	Pearson Correlation		1	.631**
	Sig. (2-tailed)			.000
	N			372
Organizational Performance	Pearson Correlation			1
	Sig. (2-tailed)			
	N			
**. Correlation is significant at the 0.01 level (2-tailed).				

Table 4.10 Correlation analysis of Variables

Table 4.11. clearly indicates a strong, positive, and significant correlation between Mobile Payment and Organizational Performance, with a correlation coefficient of 0.600 and a significance level of p=0.000. This finding supports the initial hypothesis **H1**, which proposed a

positive and significant relationship between Mobile Payment and Organizational Performance. Likewise, the result showed a positive and significant correlation between Mobile Banking and Organizational Performance, with a coefficient of 0.539 and a p-value of 0.000. This finding supports hypothesis **H2**, affirming a substantial positive relationship between Mobile Banking and Organizational Performance.

A positive and statistically significant connection (0.481, p = 0.000) was found between Organizational Performance and Internet Banking. As a result, the findings supported hypothesis **H3**, which proposed a strong and positive correlation between Internet Banking and Organizational Performance.

The correlation analysis discloses a robust and positive correlation (0.348, p=0.000) between Organizational Performance and ATM, reinforcing the **H4** Hypothesis that posits a significant and positive relationship between the two variables. These findings underscore a positive and significant relationship between ATM and Organizational Performance. Overall, it is evident that Fintech Innovation maintains a positive and significant correlation with Organizational Performance, supporting hypothesis **H5.** Furthermore, a strong and positive correlation has been shown between Organizational Performance and AI Adoption (0.631, p=0.000). This in turn satisfies hypothesis **H6**, which states that there is a strong and positive correlation between Organizational Performance and Adoption of AI.

The Pearson Correlation analysis showed that there is a strong positive significant relationship between Mobile Payment and AI Adoption (.787, p=0.000). Besides, a strong positive correlation was observed between Mobile Banking and AI Adoption (.561, p=0.000). Similarly, AI Adoption exhibits a positive and significant correlation with Internet Banking and ATM (.345, p=0.005) and (.226, 0.008), respectively. According to Arkkelin (2014) guidelines, it is evident that Mobile banking and Mobile Payment are strongly link to AI Adoption. In contrast, Internet Banking and ATM show a moderate link.

Correlations

		Mobile Payment	Mobile Banking	Internet Banking	ATM	AI Adoption	Organizational_Performance
Mobile Payment	Pearson Correlation	1					.600**

	Sig.(2-tailed)						.000
	N						372
Mobile Banking	Pearson Correlation		1				.539**
	Sig.(2-tailed)						.000
	N						372
Internet Banking	Pearson Correlation			1			.481**
	Sig.(2-tailed)						.000
	N						372
ATM	Pearson Correlation				1		.348
	Sig. (2-tailed)						.000
	N						372
AI Adoption	Pearson Correlation	. 787	. 561	. 345	.226	1	.631**
	Sig. (2-tailed)	.000	.000	.000	.005		.001
	N	372	372	372	372	372	372
Organazational_Performance	Pearson Correlation	.600**	.539**	. 481**	.348**	.631**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	
	N	372	372	372	372	372	372
**. Correlation is significant at the 0.01 level (2-tailed).							

Table 4.11 Correlation analysis of Variables

4.4 Diagnostic Tests of Linear Regression Model

Before conducting the regression analysis for hypothesis testing, a preliminary investigation was conducted. The importance of this process cannot be overlooked since it helps in ensuring the accuracy of the results.

4.4.1 Normality Test of Residuals

Testing for normality is an essential element in any statistical test because it will determine if the residuals or error terms are normally distributed. As highlighted by Brooks (2008), prior to running any hypothesis test, it is important to test the normality of these variables. This will ensure that the use of inferential statistics in the research process is valid.

As a way of testing the normality assumption, the study has used two methods: The Normal Probability Plot (NPP) and the Histogram on standardized residuals, recommended by Gujarati (2004). The purpose of the Normal P-P Plot is to confirm if the data being tested follows a normal distribution based on the closeness of the plot to the reference line. From the graph below, since the points are not deviating much from the reference line, the data can be taken to follow a normal distribution.

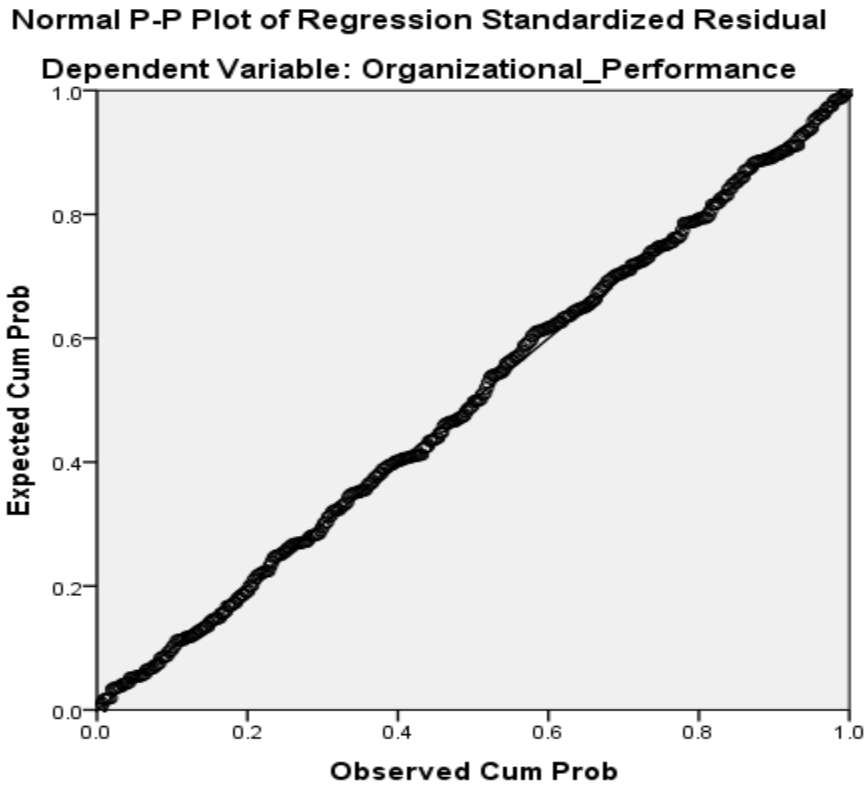


Figure 4.5 normality test of residuals

From the Normal P-P Plot below, one can observe that there is conformity to the diagonal reference line where the only small departures from the straight line have been observed. From this, it can be inferred that the residuals approximate to a normally distributed curve. This means that the normality assumption of the regression is satisfied and hence suitable for further analysis.

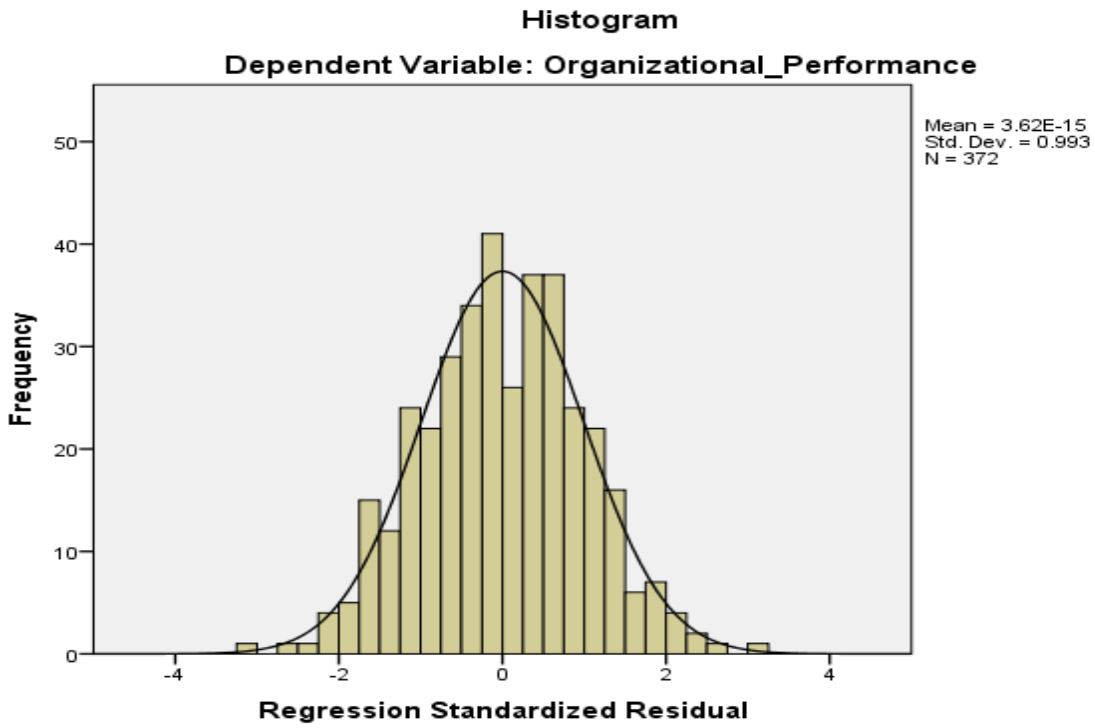


Figure 4.6 Normal P-P & histogram plot of regression of standardized residuals.

