

College of Business and Economics

Department of Management

The Influence of Digital Transformation on Banking service Performance: The Case of Bank of Abyssinia

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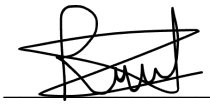
DECLARATION

I, Rediet Girma Techane, hereby declare that this thesis entitled “The Influence of Digital Transformation on Banking Service Performance at the Bank of Abyssinia” is the result of my own independent research work. This work is submitted in partial fulfillment of the requirements for the award of the Master of Business Administration (MBA) degree.

I confirm that this thesis is original in nature and has not been submitted previously, in whole or in part, to any other university or institution for the award of any degree or diploma. All sources of information used in this study have been duly acknowledged and referenced in accordance with academic standards.

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The undersigned certify that I have read and hereby recommend to the concerned academic authority that this thesis submitted by Rediet Girma Techane, entitled "The Impact of Digital Transformation on Banking service Performance at the Bank of Abyssinia," be accepted for further academic procedures in partial fulfillment of the requirements for the award of the Master of Business Administration (MBA) degree.

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This is to certify that this thesis entitled, "**The Influence of Digital Transformation on Banking service Performance: The Case of Bank of Abyssinia**" is appropriate and standard enough to be submitted in partial fulfilment of the requirements for the award of a master's degree in business administration.

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Abbreviations

AI – Artificial Intelligence

ATM – Automated Teller Machine

BoA – Bank of Abyssinia

CAD – Computer Aided Design

DCA – Digital Customer Acquisition

DT – Digital Transformation

ERP – Enterprise Resourcing Planning

ICT – Information and Communication Technology

IoT – Internet of Things

IS – Information Systems

IT – Information Technology

NBE – National Bank of Ethiopia

POS – Point of Sale

ROE – Return on Equity

SPSS – Statistical Package for the Social Sciences

TAM – Technology Acceptance Model

VISA – Visa International Service Association

ABSTRACT

Digital transformation has emerged as a highly significant concern for organizations trying to enhance their efficiency and performance. This study investigates the effect of digital transformation on the banking service performance of Bank of Abyssinia with respect to automation, digital documentation, and real-time tracking of processes while paying attention to the influence of infrastructure and organizational policies.

A mixed-methods approach was utilized in this study. Questionnaires were used to collect quantitative data, whereas qualitative data were gathered via semi-structured interviews and surveys. Statistical analysis of the data involved descriptive statistics, Pearson's correlation, multiple regression, hierarchical regression, and thematic analysis.

It was found that automation, digitization, and real-time tracking had a positive impact on Banking service performance, with real-time tracking being the strongest predictor. The regression analysis showed that the model accounted for 60.5% of variance in Banking service performance. Organizational policy and infrastructure did not act as a moderator of the impact of digital transformation on banking service performance.

Qualitative data proved the findings from the quantitative data analysis; the results indicated that digital transformation positively impacts the efficiency of operations, access to information, ability to monitor transactions, and delivery of services. However, customer reluctance, lack of digital literacy, security issues, and technical barriers emerged as obstacles.

Keywords: Digital Transformation, Automation, Digital Documentation, Real-Time Tracking Systems, Banking service Performance, Organizational Policy, Infrastructure, Bank of Abyssinia.

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CHAPTER ONE: INTRODUCTION

1.1 Background of Study

Internationally traditional bank and branch model is being substituted by a dynamic and continuous digital network which focuses on speed, transparency and real time responsiveness to customers in the global financial system (Baskerville et al., 2020). The digital transformation of banking industry denotes new ways of processing and generating value that are built on the use of highly efficient service chains leveraging technologies such as artificial intelligence, big data analytics, cloud computing and blockchain(Mwenda & Muthimi, 2025). Whereas both developed economies and neighboring countries such as Kenya have demonstrated high digital maturity levels, the financial services sector in Ethiopia still features heavy reliance on physical cash and very low use of technology(Bogale, 2025). Digital transformation in the banking sector entails more than just the integration of new technology; it involves improvement in areas such as innovation, connectivity, efficiency, service quality, and customer experience(Soltani et al., 2025).

Ethiopia is a country experiencing exciting economic changes among which are the establishment of secondary capital markets, the gradual opening of banking services to foreign banks and the entrance of high technology telecommunications companies such as Safaricom (Melesse et al., 2025).Digitalization has been singled out as the major factor that can lead to the nation's economic growth and a 10 percent rise in digital penetration has been associated with a 0.5% increase in the national GDP and even more significantly, with a 0.8% growth in the services sector. However, despite these opportunities, the Ethiopian banking sector is still faced with issues like an overly conservative regulatory framework under the control of the National Bank of Ethiopia, the regular power cuts, and the more expensive nature of the

unreliable internet connections which hinder the success in the implementation of digital banking solutions(Geda, 2022).

Bank of Abyssinia is rated as one of the top five private commercial banks in Ethiopia by the market share of both deposits and lending. It has a very good public image for the use of technology, which was indicated by its virtual banking services and the signing of global payment partners such as VISA CyberSource. Over the two fiscal years (2018/19 and 2020/21), the bank has been dynamically growing in line with expansion in both physical facilities and clientele as the bank increased its ATM network to 1, 078 terminals; customer count reached 5 million; and the number of mobile banking users rose to 708, 945. Nevertheless, mobile penetration is still at a low level since the figures of mobile banking users with the bank only correspond to about 14 percent of the total customers in that year (Geda, 2022).

Digital transformation is a crucial component of the redesigning of the service because it simplifies the exchange of information, finances, and service delivery (Mwenda & Muthimi, 2025; Uka, 2025). Banking service performance other than financial measures in terms of operational efficiency, service quality, responsiveness and reliability. While the business systems will automate the regular processes, thus reducing the human error and speeding up the delivery of services, real-time monitoring will ensure greater transparency across the internal processes and provide predictive response to interruptions (Li et al., 2025). Also, blockchain technology adds to the trust and transparency concept because it produces transparent records of transactions that cannot be changed, so that the trust between the bank and its clients can be strengthened(Uka, 2025). Similarly, digital documentation ensures that quality of information is improved and becomes easily accessible through conversion from paper-based systems into electronic documents, whereas real-time tracking facilitates the instantaneous availability of information(Soltani et al., 2025).

Bank of Abyssinia is running its operations under a "sustaining innovation" model, where it barely changes its existing processes to be able to face new competition. On the other hand, the government does not coordinate the use of shared assets such as data storage or cybersecurity, the bank is forced to incur high costs for these items independently(Uka, 2025). Moreover, there is a lack of empirical data on how digitalization can impact the banking service performance specifically in the Ethiopian setting since most local studies only concentrate on financial profitability indicators such as Return on Equity (ROE) (Bogale, 2025).

Hence, this study aims at finding out how digital practices such as automation, real, time tracking, and digital documentation can make Bank of Abyssinia's banking service more efficient, accurate and reliable in an industry that is becoming increasingly unstable and competitive.

1.2 Statement of the Problem

Organizations are making DT a strategic objective to make their operations more efficient, competitive, and operationally successful. In the banking sector, digital technologies such as automation, real-time tracking systems, and digital documentation tools are increasingly being adopted to improve internal processes and banking service delivery(Vial, 2019). Previous studies have shown that digital transformation can improve banking service performance in many ways including better coordination between parties, more transparency about how goods move through the supply chain, lower costs to operate the service, and faster responses when something goes wrong (Akindote, 2023). Therefore, Digital Transformation (DT), in many cases, is considered an essential tool for enhancing banking service Performance in the Banking Sector today.