The histogram above shows that the standardized residuals have a symmetrical distribution around the mean, which is zero. The histogram's shape represents the typical bell-shaped curve, with the majority of the bars positioned near the mean. This implies that the residuals follow a normal distribution pattern, which is highly desirable in statistical analysis.

4.4.2 Test of Homoscedasticity

Homoscedasticity is an important assumption in the Classical Linear Regression Model. This assumption asserts that the variance of the errors is the same for all data points. If the variance is constant, then the model is said to be homoscedastic. On the other hand, heteroscedasticity occurs when variances are unequal and is viewed as an issue because it can undermine the validity of statistical tests of significance. These tests presume that residuals are normally distributed, uncorrelated, and have a constant variance that is not influenced by the explanatory variables in the model. (Gujarati, 2004).

To assess the presence of heteroscedasticity, it is recommended to graph the standardized residuals versus the standardized predicted values. Heteroscedasticity is indicated by a pattern where the

points spread out in a fan shape to the left or right. In contrast, a tight clustering of points near the zero line would suggest homoscedasticity, confirming that the assumption has not been breached.

Figure 4.2 illustrates that the data points are closely clustered near to 0, indicating a strong central tendency. Additionally, the scatter plot reveals no apparent violations of homoscedasticity, suggesting that the data's variability is consistent across the range of values.

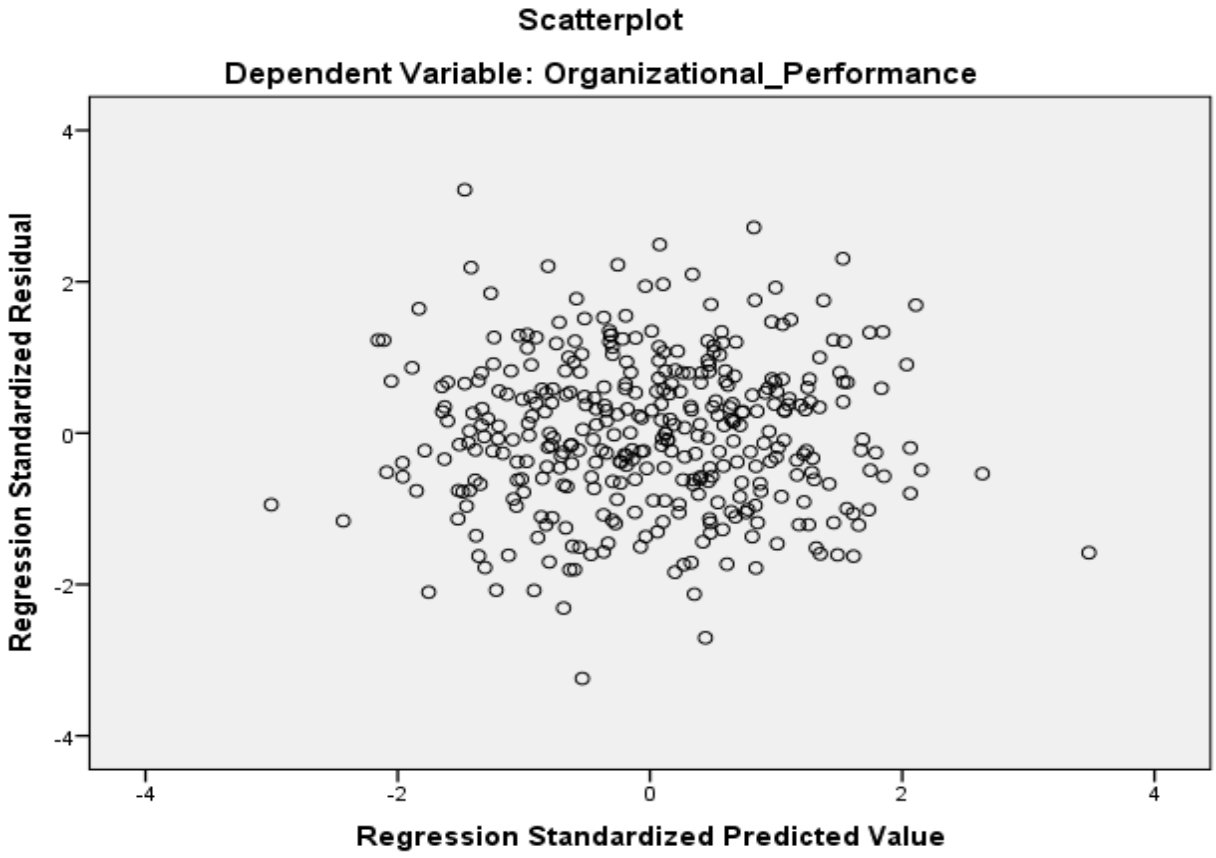


Figure 4.7 scatter plot of regression for standardized predicted value against the residual

4.4.3 Multicollinearity Test

Multicollinearity arises when an independent variable is correlated with another independent variable, thus making it difficult to determine the individual effect of each independent variable on the regression model (Brooks, 2008). Multicollinearity is usually determined from SPSS through looking at the Variance Inflation Factor (VIF) in the coefficient table. A good indication of multicollinearity is when the VIF figure is between 1 and 10. When the variance inflation factor lies outside the limits of 1 and 10, it might mean there are problems of multicollinearity.

Coefficients[a]								
Model		Unstandardizd Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	10.361	.1944		5.329	.000		
	Fintech Innovation	.329	.039	.368	8.450	.000	.785	1.273
	AI Adoption	.961	.091	.460	10.558	.000	.785	1.273
a. Dependent Variable: Organizational Performance								

Table 4.12 Multicollinearity test

4.4.4 Linearity Test

The assumption on the linearity of the simple bivariate model postulates that the relationship between the independent and dependent variables must be modeled using a straight line. In this case, the model must be linear in the parameters α and β but not necessarily in the variables themselves. According to Brooks (2008), it is advisable for one to inspect the linearity assumption through graphs such as scatter diagrams. For example, in figure 4.3, a hypothetical diagonal line drawn from the lower left to the upper right shows that the error terms in the scatter diagram have a strong linear relationship. Therefore, we can assert that the linearity assumption was satisfied.

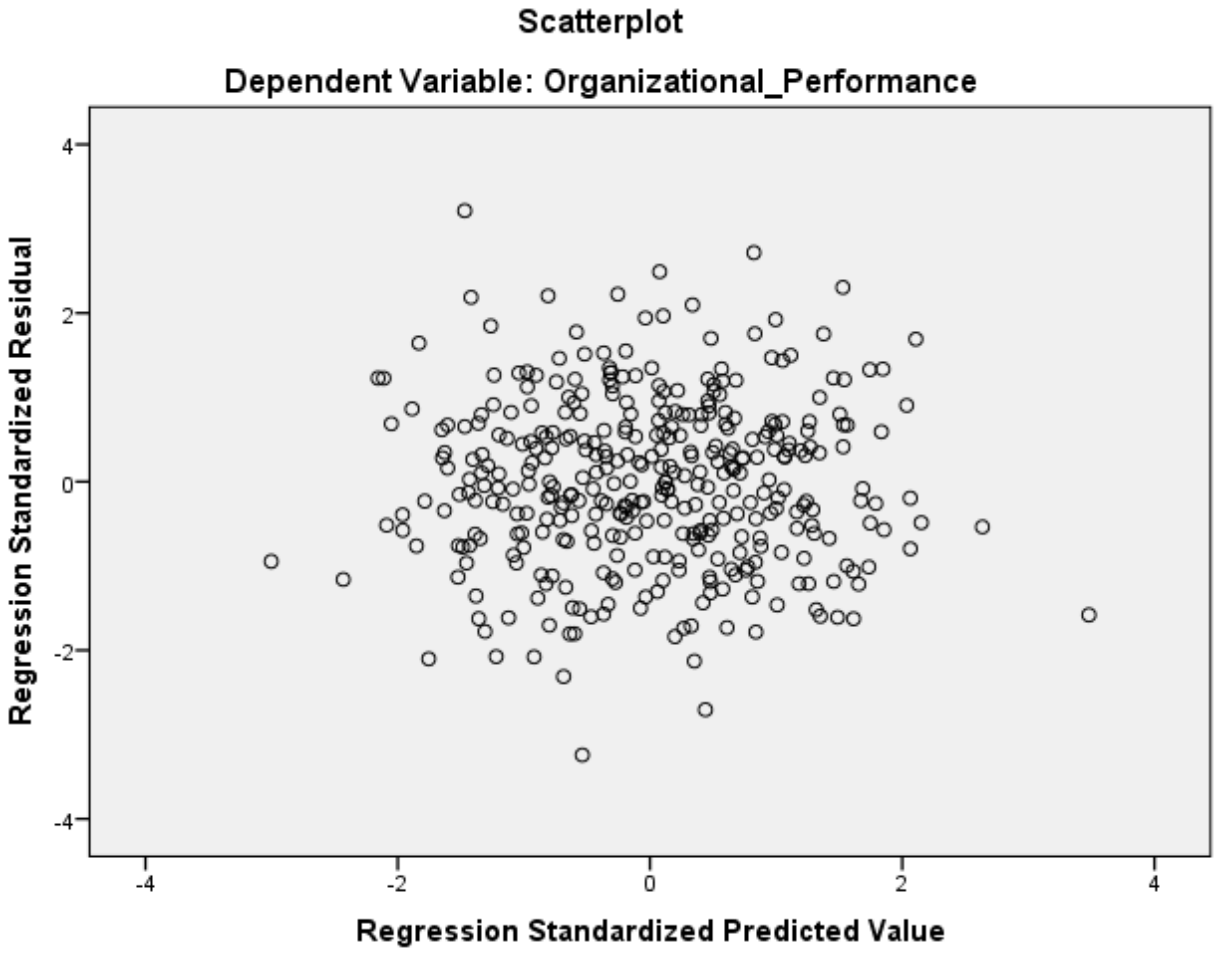


Figure 4.8 Linearity Test

4.4.5 Test for autocorrelation

The primary assumption made here is that the residuals are independent, meaning they are uncorrelated with one another. This test can be carried out using the Durbin-Watson statistic, which appears in the model summary. This test statistic takes values between 0 and 4, with the value 2 being an indication of no autocorrelation. A small value (0) means there is positive autocorrelation, while a large value (4) means there is negative autocorrelation (Saunders et al.,2009).

Model Summary[b]					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.721[a]	.519	.513	.2943453	2.061
a. Predictors: (Constant), AI Adoption, Fintech Innovation					
b. Dependent Variable: Organizational Performance					

Table 4.13 Autocorrelation

Based on the table above, it can be inferred that there is no autocorrelation, as indicated by the Durbin-Watson statistic of 2.061, which approaches the value of 2. This suggests that the residuals of the dataset are independent and there is no evident pattern in the time series data.

4.5 Regression Analysis and Hypothesis Testing

Linear and multiple regression analyses were utilized to examine the relationships among the predictor variable, the mediator, and the outcome variable, thereby testing the research hypothesis. These analyses shed light on how the predictor variables directly influence the outcome. The forthcoming analysis will scrutinize all the postulated hypotheses, assessing both the direct and the indirect influences of the regress or factors on the outcome variables.

4.5.1 Overall regression model fit.

The correlation coefficient (R = 0.721) shows a strong positive relationship between the independent variables (fintech innovation, mobile payment, mobile banking, internet banking, ATM services, and AI adoption) and the dependent variable (Organizational Performance). This implies that improvements in these technological and financial innovation factors are associated with better Organizational Performance.

The coefficient of determination (R Square = 0.519) indicates that 51.9% of the variation in Organizational performance is explained by the combined effect of fintech innovation, mobile payment, mobile banking, internet banking and ATM services, and AI adoption. This suggests that the model has substantial explanatory power, while the remaining 48.1% of the variation is explained by other factors not included in the model. The Adjusted R Square value of 0.513 further confirms the reliability of the model. Since the adjusted value is very close to the R Square value,

it indicates that the included independent variables contribute meaningfully to explaining Organizational performance without unnecessary variables inflating the model.

Furthermore, the change statistics reveal that the overall regression model is statistically significant. The F-change value of 169.030 with a significance level of p = 0.000 indicates that the combined independent variables significantly predict Organizational performance. Since the p-value is less than 0.05, the null hypothesis that the predictors have no effect on Organizational performance is rejected.

Model Summary[b]									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.721[a]	.519	.513	5.42258	.519	169.030	5	366	.000
a. Predictors: (Constant), AI Adoption, Fintech Innovation,									
b. Dependent Variable: Organizational Performance									

Table 4.14 Model Summary

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	34.264	5	18.116	134.519	.000[b]
	Residual	31.710	366	.135		
	Total	65.973	371			
a. Dependent Variable: Organizational Performance						
b. Predictors: (Constant), AI Adoption, Fintech Innovation						

Table 4.15 ANOVA

The ANOVA results presented in Table indicate that the F-ratio confirms the overall regression model fits the data well. The analysis shows that the independent variables are statistically

significant and predict the dependent variable effectively, as evidenced by an F-value of 134.52 with degrees of freedom (5, 366) and a p-value less than 0.05. Consequently, we can conclude that the regression model is a good fit for the data.

4.5.2 Mediation Analysis

A series of Simple and Multiple Regression analyses were conducted to assess the mediating role of AI Adoption in the relationship between Fintech Innovation and Organizational performance. The mediation analysis examines how the independent variable - regressor (X) indirectly influences the dependent variable- outcome (Y) via the mediator - intervening variable (M). This research adheres to the Baron and Kenny (1986) framework for evaluating the impact of a mediator on the predictor-outcome relationship. According to Baron and Kenny, there are four stages to explore in mediation analysis:

Step 1: There should be a significant relationship between the predictor variable (X) and the outcome variable (Y). This is typically assessed through a simple regression analysis, where (X) serves as the predictor for (Y).

Model 1: $Y = \gamma 0 + \gamma X + \varepsilon 1$----------Equation 1

Step 2: The relationship between the predictor variable (X) and the proposed intervening variable (M) should be significant. This significant link is crucial for validating the hypothesized influence of the predictor on the outcome through the mediator.

Model 3: $M = \alpha o + \alpha X + \varepsilon 3$----------Equation 3

Step 3: The proposed mediating variable (M) shows a significant connection to the dependent variable (Y), particularly when considering both the independent variable (X) and the mediating variable (M) as predictors of the dependent outcome (Y).

Model 2: $Y = \gamma'0 + \gamma' X + \beta M + \varepsilon 2$----------Equation 2

Step 4: Once the prerequisites of steps 1 through 3 are met, we proceed to assess mediation. In this phase, both the predictor and the mediator are considered as independent variables or predictors, while the dependent variable is treated as the outcome. A zero unstandardized coefficient implies that the mediator M fully accounts for the relationship between X and Y. Conversely, When the mediator variable's effect is considered and the association between the predictor and outcome variables is found to be weaker, I mediation is present. That means if the

strength of relationship between predictor and outcome variables is reduced after controlling for the effect of the mediator variable, that indicates the existence of partial mediation.