While there is significant global research regarding digital transformation and banking performance, there is very little empirical evidence available that is related to digital transformation and banking service

performance in developing nations (Egodawele et al., 2022). In this study, the term “little research” refers to the limited availability of empirical and quantitative studies that specifically examine the relationship between digital transformation and banking service performance within commercial banks in developing economies, especially in Ethiopia. Most of the previous digital transformation related research focuses on manufacturing firms or digital transformation in the banking industry from a customer service viewpoint with minimal attention paid to service performance in banks (Vial, 2019).Furthermore, there is insufficient research that examines the specific effects of key digital transformation dimensions namely automation, real-time tracking, and digital documentation on banking service performance within Ethiopian commercial banks. These dimensions are operational and measurable in terms of banking situations and have been partially implemented at the Bank of Abyssinia making them suitable for empirical study within resource-limited settings. In the case of Bank of Abyssinia, there is a lack of documented empirical studies that assess how digital transformation initiatives influence its service performance (Bogale, 2025). This gap limits our ability to understand DT from an academic perspective and limits the ability of managers to make decisions related to DT in this space.

The world of global banking is no longer linear and based on branch but more mobile, connected and agile digital networks where speed, transparency and real-time responsiveness are the important elements(Preindl et al., 2020). However Ethiopian banking is utterly underdeveloped and is dominated by low levels of technological adoption as well as high cash requirements (Bogale, 2025).In addition to adopting virtual banking, Bank of Abyssinia has been on the forefront addressing the digitalization of the banking industry and it has also collaborated with other international providers such as VISA CyberSource. However, the bank has a superficial digital presence with reference to the overall number of clients. At 2020/21, mobile banking customers accounted for only 14% of the total number of customers in the bank, such as the 2 times number of users(Geda, 2022). From this, we can conclude that the

implementation of digital service is restricted, and its influence on banking service performance has not yet fully been achieved.

The Ethiopian financial industry is immature in terms of digitalization due to the shortage of infrastructure (Constant power cuts and poor and expensive internet connection) leading to the high downtime of the services. In addition, the NBE has a strict regulatory environment which usually takes over a year to allow new digital products to be introduced, thereby generating a stalemate to banks seeking to revamp their service delivery chains. The additional problems within the bank such as the inadequacy of staff and customers in digital literacy and high turnover of IT professionals make the adoption of a digital culture by the bank even slower. Nationally, however, the resulting resource pooling to essential common resources like data storage and cybersecurity that transform Bank of Abyssinia into a highly independent cost is forbidden by a pooling failure (Geda, 2022). It implies that such restrictions can reduce the effectiveness of digital transformation on the quality, responsiveness, and reliability of services.

However, as a research perspective, it is odd to discover traces of the influences of digital transformation in Ethiopian banking service. The local studies available to us now just pay attention to banking service performance indicators like Return on Equity (ROE), and do not pay much attention to the most valuable service performance indicators like operational efficiency, process flexibility and information reduction distortion (bullwhip effect). As highly sophisticated competitors and companies such as Safaricom enter the market, Bank of Abyssinia is faced with a highly critical challenge of dropping off the sustaining innovations and moving on to a radical shift in its business model should it survive. This paper will fill this gap and consider how digital tools which include automated, time tracking, real time, and digital documents can be capitalized on to extract the maximum value possible to the banking service performance at Bank of Abyssinia in this kind of limited environment (Bogale, 2025). Furthermore, the connection between digital transformation and performance has been found to be

ambiguous in the literature where on one hand it has positive impacts whereas, on the other hand, there are some researches that show negative short term impacts owing to high investment costs, known as the "profitability paradox"(Oehlschläger et al., 2024).

Addressing this knowledge gap is important for both theoretical and practical reasons. From a theoretical perspective, examining digital transformation and service performance in the banking sector of a developing economy extends existing literature and tests established theories in a new context (Özkanlısoy & Akkartal, 2021). Practically, understanding how digital transformation affects banking service performance can help BoA improve efficiency, reduce operational costs, and enhance service reliability. With a focus on the three dimensions, it is also possible for the study to examine banking service performance beyond financial measures in terms of operational efficiency, process flexibility, and information flow accuracy, crucial but rarely explored outcomes of Ethiopian banking studies. Additionally, the findings can guide bank managers and policymakers in making informed decisions regarding technology investments and operational strategies. Methodologically, the study contributes empirical evidence that can serve as a reference for future research on digital transformation in banking service-sector.

To address the identified problem, the study employed a quantitative research approach using BoA as a case study. Primary data was collected from employees involved in service delivery and digital banking activities through structured questionnaires. The study examined the effect of automation, real-time tracking, and digital documentation on banking service performance using appropriate statistical analysis techniques. This approach enabled the researcher to empirically test the relationships between the variables and achieve the stated research objectives.

1.3 Research questions

The main research question is: “How does digital transformation affect the banking service performance of Bank of Abyssinia?”

The specific research questions are:

- What is the effect of Automation on banking service performance at the Bank of Abyssinia?
- What is the effect of Digital Documentation on banking service performance at the Bank of Abyssinia?
- What is the effect of Real-time Tracking on banking service performance at the Bank of Abyssinia?
- Does infrastructure have a moderating effect on the relationship between digital transformation and banking service performance at the Bank of Abyssinia?
- Does organizational policy have a moderating effect on the relationship between digital transformation and banking service performance at the Bank of Abyssinia?

1.4 Objective of the Research

The general objective of the study was to investigate the influence of digital transformation on banking service Performance at the Bank of Abyssinia.

The specific objectives are:

- The study examined the effect of Automation on banking service Performance at the Bank of Abyssinia.
- The study examined the effect of Digital Documentation on banking service performance at the Bank of Abyssinia.

- The study examined the effect of Real-time Tracking on banking service performance at the Bank of Abyssinia.
- The study examined the moderating effect of infrastructure on the relationship between digital transformation and banking service performance at the Bank of Abyssinia.
- The study examined the moderating effect of organizational policy on the relationship between digital transformation and banking service performance at the Bank of Abyssinia.

1.5 Significance of Study

This study contributes to future researchers who are willing to conduct a study on this topic. It will provide insight to BoA management and banking service professionals to gain an understanding while planning digital strategies for their organizations. The findings of this study can assist policymakers to draft policies workable at the institutional level as well as nationwide.

1.6 Scope of the Study

Geographical Scope

The scope of this study was geographically restricted to the Bank of Abyssinia, the Head Office, and the selected district offices in Addis Ababa. The focus of the study was Addis Ababa, which is the focal point for strategic decision-making, digital infrastructure and banking service and associated operations of the bank. Because of the particular focus on this site, the study can provide useful information from the major departments involved in banking service and digital transformation activities such as procurement, operations, information and communication technology, and finance. The findings of this research are applicable to the Bank of Abyssinia within this geographical context, but not to be generalized to other banks or regions without warning.

Population Scope

For this study the participants were professional staff and management teams of Bank of Abyssinia, who are either directly involved in operation and digital transformation or at any moment involved with these two areas. These were employees from the following major departments:

Table 1:Population Scope

Departments	
DCA	To get the employees' opinions about technical implementation, maintenance, and integration of digital tools such as automation and tracking systems.
Central Addis district branch Employees	To see from the perspective of employees how digital transformation has affected work efficiency and service quality.

Source: Information from BoA

Theoretical Scope

The theoretical perspective of this study is limited to studies that focus only on the role of digital change in the performance of a service-based organization in the management of banking service. In particular, the analysis is based on three dimensions of digital transformation automation, real-time tracking, and digital documentation as independent variables. Essentially, the dependent variable is banking service performance, measurable by operation efficiency, flexibility and reliability.