4.5.3 Results of Simple Linear Regressions

To investigate how Fintech explains Organizational performance (step 1), as well as how fintech explains AI Adoption (step 2), a simple linear regression analysis was conducted. This statistical method allowed for a clear understanding of how fintech innovation can influence their level of AI Adoption.

Step.1: Simple Regression Analysis between Fintech Innovation and Organizational Performance

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5948.295	1	5948.295	161.513	.000[b]
	Residual	12263.914	370	36.829		
	Total	18212.209	371			

a. Dependent Variable: Organizational Performance

b. Predictors: (Constant), Fintech Innovation

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	15.195	2.180		6.969	.000
	Fintech Innovation	.520	.040	.582	13.044	.000

a. Dependent Variable: Organizational Performance

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics		
					R Square Change	F Change	Sig. F Change
1	.582[a]	.338	.336	6.25768	.338	170.152	.000

a. Predictors: (Constant), Fintech Innovation

ANOVA table confirms the model's suitability, evidenced by an F-statistic of 161.513 and a p-value of 0.000, indicating a statistically significant fit at the 5% significance level. The coefficients table delivers crucial visions for predicting Organizational performance based on fintech innovation and settles the statistical significance of fintech in the model. Therefore, the result equation Model 1 is:

Y = 15.195+ 0.582X ——— Equation 1

According to the standardized beta coefficient (β = 0.582), Organizational performance increases by 0.582 units for every unit rise in fintech innovation. Fintech innovation has a favorable and significant impact on Organizational performance, as this link is statistically significant at the 5% significance level ($p < 0.05$).

According to the Model Summary data, there is a substantial positive association (58.2%) between fintech innovation and Organizational performance, with a correlation coefficient (R) of 0.582. This implies that increased Organizational performance in Ethiopian banks and fintech companies is linked to advancements in fintech innovation.

Fintech innovation accounts for about 33.6% of the variation in Organizational performance, according to the coefficient of determination ($R^2 = 0.338$) and modified R^2 (0.336). This supports the idea that fintech innovation has a major impact on Organizational performance and shows the model's high explanatory power.

Step 2: Simple Linear Regression between Fintech Innovation and AI Adoption (Mediator)

The model's overall fitness is confirmed by the ANOVA results. The model is statistically significant at the 5% level, according to the F-statistic value of 90.965 with a significance level of $p = 0.000$, indicating that fintech innovation consistently predicts AI adoption.

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	968.891	1	968.891	90.965	.000[b]
	Residual	3546.859	370	10.651		
	Total	4515.750	371			
a. Dependent Variable: AI Adoption						
b. Predictors: (Constant), Fintech Innovation						

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	5.029	1.137		4.422	.000
	Fintech Innovation	.198	.021	.463	9.538	.000

a. Dependent Variable: AI_Adoption

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics		
					R Square Change	F Change	Sig. F Change
1	.463[a]	.215	.212	3.26362	.215	90.965	.000

a. Predictors: (Constant), Fintech Innovation

The ANOVA result, which is displayed above, illustrates the model's general fitness. The model is a good fit for the data at the 5% significance level, as shown by the F stat of 90.965 and the p-value of 0.000. The coefficient table provides crucial data for predicting AI Adoption based on fintech Innovation and assessing the statistical significance of Fintech Innovation contribution to the model. Therefore, the equation for Model 3 can be articulated as follows:

M = 5.029+0.463X - Equation 3

The standardized beta coefficient (β = 0.463) suggests that the usage of AI grows by 0.463 units when fintech innovation is increased by one unit. Fintech innovation has a significant positive impact on the use of AI technology because of statistical significance ($p<0.05$). There is a moderate positive correlation between fintech innovation and the adoption of AI (46.3%) as per R (0.463).

Fintech innovation explains 21.2% of the variance in AI adoption, given that the value of the R square coefficient and the adjusted R2 coefficient are 0.215 and 0.212 respectively. This supports the mediation assumption in step two and proves that fintech innovation is a significant predictor of AI adoption.

4.5.4 Multiple Regressions

Coefficients table gives us a good insight on the prediction of Organizational Performance in relation to fintech. This indicates the significance of fintech in the model. Therefore, the equation resulting from Model 1 shows the ANOVA results which indicate the adequacy of the model.

This is shown in the F stat of 169.030 and the p-value of 0.000, meaning the model is statistically significant at 5%. As a result, the analysis indicated that the standard beta coefficients for the repressors Fintech and AI Adoption are 0.329 and 0.961 respectively. In addition to that, the P-value is 0.000 while the constant is 10.361, which also has a P-value of 0.000. It means that the performance is predicted in relation to fintech and AI adoption. Both AI adoption and fintech make a statistical contribution to the model.

As a result, we can hypothesize Model 2 as follows:

The regression equation for Model 3 is expressed as:

$Y=10.361 + 0.368X + 0.460M$ - Equation 2

Where:

Y = Organizational Performance
X = Fintech Innovation
M = AI Adoption

Table 1. **Result for Multiple Regressions**

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	9940.460	2	4970.230	169.030	.000[b]
	Residual	9762.258	369	29.404		
	Total	19702.718	371			
a. Dependent Variable: Organizational Performance						
b. Predictors: (Constant), AI Adoption, Fintech Innovation						

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	10.361	1.944		5.329	.000		
	Fintech_Innovation	.329	.039	.368	8.450	.000	.785	1.273
	AI_Adoption	. 961	.091	.460	10.558	.000	.785	1.273

a. Dependent Variable: Organizational Performance

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				Durbin-Watson
					R Square Change	df1	df2	Sig. F Change	
1	.710[a]	.505	.502	5.42258	.505	2	369	.000	1.909

a. Predictors: (Constant), AI Adoption, Fintech Innovation

b. Dependent Variable: Organizational Performance

The Model Summary table above reveals a robust relationship between the outcome and predictor variables, as indicated by an R-value of 0.710, signifying a 71% correlation. Furthermore, the model's adjusted R-square value of 0.502 suggests that fintech and AI Adoption account for 50.2% of the variation in Organizational Performance. This underscores a substantial relationship between dependent variable (Organizational Performance) and predictor variables (fintech and AI Adoption). Furthermore, when the independent variable (fintech) is controlled, multiple regression analysis of the model shows a significant relationship between the mediator variable (AI Adoption) and the dependent variable (Organizational Performance). As a result, **step 3**'s premise is satisfied.

Step 4 tests for Mediation

After fulfilling the first three assumptions outlined by Baron and Kenny (1986), the subsequent step is to test for mediation. The fourth assumption at step 4 states that a mediation effect is present only if the relationship between the independent and dependent variables becomes weak or less significant when the effect of the mediator variable is considered or controlled.

The three models are summarized as follows:

Mediation Analysis Results

Model 1: Y=15.195+.582X

Model 2: Y=10.361 + 0.368X + 0.460M

Model 3: M=5.029+0.463X

Where:
Y = Organizational Performance
X = Fintech Innovation
M = AI Adoption

The results from the three regression models provide evidence for mediation following the procedure of Baron and Kenny (1986).

Research suggest that employing standardized coefficients is advantageous for elucidating mediation analyses. The path analysis depicted in Figure 4.4 illustrates the interactions among the predictor, mediator, and outcome variables.

Path α, with a value of 0.463, signifies the connection between the mediator and predictor variables. Path β indicates the mediator's effect on the outcome variables, with a value of 0.460. The influence of the independent variable on the outcome variable is denoted by Path γ', valued at 0.368, which diminishes when the mediator is taken into consideration. This reduction suggests that AI Adoption serves as a partial mediator in the relationship between Fintech Innovation and Organizational Performance. As per Baron and Kenny's definition from 1986, partial mediation is identified when the mediator lessens the predictor's impact on the outcome.

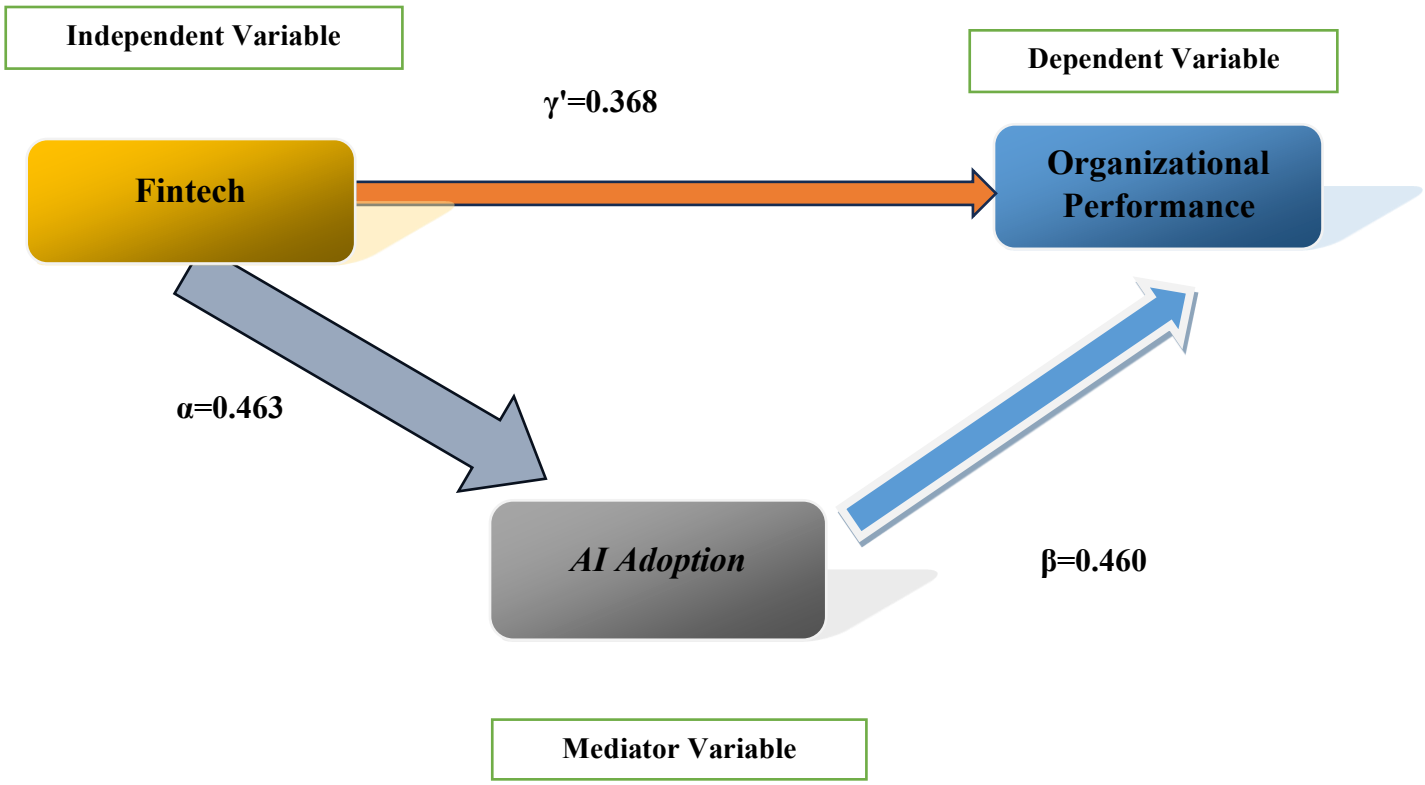


Figure 4.9: Path Analysis

4.5.5 Hypothesis test results of the research

The summary of the regression analysis model, as depicted in Table 4.17, indicates that Fintech Innovation comprising Mobile Payment, Mobile Banking, Internet Banking & ATM account for a significant portion of the variation in Organizational Performance. Specifically, the R-squared value of 0.492 suggests Fintech Innovation explain 49.2% of the variability in Organizational Performance, highlighting the impact of each unit change in Fintech Innovation.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.702[a]	.492	.486	5.50541	.492	79.095	5	366	.000

a. Predictors: (Constant), AI Adoption, Fintech Innovation

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	13.936	1.984		7.024	.000		
	Mobile Payment	.924	.070	.528	13.120	.000	.951	1.051
	Mobile Banking	.713	.069	.374	9.249	.000	.824	1.121
	Internet Banking	.561	.089	.281	6.323	.000	.780	1.282
	ATM	.347	.107	.159	3.243	.000	.643	1.555

a. Dependent Variable: Organizational Performance

We can postulate the Model 1 as follows:

Y = 13.936 + 0.924X1+0.713X2+0.561X3+0.347X4 Where:

Y = Organizational Performance of banks

X_1 = Mobile Payment

X_2 = Mobile Banking

X_3 = Internet Banking & X_4 =ATM

With a coefficient value of 0.924 ($p < 0.05$), mobile payment is the most significant predictor of Organizational Performance, according to the regression coefficient analysis. As a result, Hypothesis H1 is accepted since it shows a substantial positive and statistically significant effect. Similarly, with a beta coefficient of 0.713 ($p < 0.05$), mobile banking shows a strong positive and significant impact on Organizational Performance. As a result, Hypothesis H2 is approved. Additionally, with a value of 0.561($p < 0.05$), Internet Banking contributes positively and significantly to Organizational Performance. This demonstrates that Hypothesis H3 is accepted. Furthermore, with a coefficient value of 0.347 ($p < 0.05$), ATM services have a positive and statistically significant impact on Organizational Performance. Thus, Hypothesis H4 is approved.

From Table 10 regression coefficient analysis, it is evident that the regression coefficient for AI Adoption is significant (0.312, p=.000), indicating a predictive relationship with Organizational

Performance. This observation is consistent with the findings of Ricardo S. (2020), reinforcing the notion that AI Adoption is a crucial factor in Organizational Performance. Furthermore, this supports the hypothesis H5, which posits a positive and significant relationship between AI Adoption and Organizational Performance.

Regression Analyses between AI Adoption *and* Organizational Performance

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.878	.098		19.208	.000
	AI Adoption	.312	.025	.560	12.336	.000
a. Dependent Variable: Organizational Performance						

Summary of Hypotheses Testing

Hypothesis	Developed Hypothesis	B	t	Sig.	Test Result
H1	There is a positive and significant relationship between Mobile Payment and Organizational Performance	.924	13.120	.000	Accepted
H2	There is a positive and significant relationship between Mobile Banking and Organizational Performance	.713	9.249	.000	Accepted
H3	There is a positive and significant relationship between Internet Banking and Organizational Performance	.561	6.323	.000	Accepted
H4	There is a positive and significant relationship	.347	3.243	.000	Accepted

	between ATM and Organizational Performance				
H5	There is a positive and significant relationship between Fintech Innovation and AI Adoption	.198	9.538	.000	Accepted
H6	There is a positive and significant relationship between AI Adoption and Organizational Performance	.312	12.336	.000	Accepted
H7	AI Adoption mediates relationships between Fintech Innovation and Organizational Performance	.961	10.558	.000	Accepted

4.6 Finding and Discussion

The core premise of the current study is the assumption that fintech innovation as well as its various components such as mobile payment, mobile banking, internet banking, ATM services, and AI adoption exert positive and statistically significant impact on organizational performance of banks and fintech firms operating in the Ethiopian financial sector. Also, it is expected that AI adoption mediates the relationship between fintech innovation and organizational performance in question. Multiple regression analyses provide empirical support for all of the hypotheses formulated for testing.

First, the overall regression model appears to have considerable power of prediction. In particular, the combined model produces a correlation coefficient (R) of 0.721, implying that there is a statistically significant positive relationship between the whole array of independent variables and organizational performance. The coefficient of determination ($R^2 = 0.519$) means that the independent variables explain 51.9% of variation in the dependent variable. Moreover, adjusted $R^2 = 0.513$ implies that the predictive power of the developed model does not stem from excessive inclusion of unnecessary predictors and is reliable. Thus, almost the same values of R^2 and adjusted R^2 indicate that the selected variables are meaningful predictors. Additionally, a very low p-value for the F-statistic test (169.030, $p < 0.001$) suggests accepting the alternative hypothesis regarding the collective influence of the predictors on organizational performance.