In addition to performance in the banking service practice, the research also considered contextual moderating factors of infrastructure, organizational policy and leadership, and awareness and skills that explain differences in the success of digital transformation initiatives.

It is a theoretical paper on digital transformation and banking service and therefore does not represent the more holistic corporate performance objective of financial or customer satisfaction.

1.7 Limitation of the Study

Although the research aims to achieve valid results, it is acknowledged that the methods used may have limitations. The researcher did not study other variables such as organizational culture or government regulations which may also affect banking service. Additionally, the study relied on quantitative data from a sample, which may have limited generalizability to all banks in Ethiopia.

1.8 Definition of key terms

Automation: Is the use of technology to handle repetitive, rules-based processes in the banking industry. It improves speed, accuracy, compliance and operational efficiency while reducing manual work and operational costs (Finio & Downie, 2026).

Digital Documentation: Refers to the process of creating, storing and managing administrative, accounting and financial documents electronically by replacing paper-based process (Baskerville et al., 2020).

Real-time Tracking: Refers to the use of digital technologies to monitor and access up to date information on transactions and operational processes as they occur (Preindl et al., 2020).

Service performance: Service Performance in the Digital Environment is a multi-dimensional construct that assesses the ability of an organization in the effective use of technology in meeting their strategic goals in the financial, operations, and customer-oriented areas(Soltani et al., 2025).

Infrastructure: is, in a digital banking environment, the mathematical and physical foundation for all service delivery and analytical capabilities (Linda Onyeanuforo & Bilkisu Mohammed Affiliations, 2024).

Organizational policy: is the frameworks, regulations, and procedures that frame the bank's operations and how it aligns itself with digital transformation (Linda Onyeanuforo & Bilkisu Mohammed Affiliations, 2024).

1.9 Organization of the study

The study is organized into five main chapters. Chapter One presents the introduction, including the background of the study, statement of the problem, research objectives and questions, significance of the study, scope of the study, and definitions of key terms. Chapter Two reviews related literature, covering theoretical frameworks, empirical studies, and the identified research gap relevant to digital transformation and banking service performance. Chapter Three outlines the research methodology, including the research design, population and sampling techniques, data sources, data collection instruments, methods of data analysis, and ethical considerations. Chapter four outlines the data analysis including demographic, correlational, regression and Moderation analysis. Chapter five includes major findings and recommendations. Finally, the study concludes with references and appendixes as appropriate.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter looks at the theoretical and empirical literature in digital transformation and banking service performance in banking sector. The purpose of this review is twofold, lay the academic foundation for the research, identify weak points in knowledge, and create a conceptual model to guide the research.

The first section of this review relates to the scope and history of digital transformation and how the real transformation compares to the inceptions of digitization and digitalization. It then looks at the evidence, particularly in the case of the Ethiopian banking sector, to see how practices such as automation, real-time tracking, and digital documentation have enriched the organizational performance. Finally, this chapter explores research gaps in research and provides a conceptual framework for research.

2.2 Theoretical review

2.2.1 The concept of digital transformation

Digital transformation (DT) refers to a deep and broad transformation that affects the whole and much more than use of new technologies. It includes Cyber-Physical Systems, IoT, Big Data, blockchain, etc. to organize the value chain and shatter the “silos” of the organization (Preindl et al., 2020).

Digital transformation is not just about technology. Even though technology may be the driver, it is only when technology changes the strategy, system, culture and mindset of the organization that transformation takes place (Alabdali & Salam, 2022). It also involves enhancing employee capabilities, empowering leaders, and reinventing business models (Ning & Yao, 2023). When an organization applies technology to enhance user engagement but doesn’t modify the business logic/organizational structure, the solution is often seen as being a “sustaining innovation” not a true digital transformation (Geda, 2022).

Digital transformation is often considered the end stage of sequential evolution. We often refer to the sequence: Digitization, Digitalization and finally Digital Transformation. Digitization refers to the first-level attempt at converting an analog signal or that of a manual process or paper-based process into an electronic data format. It saves time and resources. Digitalization is the link for transformation. An entity utilizes information technology systems and digital information to enhance and/or optimize one or more specific business processes. Switching to Digital Means for Instance, doing away with record keeping by hand for a software system. Digital Transformation is a successful conversion of the efforts of digitization and digitalization causes how a company operates (Jaleta, 2023).

From technological perspective, the core architecture of DT is often described using the acronym ABCD which includes Machine Learning (ML) And Artificial Intelligence (AI), Blockchain for secure, real-time tracking and transparency, cloud computing for scalable storage and connectivity and Big Data which helps in predictive analytics and decision-making (Fan & He, 2025). In banking service, the transition from linear sequential processes to digital supply networks or DSNs is called digital transformation. It improves visibility, agility, and responsiveness, thus creating competitive advantage (Damtew & Brihane, 2022). Digital transformation also creates superior service and firm performance and creates unique advantages that rivals may find hard and costly to copy. In response to the forces caused by switching costs and customer-led demands for swift, reliable and cost-effective interaction, in banking, DT portfolio is a shift from branch banking to relationship based banking and digital services (Bogale, 2025).

The main goal behind digital transformation is to enhance the operational efficiency and effectiveness of business activities by employing data resources for strategic positioning that produces a determined outcome, such as a lowered cost of disruptive risks, an improved capacity for dealing with market volatility, or establishing a better fiduciary bond with customers (Baskerville et al., 2020).

2.2.2 Levels of digital transformation

The digital transformation is a journey through a series of different stages. In this journey different maturity levels are passed through. The range of digital transformation levels extends from the simple manipulation of data into usable formats, to the full-scale overhaul of enterprise business models within large-scale business networks.

At a conceptual level, digital transformation is the final stage of a three-part progression:

The process begins with digitization where the physical record is converted to a digital form. This can be by scanning a paper document or by converting a voice message into digital format. By ensuring data accuracy, resources and time can be saved. Digitalization is a bridge to transformation, where an organization uses computer systems and the internet to streamline and make more efficient, specific business processes. The process of digital transformation is where an organization undergoes a complete change in the way it functions and generates its income (Jaleta, 2023).

From implementation perspective, digital transformation can be divided into three separate phases. In the initial phase, companies focus on local level applications of the technology, including e-sourcing and radio frequency identification. In the intermediate phase, industrial applications will be developed in a limited sense. This will be through the implementation of smart services or "smart factory" systems. This advanced stage entails the linking of the entire service using intelligent application tools. The supply chain integration covers sourcing, production and retail levels (Preindl et al., 2020).

Research into Chinese listed firms suggests a hierarchy based on the depth of organizational integration: At the initial level the emphasis is on integrating with an organization’s fundamental systems to optimize its internal processes and operations. Advanced level involves a deeper transformation of business processes that goes beyond straightforward internal embedding. This business process essentially shapes

the fundamental business activities within the market and integrates different business ecological situations, bringing about new growth (Fan & He, 2025).

Digital maturity models (DMM) are structured collections of elements describing a specific aspect of maturity of an organization used to take a snapshot of an "as-is" capability set and highlighting specific gap areas that could be targeted for movement on the transformation journey (Jaleta, 2023). Digital maturity models don't view transformation as a discrete event but rather as a multi-stage evolution. These levels refer to certain models and assessment dimensions that are as follows.

The WCO Digital Customs Maturity Model (DCMM) has been developed for international customs and trade. There are six stages of digital maturity which are Initiate, Implement, Consolidate, Engage, Enhance and Embark.