Considering the empirical results in regard to individual hypotheses, it can be seen that the highest unstandardized coefficient was obtained for the independent variable "mobile payment" (0.924). At the same time, the standardized beta for the variable in question amounts to 0.528 ($p < 0.001$). Hence, a one-unit increase in the mobile payment variable leads to an average 0.924 increase in organizational performance. Likewise, a similar beta coefficient of 0.713 ($p < 0.001$) was calculated for the mobile banking variable. As for the other variables, internet banking and ATM services proved to be meaningful predictors with coefficients of 0.561 and 0.347 (both $p < 0.001$), respectively. Hierarchically speaking, the coefficients decrease moving from more contemporary digital payment methods (i.e., mobile payment and mobile banking) to relatively old interfaces (i.e., internet banking and ATM services). Therefore, hypotheses H1-H4 are entirely confirmed.

Regarding mobile payment and mobile banking as predictors of organizational performance, they conform to the existing literature. Particularly, several studies have demonstrated the transformative role played by mobile financial services in enhancing profitability, service delivery efficiency, and bank performance as a whole. In particular, studies conducted in sub-Saharan Africa and other developing countries found out that adopting mobile payments infrastructure decreases costs, expands customer base, and improves the bottom line (Asongu & Nwachukwu, 2018; Kirui et al., 2013). The empirical results of the present study corroborate these conclusions and apply to a specific context, namely that of Ethiopian banks and fintech firms. At the same time, the relatively low coefficient for ATM services might be explained by the fact that ATM adoption has become less relevant compared to that of mobile platforms as shown in other studies (East Africa).

Turning to the simple linear regression, it is necessary to note that the standardized beta for fintech innovation and organizational performance was equal to 0.582 ($p < 0.001$), and R^2 amounted to 0.338. In other words, fintech innovation alone is able to explain about 33.6% of variance in organizational performance. Thus, the effect size was quite large and provided empirical confirmation of Hypothesis H5. Furthermore, the high F-statistic of 161.513 ($p < 0.001$) indicates that the independent variable is not a marginal one. Overall, this result is consistent with prior studies by Mention and Torkkeli (2012) and Kumbure et al. (2022). Specifically, the two works highlighted the fact that fintech innovation represents an essential strategy to increase efficiency and competitiveness in the financial industry. This result has theoretical implications in terms of

relevance since the Ethiopian country has only lately liberalized its financial sector and started implementing innovations related to fintech.

Concerning the next step of the Baron and Kenny (1986) approach, it is necessary to say that fintech innovation proved to be a significant and positive predictor of AI adoption in a simple regression model ($\beta = 0.463$, $p < 0.001$). In addition, adjusted R^2 of 0.212 means that fintech innovation is able to predict about 21.2% variance in AI adoption. Thus, the above-mentioned criterion has been fulfilled, which provides grounds for assuming that Hypothesis H6 holds true. Also, it should be noted that there is theoretical justification for the obtained finding since an organization that adopts fintech innovation possesses necessary infrastructure, human capital, and readiness to implement new technology.

As mentioned before, the simple regression for AI adoption as a predictor of organizational performance produced standardized beta of 0.560 ($p < 0.001$). In other words, Hypothesis H6 also holds true based on results of Table 10. At the same time, it can be seen that this result fits well into theoretical predictions of Ricard S. (2020) and others concerning AI. Indeed, the adoption of AI is known to enhance organizational performance due to increased efficiency in making decisions, service provision, and customer engagement.

Speaking of mediation analysis, it is worth noting that the use of the multiple regression model allowed explaining 50.5% of variance in organizational performance ($R^2 = 0.505$ and adjusted $R^2 = 0.502$). Meanwhile, the addition of AI adoption decreased the standardized beta between fintech innovation and organizational performance from 0.582 to 0.368. However, AI adoption remained to be a statistically significant predictor (standardized beta = 0.460, $p < 0.001$). Based on Baron and Kenny (1986) criteria, these findings indicate partial mediation. Specifically, the independent variable retains its ability to affect the dependent one even after including the mediator variable. Thus, Hypothesis H7 is proven. The relationships can be summarized in the following paths:

1. fintech innovation → AI adoption ($\alpha = 0.463$)
2. AI adoption → organizational performance ($\beta = 0.460$)
3. fintech innovation → organizational performance ($\gamma' = 0.368$)

At the same time, it is important to stress that partial rather than full mediation is found in this case. In other words, the independent variable (i.e., fintech innovation) still has a significant effect on the dependent variable (organizational performance) even after introducing the mediator (AI adoption). This result reflects a complex interaction between fintech innovation and organizational performance in the sense that the former influences the latter through multiple pathways simultaneously. According to Gimpel et al. (2018), fintech innovation has an impact on firms' performance both directly and indirectly (through other innovations and technology). Hence, the mediation analysis results of the current paper add to this concept.

Nevertheless, the results should be treated with caution since they are potentially context-specific. Specifically, the specific institutional, regulatory, and infrastructural features of the investigated environment (Ethiopian financial sector) may have contributed to the relatively large effect sizes of independent variables. In this sense, it is appropriate to contrast this study with those conducted in other countries where both fintech innovation and AI adoption are widespread. For instance, the empirical effect size of fintech innovation is considerably smaller in advanced economies (Philippon, 2016; Frame et al., 2018). Such differences may result from the fact that fintech innovations in such countries yield diminishing returns since digitalization has been implemented long ago. In contrast, fintech innovations in Ethiopia have not been applied extensively yet and hence lead to larger performance improvements.

Overall, it can be concluded that the regression analyses provided sufficient empirical evidence to accept all seven hypotheses of the current study. Namely, each of the components of fintech innovation has been found to be a statistically significant predictor of organizational performance. Moreover, AI adoption was proven to play a mediating role.

Chapter Five

Summary, Conclusions, And Recommendations

5.1 SUMMARY

One would think it logical to state that the financial sector in Ethiopia has entered into an important stage of inflection where innovations in the form of fintech are playing an important part. The sector has experienced much change in recent times due to the incorporation of different forms of technology, such as mobile money transfers, mobile banking, internet banking, and ATM facilities. Moreover, there have been changes in this sector as a result of the use of artificial intelligence as another tool to promote growth in this sector. Against this backdrop, the following question arises: Does fintech innovation improve the performance of organizations? If yes, is there any mediation effect with artificial intelligence incorporation?.

Research Objectives and Approach

The current study intends to find out whether mediation effects exist in the correlation between fintech innovations and organizational performance while also meeting other secondary goals. The study tries to answer two questions as follows: first, it examines the direct effect of fintech innovation on organizational performance and attempts to identify the unique effects of four types of fintech innovation: mobile payment, mobile banking, Internet banking, and ATM services. Second, it investigates the effect of AI adoption on organizational performance and explores whether there is any mediation effect of fintech innovation on AI adoption. For the current study, data were gathered using a questionnaire distributed among 372 people working at commercial banks and fintech companies in Ethiopia. Managers and employees were part of this sample group, and the questionnaire had a response rate of 97%.

Key Findings

The findings suggest that fintech innovations significantly predict organizational performance among Ethiopian organizations working within the financial sector ($R^2 = 0.336$, $\beta = 0.582$, $p < 0.001$). Among the four sub-factors of fintech innovation, the contribution of mobile payments is more than that of other two factors ($\beta = 0.528$). Mobile banking ($\beta = 0.374$), internet banking ($\beta =$

0.281), and ATM services (β = 0.159) contribute relatively lower. Moreover, artificial intelligence adoption has a significant positive effect on organizational performance (β = 0.560, p < 0.001) and acts as a mediator in the relationship between fintech innovation and organizational performance. As a result, adding artificial intelligence adoption in the research model negatively moderates the positive effect of fintech innovation on organizational performance, with the beta reducing from 0.582 to 0.368 (p < 0.001). The suggested full model (fintech innovation + artificial intelligence adoption) explains 51.9% of variance in organizational performance (F = 169.030, p < 0.001). All seven research hypotheses were validated.

Implications

The conclusions drawn from the study are highly important. In particular, the findings reveal that banks and fintech firms need to invest in innovations in fintech with the use of mobile apps as they will provide more advantages for companies than other kinds of innovations. It may be assumed that the application of artificial intelligence will be a kind of performance multiplier in the context of fintech innovations. Organizations that use artificial intelligence in fintech, like fraud detection and scoring of credits, will show considerably better performance compared to fintech organizations without the use of artificial intelligence. The conclusions drawn from the study are also useful for creating policies. The National Bank of Ethiopia and the Ministry of Innovation and Technology should create certain conditions under which organizations will perform better due to the use of AI in their fintech projects.