The focus of Initiate is on digitizing transactions, making it easier to automate office work or run a simple website using it. The second stage (implement) refers to e-processing of declarations and dematerialization of such documents. At the consolidate level an organization does data harmonization and pre-arrival processing. Integrated e-services with mobile apps and a joint risk management system can be found at the fifth (engage) level. Enhance is level about e-commerce solutions, 24/7 automated clearance, cross-border info exchange. Embark refers to the highest level of usage of emerging technologies. Drones, blockchain, and one-stop shops (Jaleta, 2023).

Obviously, it is not always practical (or wise) to assess the maturity on a scale of 1 – 5. According to research on Ethiopian customs, maturity is often used in practice to assess six subjective dimensions that test people's perceptions of their organizations. These dimensions include digital Strategy, which refers to the existence of a well-defined policy with visible and understandable examples by executives that understand the value of the tools. Digital technology focuses on accessing credible infrastructure and

emerging technological tools (AI, IoT or Machine Learning) through digital technology. Digital culture refers to a set of values that manifests in employees who trust data more than their "gut feelings" and play an active digital "growth mind-set". Digital Process can be defined as how much "routines" are being "redesigned" to help facilitate technology. Digital Organization encompasses the alignment of leadership and talent management with the capabilities required in the progressing digital world. Digital Stakeholders & Customers refer to the extent to which other parties are engaged and their views captured digitally (Jaleta, 2023).

To reach the highest levels of maturity, organizations are advised to adopt a phased approach which leads to a transition from internal vision to external integration. At the Visionary level, there is a long-term vision for the company and its entire service, one that will last between fifteen to thirty years. At the assessment level, the current hardware, software, people, processes and data will be assessed. At the Pilot level, a minimum of three pilot projects is being run. These pilots are in line with the methods used by start-up companies and are designed to enable quick implementation. At the Network level, the roll out of service wide systems across the company will involve collaboration with key business partners to promote the adoption of service 4.0 throughout the organization (Preindl et al., 2020).

2.2.3 History of digital transformation

The historic substantiation of the assertion is not a singular occurrence, but the series of events over decades which have changed how an enterprise creates value being run through the operating of a set of functions and complex networks across the world. IT research has been ongoing for more than 50 years further back from there but journey to transformation has gone through stages of maturity and much technological revolutions (Damtew & Brihane, 2022).

Historical development is often divided into three phases that are built upon one another.

The process of converting manual, paper operation or analog electronic signals to digital electronic data so that error can be reduced and resources can be saved is termed digitization. Computer systems and Internet technology were applied to better or enhance a specific business process to achieve digitalization which is also known as a steppingstone to transformation. The replacement of manual recordkeeping by means of a software application, this bridging stage is called digitalization. In the last stage, digital transformation and change is radical. Organizations are redesigning business models and user experience using data and technology (Jaleta, 2023).

In the financial field, the history of digital transformation shows a typical pattern of evolution that has shifted from selling products in branches to selling relationship digitally. The use of ATMs and debit cards made it possible to access money electronically or outside the bank's premises. From the Reference Year 2010 onwards, there was massive exponential growth in the use of mobile and internet banking. In Ethiopia, the essential milestone was National Payment System Proclamation No. 718/2011 which required and favorably promoted the use of electronic banking services (Bogale, 2025). Technologies like cloud services, blockchain, AI, big data, and other fintech's are now becoming cheaper and better substitutes for banking (Baskerville et al., 2020).

The year 2020 constitutes a major historical watershed regarding digital transformation. The COVID-19 pandemic was a super accelerator that effectively shortened the time frame for moving digital at a much faster pace. Because of the restrictions placed on people and banks in response to the pandemic, there was an essential need to conduct financial activities safely and remotely through digital means. Many organizations were compelled to move away from just "sustaining innovations" to deeper and integrated use of digital means to do business (Baskerville et al., 2020).

2.2.4 Digital transformation practices

The ability to enable and develop digital transformations including automation, real time monitoring and digital documentation enables businesses to create new digital supply networks that can be very interactive and responsive to changes in customer demand. The three key areas in developing a Digital Supply Network include:

Automation in banking service has changed the way work is done, and decisions are made in business. The use of automation in workflow streamlines the way an organization performs tasks as it replaces the need to perform manual repetitive tasks with automated information-based systems and has resulted in cost savings, reduced lead times and less opportunity for human error (Uka, 2025). With an increase in automation decision making, it is becoming more reliant on information-based systems using deep learning and analytical tools to prepare, recommend or make decisions. Automating business process results in fewer opportunities for human discretion which creates greater stability in business processes and ensures that all actions are compliant with company policies. However, automation does not remove the need for humans from decision-making processes. Most companies will have systems that provide recommendations but leave the ultimate decision to a human for more complex or intuitive decisions (Preindl et al., 2020).

Real Time Monitoring and Visibility, primarily enabled by Internet of Things (IoT), Radio Frequency Identification (RFID) technology and sensors, creates "real-time firms." With the creation of ubiquitous visibility by exchanging information in real time between physical and digital flows, companies can monitor their assets (e.g., truck movement) and accurately predict when they will arrive. Enhanced responsiveness in the sup banking service ply chain enables it to react quickly to changes in the market or disruptions and increases its agility. Resource usage is tracked in real time allowing for continual cost savings via real-time process improvements as well as a reduction in informational distortions or the

"bullwhip" effect (Preindl et al., 2020). In industries where safety is a concern (i.e., food), tracking technologies enable companies to maintain trust in their customers by providing tamper-evident records of products journey from origin to delivery (Uka, 2025).

Digital documentation represents the replacement of paper-based, manually created business processes with those supported by IT and cloud-based systems. By digitally creating and managing document flows, significant amounts of resources are saved by eliminating stationery expenses as well as providing an alternative use of space by using more efficient digital storage (Baskerville et al., 2020). Digital documentation also provides an opportunity to generate profile databases for intelligence-driven marketing analysis and enable identification of potential customer needs. Through electronic management of past purchasing data, organizations have better opportunities to evaluate suppliers and plan future procurements (Alabdali & Salam, 2022).

All three practices individually create capabilities that are difficult to replicate, which ultimately result in a long-term competitive advantage. Organizations that can incorporate these technologies will be able to lower transaction costs, manage environmental uncertainty more efficiently and improve their fiduciary relationships with their customers (Baskerville et al., 2020).

2.2.5 The influence of digital transformation on banking service performance

The digital transformation process affects the performance of banks greatly, but research has indicated a dual impact, where there is an immediate positive influence in certain areas while a "profitability paradox" exists elsewhere.

In relation to Saudi Arabia and Tunisia, digitalization has had a positive and statistically significant effect on the performance of the bank. Some of these positive impacts are: Improved Financial Indicators like increased digitalization maturity has been linked to improved Return on Assets (ROA) and Return on

Equity (ROE). Digitalization makes the operation efficient, optimizes processes, and leads to lower costs in the long run. Digital technologies help in building better relations with customers through real-time information access, usability, and customization. Tools related to digitalization help prevent fraud and improve monitoring and control. The use of digital technology increases reputation and improves the competitive edge of the bank.(Soltani et al., 2025; Walid, 2026)

On the contrary, studies of Vietnamese joint-stock commercial banks prove that digital transformation can affect performance negatively at some stages. The "profitability paradox" states that while new technologies improve the efficiency of processes, huge costs of investments into the IT infrastructure, workforce, and correction of system errors can decrease profits in the beginning. On average, five years after the process of transformation positive effects start showing on the performance of firms. Transformation is considered by investors as a good signal of the development of a firm only in combination with infrastructure investments; otherwise, it can be perceived as a bad one related to profitability.(Nguyen-Thi-Huong et al., 2023)

Digital transformation affects not only financial performance but also the environmental performance of banks: In Tunisia, digitalization works as an impetus for environmental innovations, allowing banks to use less paper, avoid transportation, and reduce their ecological impact in general. Digital instruments make processes in banks more transparent and therefore improve management practices and create better corporate culture. (Soltani et al., 2025)

2.2.6 Theoretical framework

Influence of DT on Banking Service Performance can be viewed from multiple theoretical perspectives such as the Resource-Based View (RBV), Dynamic Capabilities (DC), TOE framework, Organizational Information Processing Theory (OIPT/IPT), and Organizational Policy (OP) approaches. These theories

describe the interaction between digital factors (automation, real time tracking, digital documentation) with infrastructure and policies that impact performance results.

The Resource-Based View claims that an organization creates sustained competitive advantage when it utilizes its strategic resources that are valuable, rare, inimitable, and non-substitutable. Thus, automation is a strategic capability for managing processes within the organization, including order processing, deliveries, and billing, which allows decreasing labor costs and expenses for materials without lowering the level of service quality. With the implementation of automation tools within the process, the banks create corporate value, improve their reputation, increase customers' attraction, and become more efficient in operation, which positively impacts ROA and ROE(Soltani et al., 2025; Tiwari et al., 2024).

According to Dynamic Capabilities theory, dynamic capabilities refer to an understanding of how banks use, develop, and recombine internal and external competencies to cope with the rapidly changing environment. Digital documentation shows the shift towards the use of digital technologies for enhancing innovation and connectivity. The capability allows banks to shift from paper-based innovations to innovations based on digital technologies while enhancing organizational agility. Therefore, banks become more responsive to the changing environment and can easily align their business strategy with customer needs, including delivery of services remotely. Besides, digital documentation ensures environmental sustainability through minimizing the usage of paper(Shiferaw & Amentie Kero, 2024; Soltani et al., 2025).

Organizational Information Processing Theory (IPT/OIPT) stresses the significance of technological innovation for information processing and uncertainty reduction. Real-time tracking leads to immediate accessibility to information about customer needs and service operations; hence, there will be greater transparency and reduced information asymmetry between banks and their customers. The increased

transparency enhances customer relationship management because customers can get updated on various products and services offered, as well as the promotions that can help them. In turn, there is higher customer satisfaction, which is an important determinant of organizational success. Real-time tracking also enhances responsiveness in capturing individual customer needs(Oehlschläger et al., 2024; Walid, 2026).

In this connection, the Technology-Organization-Environment (TOE) theory states that there are three components that determine the choice of technology, namely technological factors, organizational factors, and environment. Under TOE, organizational policy is one of the key variables, which include managerial support, information security policies, and standardization of business processes that play a crucial role in the process of transformation. Environmental variables, such as government incentives and competition, also drive banks towards the implementation of digital technology(Wang et al., 2024).

While RBV, DC, and IPT consider the role of capabilities of organizations, the organizational Policy approach considers the factors that affect the effectiveness of digital transformation in terms of constraints. The infrastructure is technical alignment that includes the consistency and coordination of digital technologies within the organization. Profitability paradox indicates that insufficient infrastructure might make digital technologies decrease profitability because of the failure of systems, costs related to implementation, and expenses on human resources. Organizational policies are needed for strategic alignment of digital technologies and organizational goals. Policies help to achieve psychosocial alignment through handling attitudes of employees to digital transformation (Oehlschläger et al., 2024).

In conclusion, in the context where automation, digitization, and real-time tracking of processes are well-supported by effective infrastructure and organizational policies, better service performance can be gained by banks. The following factors include better financial performance as measured by higher ROA and

ROE; better operational performance as measured by shorter process lead times and lower operating costs; higher sustainability due to environmentally friendly activities; and better competitiveness in the banking industry**.**

2.3 Empirical review

Various empirical studies carried out on DT in the banking industry indicate a complicated scenario where its impact on performance is highly dependent on geographical area, bank size, and particular phase of adoption. Where some studies point to positive effects on financial and operational performance, others point out the concept of profitability paradox where there are initially negative effects on performance owing to substantial costs incurred for investments. Various empirical studies conducted in both developed and developing countries point to strong positive correlation between DT and bank performance. For example, a study conducted in Saudi Arabia based on 10 listed banks using Saudi DT index (Qiyas) reveals that DT level has positive effect on performance especially ROA (Walid, 2026). Moreover, findings from Tunisia illustrate a positive correlation between digitalization and financial performance due to better customer relations, competitive advantage, increased transparency, and good management practices(Soltani et al., 2025). In China, one study conducted on 60 commercial banks concluded that there was a positive correlation between digitalization and commercial performance despite the difference in the strength of the impact based on the size of the bank. Moreover, empirical results from Sri Lanka also demonstrate the influence of digital transactions on financial performance, which prompts banks to pursue digitalization(Walid, 2026).

However, literature on the topic reveals some cases where the effects of digital transformation on the profitability of an organization could be neutral or even negative. In Vietnam, according to research carried out among joint-stock commercial banks, digital transformation was found to have had negative impacts on ROA and ROE within the period 2015 to 2021. The reason for this is primarily attributed to

the considerable amounts of money spent in the development of IT systems, personnel, and other changes(Nguyen-Thi-Huong et al., 2023). Likewise, empirical evidence from Indonesia indicates that banking digitalization negatively influences the financial performance of a bank because the investors are still skeptical regarding the evaluation of firms which make extensive use of digital technologies(Walid, 2026). Such evidence supports the notion of the "profitability paradox" where the use of digital technology does not result in immediate increase in profits despite increasing efficiency, because of the costs of transformation. Organizations are estimated to take around five years of post-implementation to feel the effects of digital transformation on performance(Nguyen-Thi-Huong et al., 2023).

Other than financial results, digital transformation also impacts operational and environmental performance. Through digitalization, the process of operation is streamlined, costs associated with operation in the long run are minimized, risk management is improved and fraud detection becomes better. Digitalization in Tunisia has also been found to be a trigger for green innovation, since it minimizes the use of paper and transportation needs, hence minimizing the environmental impact on the operations of the banks(Nguyen-Thi-Huong et al., 2023; Soltani et al., 2025).

Moreover, empirical research shows that the success of digital transformation is affected by several important factors. One of them is the quality of the infrastructure, which is one of the main factors limiting successful implementation of digital initiatives due to poor IT infrastructure and the upgrading of which positively affects investors' confidence. The macroeconomic factors are important, as well. For instance, researches conducted in Saudi Arabia show the positive correlation between economic growth, bank size, performance, and digital transformation. Moreover, the impact of the COVID-19 pandemic on digital transformation turned out to be unusual. The cost of digital transformation was quite high, but the pandemic made some banks profitable(Nguyen-Thi-Huong et al., 2023; Walid, 2026).