5.2 CONCLUSION

Overview

The current research examines the influence of AI implementation on the relationship between fintech innovation and organizational performance in the context of Ethiopian commercial banks and fintechs. The research is important both theoretically and practically, considering the growing technology environment that Ethiopia has been experiencing in the finance industry. The theoretical framework adopted for the current research includes five different models and theories, namely, TAM, TOE, RBV, DOI, and BSC. Seven hypotheses have been formulated in line with the research objectives. Data collection was performed based on the survey approach using the questionnaire, and a total of 372 participants were sampled.

Summary of Principal Findings

Several empirical convergences were established in the course of analysis. First, all four fintech sub-dimensions – namely, mobile payment, mobile banking, internet banking, and ATM services – exhibited a positive, statistically significant relationship with organizational performance. This finding supports Hypotheses H1-H4. Of particular interest is the fact that mobile payments have proven to be the leading predictor ($\beta = 0.528$, $p < 0.001$) of organizational performance, followed by mobile banking ($\beta = 0.374$, $p < 0.001$), internet banking ($\beta = 0.281$, $p < 0.001$), and ATM services ($\beta = 0.159$, $p < 0.001$). These patterns of influence can be considered congruent with the larger trend characterizing the financial sector of Ethiopia, where mobile-first technology is used for the delivery of services.

Second, fintech innovation was found to be a significant predictor of organizational performance ($\beta = 0.582$, $R^2 = 0.338$, $p < 0.001$), thus corroborating Hypothesis H5. The current result demonstrates that about a third of organizational performance variability among the sampled financial firms in Ethiopia can be explained by fintech innovation, implying a rather considerable effect size.

Third, it was found that fintech innovation was a significant predictor of AI adoption ($\beta = 0.463$, $R^2 = 0.212$, $p < 0.001$), thus corroborating the necessity precondition for the establishment of the hypothesized mediating effect (Hypothesis H6). From the theoretical standpoint, investment in the infrastructure development of fintech leads to the generation of data, technological capabilities, and organizational preparedness required for further introduction of artificial intelligence technologies.

Finally, the key finding made by this study is the confirmation that AI adoption is a partial mediator of the fintech innovation-organizational performance relationship (Hypothesis H7). After introducing AI adoption as a mediator, the effect of fintech innovation on organizational performance decreased substantially from $\beta = 0.582$ to $\beta = 0.368$, while the coefficient of AI adoption itself proved to be quite high ($\beta = 0.460$, $p < 0.001$). The proposed regression model accounted for 51.9% of variance in organizational performance ($R^2 = 0.519$, $F = 169.030$, $p < 0.001$). The obtained pattern fits the partial mediation model established by Baron & Kenny (1986). Thus, it can be concluded that AI adoption serves as a significant mechanism of transmitting fintech innovation impact on organizational performance; at the same time, fintech innovation also directly affects performance independently of AI adoption.

Addressing the Research Questions

The results from this study answer the five questions raised in the introduction of Chapter One. Fintech innovation positively influences the performance of the organizations being studied, and this influence is both statistically significant and substantively large; however, its influence occurs via an incomplete mediation process through the adoption of AI innovations. The effect of fintech innovation on organizational performance can be verified through the bivariate coefficient of 0.582, while that of fintech innovation on AI adoption can be confirmed by the beta coefficient of 0.463. The bivariate coefficient for the association between AI adoption and organizational performance can be obtained from the analysis, which is 0.560, while the mediation-model coefficient is 0.460.

Theoretical Contributions

The current study makes numerous contributions from a theoretical perspective. First, it contributes to the still-nascent body of empirical literature on fintech innovation and its impact on organizational performance in Sub-Saharan Africa settings by providing the first systematic analysis of the mediation path that involves all stages: fintech innovation, AI adoption, and organizational performance. The research therefore adds depth to the body of knowledge on the topic by extending the scope of applicability of relevant theories to frontier markets.

Second, partial rather than complete mediation suggests the existence of at least two pathways through which fintech innovation leads to organizational performance improvements: one direct, via reduced costs, process automation, and improved client services, and one indirect, via fintech innovation and AI adoption. These findings support the concept of multi-channel creation of fintech value, as outlined by Gimpel et al. (2018). Thus, fintech value creation is likely to occur through both indirect and direct means, leading to higher organizational performance.

Third, the application of TOE, RBV, and Balanced Scorecard frameworks to the analysis of fintech innovation, AI adoption, and organizational performance in banks in Ethiopia provides an effective combination of theories. This approach leads to better results compared to individual framework application. Moreover, it can serve as a methodology framework for future research on digital transformation and its effects on banking in developing countries.

Practical Significance

From a strategic perspective, the insights gained offer specific direction for managers and executives working in Ethiopian financial institutions. The performance impacts linked to the use of mobile payments and mobile banking over the use of internet banking and ATMs can be interpreted as indicating that investments in fintech technology should focus on mobile banking and payment innovations, especially in situations where mobile access exceeds that of both broadband and ATM technology. Significantly, the partial mediation analysis indicates that in order for financial institutions to fully benefit from fintech investments, they will have to adopt AI alongside the implementation of fintech innovations; otherwise, performance benefits will not be maximized.

The implication from a policy standpoint is that in order to fully leverage performance benefits from fintech innovation, policies that facilitate fintech innovation and AI implementation are necessary in order for there to be performance benefits.

Limitations

Despite the study's contributions, however, there are also a number of limitations associated with this paper that need to be considered in relation to its results. Firstly, being conducted using a cross-sectional research design, this paper does not allow for any strict causal relationships to be established because even though there was a mediation analysis performed, only the collection of longitudinal panel data can allow for establishing any clear causal directions. Secondly, being based on the collection of subjective, self-reported variables, the study raises questions of potential common method bias despite various techniques used in the process to eliminate it. Thirdly, due to the fact that the sample included only Ethiopian financial institutions, the conclusions made by the paper cannot be generalized beyond other Sub-Saharan countries or emerging market economies with higher development. Lastly, the changing nature of regulations and technology in Ethiopia means that some contextual conditions of the research may have changed.

Closing Statement

There is an important time in the development of the country’s financial sector. The combination of the fast pace of spread of fintech, the emergence of advanced abilities of artificial intelligence, and a full-fledged strategy for digital transformation of the country provides numerous possibilities for financial organizations to improve performance, increase inclusion of customers and ensure

effective competition. The results of this study have proven that fintech innovations and adoption of artificial intelligence, especially in their combined form, can be considered reliable sources of organizational success in the financial sector of the country. In connection with digital financial transformation of the state and the goals set by Digital Ethiopia 2030 project, the conclusions made in this work can serve as an excellent basis for making future decisions, forming strategies, and ensuring the effectiveness of the process of transformation.

5.3 RECOMMENDATIONS

5.3.1 Practical Recommendations for Banks and Fintech Firms

Based on the empirical findings of this study, the following actionable recommendations are directed at managers and executives of Ethiopian commercial banks and fintech establishments:

1. Prioritize Mobile-First Fintech Investment

Since mobile payment and mobile banking services have demonstrated a higher performance impact coefficient than other factors (respectively, 0.528 and 0.374), it would make sense for banks to invest more resources into developing their mobile applications, enhancing customer experience, and extending their networks. The focus of attention must be paid to increasing the compatibility of mobile payments between rival mobile banking systems.

2. Pursue a Deliberate AI Adoption Strategy

From the above results, it is evident that artificial intelligence adoption plays an important role in amplifying the benefits of performance improvement related to fintech use. Both banks and fintech companies should develop comprehensive AI adoption frameworks that include fraud prevention, AI-assisted credit scoring, customer service automation using multilingual chatbots, and customer retention through predictive analysis. The order of development and integration should take advantage of current fintech systems and focus on high-impact applications like fraud prevention and AI credit scoring in the short run.

3. Invest in AI and Digital Talent Development

The recorded shortage of skills in the financial sector in Ethiopia is considered to be a structural obstacle towards the implementation of AI technologies. It is recommended that organizations should consider forming specialized data science and AI training centers, graduate recruiting programs, and partnerships with local universities, such as Addis Ababa University, to ensure

sustainable development of AI engineers and data scientists to enable future AI implementation capabilities.