2.4 Research Gaps

The given resources present several research deficiencies related to digital transformation and its impact on performance in different industries, including banking. Such deficiencies can be classified as being based on the conceptual, methodological, contextual, and process-oriented aspects(Oehlschläger et al., 2024) Conceptually, there is a lack of theoretical embedding and empirical investigation of advanced technologies like Digital Twins (DT), which leads to conceptual confusion. Current literature mainly concentrates on technical fundamentals of DTs; at the same time, managerial implications of this phenomenon are still in the early stages of development. At the same time, the connection between digital transformation and organizational performance is not clearly established by researchers, which results in the emergence of the "profitability paradox" that debates on whether digitalization improves or impairs organizational performance and whether its effect is linear or U-shaped. In terms of theoretical gaps, one should pay attention to Strategic Management where no agreement on DC practice is achieved, and very few studies investigate the relationship between Resource-Based View (RBV), Knowledge-Based View (KBV), and DC within business-to-business exchanges and supply chains. Besides, many authors concentrate on transactional issues, for instance, purchasing intentions, ignoring other important issues, namely trust, brand loyalty, and customer stickiness.(Chang et al., 2024; Nguyen-Thi-Huong et al., 2023; Tiwari et al., 2024)

In terms of methodology, most of the literature available uses cross-sectional data, which makes it impossible to study changes in the user experience pre- and post-digital transformation. For this reason, it becomes very important to undertake longitudinal research to be able to observe changes in the user behavior and its impact(Wang et al., 2024). There are problems related to the difficulty of measurement, especially in the case of the banking industry research, as the concept of digital transformation is usually measured through such indicators as keyword frequencies in annual reports. It becomes necessary to

develop more precise measures of digitalization. Finally, there is no methodological triangulation as there are few mixed-method studies (Nguyen-Thi-Huong et al., 2023).

The contextual and geographical gaps are also equally evident. Digital transformation and dynamic capabilities research is lacking in areas like Africa, America, and Eastern Europe, necessitating the undertaking of research in underdeveloped and developing countries. (Shiferaw & Amentie Kero, 2024)Sector-based gaps are also evident, especially in the finance and agribusiness industries, which lack empirical data. For instance, the impact of digitalization on both financial performance and sustainability in emerging markets such as Tunisia is not well researched. Additionally, the literature focuses on big firms that are listed, with very little information being available on small and medium enterprises (SMEs), as well as non-listed firms. In the case of business-to-business operations, the research should go beyond single firm-based analysis to look at flexibility creation in a wider supply chain context(Soltani et al., 2025; Tiwari et al., 2024).

Another problem related to digital transformation is associated with process-oriented limitations in the research. Namely, many of the empirical studies examine the digitalization process at certain stages of the transformation – for example, adoption or implementation; however, there are few studies that examine the full cycle of digital transformation process including adoption, application, and performance stages (Wang et al., 2024). Moreover, the influence of moderating factors of both internal and external nature on the link between digitalization and performance remains under-examined. For example, factors of information processing capacity, which can impede efficient digital capability use, have become examined just recently(Oehlschläger et al., 2024; Soltani et al., 2025).

2.5 Conceptual Framework of the study

Digital transformation is viewed as an independent variable, while banking service performance is seen as the dependent variable in this study. Digital transformation is operationalized using three primary components: automation, digital documentation, and real-time tracking, whereas banking service performance is captured using cost efficiency, reliability, responsiveness, and service quality. The framework draws on a number of theories including Resource-Based View (RBV), Dynamic Capabilities (DC), Technology–Organization–Environment (TOE), and Information Processing Theory (IPT/OIPT).

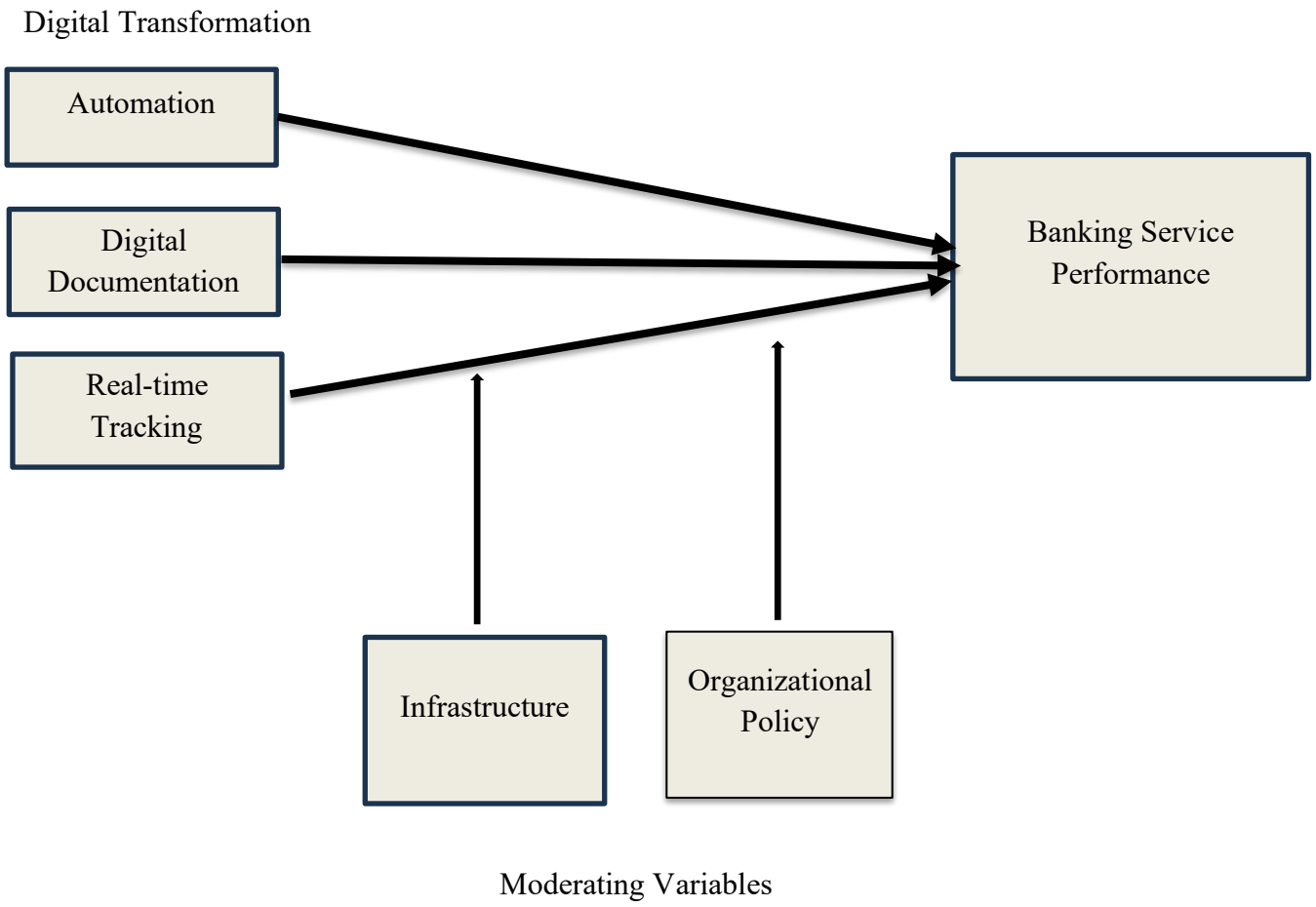
The RBV theory states that organizations achieve a sustainable competitive advantage when they have valuable and hard-to-imitate resources. Digital technologies like automation technology, digital documentation, and tracking technology are strategic resources that improve operational capacity and performance. Automation saves repetitive manual operations, increases efficiency and decreases operational costs hence leading to efficient service delivery(Soltani et al., 2025; Tiwari et al., 2024).

Dynamic Capability theory states that organizations constantly reconfigure and adapt their internal capabilities to match dynamic environment. Digital documentation increases organizational flexibility by moving organizations from the conventional paper-based system to a digital system that allows for easy flow of information(Shiferaw & Amentie Kero, 2024).

According to the theory of Organizational Information Processing, organizations enhance their performance through enhanced information processing and reduce uncertainty. Real-time monitoring systems increase information visibility and help in making decisions immediately by providing instant access to information concerning operations and customers. It helps in reducing information asymmetry and improving service response and reliability(Oehlschläger et al., 2024).

In addition, the model contains infrastructural and organizational policy as moderators. According to the theory of Technology Organization and Environment (TOE), the impact of the context of both technology and organization on implementation of technology has been identified. The role of infrastructure is providing technological support through provision of reliable systems, Internet connection, and digital content, while the role of organizational policy is to provide governance, support from leadership, and strategy for digitization(Wang et al., 2024). Thus, the model assumes that the relation between digitization and banking service performance gets stronger in the presence of infrastructure and organizational policies.

Figure 1:Conceptual Framework



Source: Developed by the researcher based on literature review on DT, RBV, DC, TOE, STS and IPT

2.6 Hypothesis of the Study

Evidence gathered empirically from previous research work reveals that automation has a positive impact on banking service performance. Automation allows banks to automate processes, shorten processing time, prevent operational errors, and increase the efficiency of service delivery. The RBV model proposes that automation systems form essential resources for organizations that facilitate increased operational efficiencies and create a competitive advantage via improved service delivery (Barney, 1991). Previous research conducted on automation technology demonstrates that automated systems play a significant role in increasing efficiencies and effectiveness of services due to less manual interventions and effective use of resources (Tiwari et al., 2024). Likewise, research on digital transformation has revealed that automation increases the efficiency of service delivery to customers due to fast transaction processing and reduced operational costs (Soltani et al., 2025). In the banking industry, automation technologies such as digitized account opening process, automated customer verification process, and automated loan processing system have helped in increasing efficiency of service delivery.

H1: Automation has a positive effect on banking service performance at Bank of Abyssinia.

Efficiency and effectiveness in banking have been facilitated by digital documentation as opposed to using the manual process where paper works were used. This is because digital documentation enables banks to access information easily, minimize delays in processing, increase precision, and communicate swiftly between departments and clients. According to the Dynamic Capabilities Theory, the performance of an organization is enhanced by constant adjustment and reconfiguration of its resources and processes with respect to changes in the environment. The application of digital documentation in this case is another capability that makes banks capable of responding to client demand in addition to improving efficiency. Several researchers have shown that digital documentation enhances organizational performance through efficient workflow, information management, and improved service delivery (Baskerville et al., 2020;

Shiferaw & Amentie Kero, 2024). Also, research has shown that the use of digital banking has revealed that digitization leads to better customer satisfaction due to easy service provision and minimized waiting time.

H2: Digital documentation has a positive effect on banking service performance at Bank of Abyssinia.

Various empirical studies suggest that real-time tracking systems have a positive effect on the performance of banking services through visibility, responsiveness, and improved decision making. The theory of organization information processing suggests that performance of organizations is positively influenced when the ability of organizations to process information increases and reduces the level of uncertainty. Real-time tracking systems facilitate the availability of current information to banks, which makes it possible for them to respond faster and be more effective in-service provision. The availability of real-time information facilitates transaction monitoring, service bottleneck identification and fast responses to customers. Several empirical studies have established that real-time information systems increase the responsiveness, quality, and effectiveness of organizations (Oehlschläger et al., 2024; Tarannum et al., 2024). In the case of banking, real-time systems make transactions more transparent and improve communication and service delivery.

H3: Real-time tracking has a positive effect on banking service performance at Bank of Abyssinia.

The role of the infrastructure is regarded as among the major determinants of the efficiency of digital transformation activities. Based on the Technology–Organization–Environment (TOE) model, technological readiness and resource endowment have an essential effect on the success of technology adoption and its results. In the context of developing countries, technologies tend to be ineffective because of poor technological infrastructure which includes such problems as low internet connectivity, lack of IT resources, and numerous interruptions in service provision. Even though digital transformation creates

substantial prospects for enhancing bank services, it may make the process of automation, documentation, and tracking less efficient because of infrastructure issues. Previous research showed that appropriate infrastructure could enhance the effect of digital transformation on the organizational performance as it serves as the technological basis for digital processes (Geda, 2022; Wang et al., 2024)

H4: Infrastructure moderates the relationship between digital transformation and banking service performance at Bank of Abyssinia.

Organizational policy and leadership commitment have also been found to impact the outcomes of digital transformations. In line with the Technology-Organization-Environment approach, organizational issues become an important determinant in the successful application and use of technology. The same is true for the Socio-Technical Systems theory, which states that technological systems operate at their best if they are backed up by proper organizational structures, organizational policies, and practices. Proper organizational policies make it easier to manage resources, prepare employees for change, align with strategy and provide governance of the processes related to digital transformations. According to the studies, organizational support in terms of digital strategies and commitment from leadership increases the likelihood of successful digital transformation results and enhanced performance (Baskerville et al., 2020; Wang et al., 2024). Thus, organizational policy can be expected to influence the relationship between digital transformation and the performance of banking services.

H5 Organizational policy moderates the relationship between digital transformation and banking service performance at Bank of Abyssinia.

CHAPTER THREE: RESEARCH METHDOLOGY

3.1 Introduction

This chapter presents the research methodology adopted to study the effect of digital transformation on banking service on the case of BoA. It describes the research approach, research design, target population, sample size determination, sampling techniques, data sources, data collection methods, data analysis procedures, study variables, validity and reliability measures, and ethical considerations adopted in the study.

3.2 Research method and approach

This study used a mixed research approach with deductive research methods. The qualitative part involved semi-structured interviews with staff members of the Digital Customer Acquisition Department at the Head Office. This provided us with a more comprehensive understanding of the bank's digital transformation initiatives. The quantitative approach was used to evaluate the existing concepts of digital transformation and banking service performance in the banking industry. Through deductive logic, the research first drew on theories, hypotheses, then tested by numerical results. This method provided the researcher with an objective means of evaluating the variables and assessing how they relate to each other. Deductive was used to identify research variables based on the literature review, and then to select measuring tools and analyze quantitative data from the population studied. This data is then statistically processed to verify or test the hypotheses. This is a useful test strategy for testing cause-effect relationships as well as for producing generalizable results for the commercial banking market (Creswell & Creswell, 2018).

3.3 Research design

This study adopted an explanatory research design. An explanatory design is appropriate when the objective of the research is to examine cause and effect relationships between variables (Saunders et al., 2019). This design was appropriate because the goals of the study were to explore the effects of automation, real-time tracking, and digital documentation on banking service performance and to examine the moderating effects of infrastructure availability and organizational policy. The qualitative interview component helped explain the quantitative findings.

3.4 Target population and sample size

3.4.1 Target population

Of the many departments within the banking industry, and at the Bank of Abyssinia (BoA), some are leading digital transformation initiatives that aim to improve banking service performance.

The Information Technology and Digital Banking departments plan the technical and strategic direction of the bank's digital transformation programs. Both departments are required to roll out large-scale digital infrastructures like cloud computing and data analytics, and virtual banking, including BoA's Apollo app. They also run advanced systems like digital identity management, which greatly assist customers to move towards digital services (BoA, 2024). A combination of a real-time management information system and a secure shared data environment allow these departments to avoid many months in the delivery of service and increase their efficiency (Tarannum et al., 2024).

The core unit of digital tools will be the operating departments, as they will function in the daily operations of the banking service to meet customer needs. Intelligent automation and artificial intelligence can enable operating units to automate cognitive and transactional processes such as service delivery, loan issue, etc. (Mbeca, 2022). Purchasing and sending financial goods and services is made possible via digital means.