4. Strengthen Cybersecurity Infrastructure

With the increase in the amount of digital transactions and with more AI-based systems being implemented, cybersecurity resilience is not only an option but a must-have strategy. Banks need to incorporate AI-enabled monitoring mechanisms to detect fraudulent activity and implement a zero trust-based approach to their cybersecurity architecture while adhering to relevant regulations by the National Bank of Ethiopia on data security.

5. Foster Fintech-AI Complementarity

Dual-pathway mediation theory posits that optimal peak performance can be achieved if investments made in fintech and AI are considered not as conflicting but rather complementary activities. Companies need to embed AI systems into their teams responsible for fintech product development, such that any new fintech products will have been created in a way that allows the creation of data structures to optimize AI performance.

5.3.2 Recommendations for Policymakers and Regulators

The National Bank of Ethiopia (NBE), the Ministry of Innovation and Technology (MInT), and other relevant regulatory bodies are advised to consider the following evidence-based policy actions:

1. Accelerate AI Policy Implementation

While the National AI Policy framework adopted by Ethiopia acknowledges AI as an important area for development, there have been disparities in its application within the finance industry. There is a need for policy-makers to formulate industry-specific policies regarding the deployment of AI technology within the financial sector, especially in the areas of credit decisioning, anti-money laundering and consumer data privacy, among others.

2. Develop an AI Capacity-Building Ecosystem

Considering the proven skills shortages in data science and AI technologies, policymakers must consider the allocation of funds and the organization of an AI capacity building initiative in the finance sector in particular. This will include developing curriculum at universities, launching

professional certifications, and creating public-private training partnerships. It will also involve recruiting diaspora experts in AI as part of the broader HR4DigitalEthiopia initiative.

3. Strengthen Digital Infrastructure

Deficits in infrastructure such as access to reliable energy and broadband internet connectivity limit the effectiveness that can be gained from advancements in both fintech and the use of AI technologies. In the context of the Digital Ethiopia 2030 agenda, infrastructure investments through which there is provision of electricity and broadband connectivity in peri-urban and secondary cities are crucial.

5.3.3 Recommendations for Future Research

Several important research directions emerge from the limitations and findings of this study:

- Longitudinal Studies: Future studies must employ longitudinal designs using panel data to assess the direction of causality between fintech innovation, AI adoption, and organizational performance, observing changes in their connections over different time periods.
- Moderation Analysis: Scholars need to focus on moderating variables like organizational size, ownership form (government-owned firms or privately held enterprises), the number of years in operation in the digitized service, and the regulation to investigate how they affect the magnitude of the mediating relationship found in this study.
- Qualitative and Mixed-Methods Extensions: Qualitative and mixed-methods research can provide additional insights into the processes through which managers in organizations leverage the adoption of artificial intelligence to gain from their investments in financial technology innovations.
- Sectoral Comparative Studies: Cross-country comparative analyses focusing on fintech and AI innovations in developing countries like Kenya, Rwanda, Nigeria, among others, in sub-Saharan Africa could help separate generalizations from contextual factors to further develop theories in the field.
- Full Structural Equation Modeling: Further investigations will use partial least square structural equation modeling (PLS-SEM) or covariance-based structural equation

modeling (CB-SEM) techniques to conduct indirect effect estimation using the bootstrapping method.

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APPENDICES

ADDIS ABABA UNIVERSITY

COLLEGE OF BUSINESS AND ECONOMICS

DEPARTMENT OF MANAGEMENT

Hello! My name is Alemayehu B. Kibret and I am pursuing my graduate study at Department of Management in Addis Ababa University. This is a questionnaire on *"***The Mediating Role of AI Adoption on the Relationship Between Fintech Innovation and Organizational Performance: Evidence from Ethiopian Banks and Fintech Establishments***"* for the accomplishment of M.Sc. Degree in Management. The response from respondents was kept confidential and used only for academic research purpose. Therefore, you are kindly invited to respond to each of the questions. Your participation is very much appreciated.

If you have any questions,

Alemayehu B. Kibret

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I thank you in advance for your time and cooperation

Section A: Demographics

General Instruction

- Use tick **(√)** mark to indicate the answer for questions presented in choice
- Gender

Male ☐ Female ☐

2. Age

18-30 ☐

31-45 ☐ >45 ☐

3. Position

Manager ☐

IT Officer ☐ non-IT Officer ☐

1. Years of Experience

0-5 ☐ 11-15 ☐

6-10 ☐ >15 ☐

Appendix: Standardized Likert-Scale Questionnaire

1. How would you rate the following Fintech Innovation currently provided by the company?

	Very poor	**Poor**	**Average**	**Good**	**Very good**
Mobile payment	☐	☐	☐	☐	☐
Mobile banking	☐	☐	☐	☐	☐
Internet banking	☐	☐	☐	☐	☐
ATM	☐	☐	☐	☐	☐

Section A: Fintech Innovation

No	Statements	SD (1)	D (2)	AV (3)	A (4)	SA (5)
1	FinTech offers greater convenience compared to traditional financial services.					
2	FinTech provides better access to financial services.					
3	FinTech enables faster and more efficient financial transactions.					

4	FinTech offers better financial security and fraud protection					

Note. SD = Strongly Disagree, D = Disagree, AV = Average, A = Agree, SA = Strongly Agree.

Sub-Section A: Mobile Payment

No	Statements	SD (1)	D (2)	AV (3)	A (4)	SA (5)
1	Mobile payment systems make financial transactions faster and easier.					
2	I find mobile payment services convenient for daily transactions.					
3	Mobile payments reduce the need for physical cash transactions.					
4	Mobile payment platforms provide secure transaction options.					
5	I believe mobile payment enhances overall banking efficiency.					

Sub-Section B: Mobile Banking

No	Statements	SD (1)	D (2)	AV (3)	A (4)	SA (5)
1	Mobile banking allows me to access financial services anytime and anywhere.					
2	Mobile banking applications are user-friendly and easy to navigate.					
3	Mobile banking reduces the time and cost of visiting a bank branch.					

4	Mobile banking improves the accuracy and speed of financial transactions.
5	Mobile banking services increase customer satisfaction.

Sub-Section C: Internet Banking

No	Statements	SD (1)	D (2)	AV (3)	A (4)	SA (5)
1	Internet banking enables me to perform various banking activities online efficiently.					
2	Internet banking enhances transparency and control over financial transactions.					
3	Internet banking reduces the need for in-person visits to the bank.					
4	Internet banking offers secure and reliable transaction processing.					
5	Internet banking contributes to improved operational performance of banks.					

Sub-Section D: ATM (Automated Teller Machine)

No	Statements	SD (1)	D (2)	AV (3)	A (4)	SA (5)
1	ATMs provide convenient access to banking services at any time.					
2	ATM services reduce congestion inside bank branches.					
3	ATMs allow employee to complete transactions quickly and securely.					
4	The availability of ATMs improves customer satisfaction and service efficiency.					

5	ATM services contribute to improved operational performance of banks.

Section B: Organizational Performance

No	Statements	SD (1)	D (2)	AV (3)	A (4)	SA (5)
1	Fintech innovation has improved the efficiency of banking operations.					
2	Service delivery time has been significantly reduced.					
3	Automation has minimized manual errors and processing delays.					
4	Technology adoption has reduced operational costs.					
5	Digitalization has minimized paperwork and resource wastage.					
6	Fintech innovations enhance customer service reliability and consistency.					
7	employee are more satisfied due to faster and accurate digital services.					

Note. SD = Strongly Disagree, D = Disagree, AV = Average, A = Agree, SA = Strongly Agree.

Section C: AI Adoption

No	Statements	SD (1)	D (2)	AV (3)	A (4)	SA (5)
1	I have already adopted FinTech (AI) services.					
2	I regularly use FinTech (AI) platforms for my financial needs.					
3	I am likely to recommend FinTech (AI) services to others					

4	I believe I have the necessary skills and knowledge to use FinTech (AI) effectively.					
5	I am confident in my ability to navigate and troubleshoot issues on FinTech (AI) platforms.					

Note. SD = Strongly Disagree, D = Disagree, AV = Average, A = Agree, SA = Strongly Agree.