In fact, digitalization of processes used internally has been shown to be an important contributing factor to the performance improvement as it allows for processing to be speedier than ever before, reduces the number of errors, and improves the overall quality and consistency of service delivery particularly with physical assets such as cards and equipment (Mwenda & Muthimi, 2025).

The target population of this study were employees working in selected Bank of Abyssinia branches in the Central Addis District and employees from the Digital Channels Administration (DCA) Department at the Head Office. The Central Addis District contained branches that used digital banking technologies and digital systems, making it an appropriate setting to investigate the impact of digital transformation on banking service Performance.

The focus of the study was on Premium, Corporate, and Virtual Branches within the Central Addis District. Staff in these branches were directly involved in the use of digital platforms, automated systems, digital documentation, and real-time tracking, and were able to provide relevant information on digital transformation and its impact on banking service.

Table 2: Target Population

Branch Type	Number of Branches	Average number of employees per branch	Total Employees
Premium	4	13	52
Corporate	7	10	70
Virtual	3	4	12
Total	14		134

Source: BoA central and Addis's district and the researcher observations

3.4.2 Sample size

The sample size was calculated using Yamane's Formula with a 95% confidence level and a 5% margin of error (e = 0.05): (Oluigbo et al., 2024)

$$n = N/(1 + N(e)^2)$$

Step-by-Step Calculation:

Square the margin of error: $e^2 = 0.05 \times 0.05 = 0.0025$

Multiply by population size: $N(e^2) = 134 \times 0.0025 = 0.335$

Add 1 to the denominator:1 +0.335 = 1.335

Divide the population by the denominator: n = 134/1.335

Result:

n=100.37

Rounded up, the required sample size is 100 respondents.

Each branch category was proportionally represented. The percentage share of each stratum was calculated by dividing the number of employees in each branch category by the total population of 134.

For Premium Branches: 52/134 × 100 = 38.8%

For Corporate Branches: 70/134 × 100 = 52.2%

For Virtual Branches: 12/134 × 100 = 9.0%

The percentages were then added to the sample size of 100 respondents to calculate the number of respondents from each stratum.

Table 3: Sample size

Branch Type	Population	Percentage	Sample Size
Premium	52	39%	39
Corporate	70	52%	52
Virtual	12	9%	9
Total	134	100%	100

Source: Adapted using Yamane's formula

3.4.3 Sampling Technique

The quantitative component of the study was assessed with a stratified random sampling technique. The stratification of a population is where subgroups are identified, and each subgroup will be addressed in the sample. According to Creswell, stratification is when a population is divided into groups based on a selection of characteristics and an example is created that reflects the actual percentage of individuals in each group of the population. This ensures the sample is representative of the sample and the findings are accurate. (Creswell, 2009)

During this study, employees were stratified by branch type: Premium Branches, Corporate Branch, and Virtual Branches. The different branch types were used for stratification because they represent different parts of the Bank of Abyssinia that use different digital banking technologies and services.

After calculating the sample size using Yamane's formula, proportional allocation was applied to ensure that each stratum of the population was represented as it constituted in the population. Premium branches constituted 38.8% of the population and contributed 39 respondents to the sample, corporate branches

constituted 52.2% of the population and contributed 52 respondents, and Virtual Branches constituted 9.0% of the population and contributed 9 respondents. This proportional allocation ensured that the sample accurately represented the true distribution of employees within the three branch categories.

For the qualitative study a purposive sampling technique was employed to select respondents with relevant knowledge of digital transformation and banking service Performance. Purposive sampling, also known as judgmental or selective sampling, is a non-probability technique by which researchers deliberately choose individuals, cases or events based on their relevance to the research question. This model allows for data-rich, context-specific cases that are a source of deep insights into complex phenomena when used to bring the researcher's expertise to bear on the subject. It provides good flexibility and cost-efficiency but emphasizes depth and specificity over generalizability (Tajik et al., 2024).

3.5 Data Source

This study used primary data collection. The quantitative data was obtained from Bank of Abyssinia's branch employees through questionnaires. The qualitative data was obtained through interviews with the employees of the Digital Channels Administration Department and open-ended question for branch employees.

Primary data is the right choice when existing data is not adequate, or study objectives are to investigate specific organizational processes and perceptions for which there is no existing documentation. Primary data is up to date, context based and used for the validation of hypotheses in survey-based research and therefore is the most appropriate data source to test the relationships between the dimensions of digital transformation and banking service performance in the banking sector (Mazhar, 2021)

The questionnaire was adapted from established studies on DT and banking service performance. Automation items form (Mbeca, 2022) and (Alabdali & Salam, 2022) , Real time tracking items from

(Tarannum et al., 2024), Digital documentation items from (Baskerville et al., 2020), Infrastructure and organizational policy items from (Geda, 2022.) and (Baskerville et al., 2020).

Efficiency, flexibility, and reliability as measures of banking service performance, provides a comprehensive view of the effects of digital transformation on banking service outcomes (Uka, 2025).

3.6 Data Collection

The primary data was collected from the structured questionnaire and semi structured interview. The questionnaire is a great and flexible method of collecting data, particularly in quantitative research, where the structure of the questionnaire facilitates standardized data collection, organization, and analysis. The questionnaire, also a cost-effective method of data collection and easily digestible by an easily accessible and broad-based audience, makes this approach very suitable for getting a better understanding of study variables. Although there were some limitations to the questionnaire method such as a low response rate, the possibility of non-responsiveness, response bias, and the challenging representativeness issue, the questionnaire is still a valuable research instrument. But the form of structured questionnaires was designed to assist in data collection with orderly data collection, and a good sample size as well as systematic data collection can result in reliable information that will help in furthering the study objectives (Kuphanga, 2024).

The structure of the questionnaire related specific items to the study's variables. It began with items measuring demographic characteristics, followed by measures for the independent variables (automation, real-time tracking, and digital documentation) and the dependent variable (banking service performance). Furthermore, the instrument included items to assess the moderating variables, infrastructure and organizational policy, to determine their joint impact on the relationship between independent and

dependent variables. To capture the respondents' perceptions of digital change and its influence on perseverance, continuous scales was employed to measure each construct (Creswell, 2009).

3.7 Data Analysis

Once data has been collected, filled-in questionnaires will be coded, and the data will then be entered into SPSS for analysis. The units of data will be thoroughly processed and analyzed.

This involved both descriptive and inferential statistics. Percentages, means, and standard deviations were used to represent demographic characteristics of respondents and a description of the variables used in the study.

The principal inferential statistical technique, multiple regression analysis, was used in this study. In such cases multiple regression analysis is useful because it allows for a check that one independent variable is associated with two independent variables or more and thus is a much more powerful tool than a simple regression with one independent variable. Here, performance in banking service is the independent variable and automation, real-time tracking, and digital documentation are the independent variable.

Multiple regression is a dependence technique and therefore depends on the explicit identification of dependent variables as well as independent variables prior to analysis. This technique can be used when the variables are intervalley scaled (metric) or appropriately modified. So, the research indicated which variable is the dependent variable and which variables are the predictors before estimating the regression equation. Regression analysis was used to explain and predict. The purpose of the research study was to answer one of the questions, that is, how different levels of variation of independent variables are associated with changes in banking service performance. In addition, regression also allows one to derive the dependent variable from the known independent variables. The regression model was estimated to use the least squares principle to minimize the total prediction error as much as possible for reducing the sum

of squared difference between observed and predicted values of the dependent variable. This method gives the regression model the best likelihood of prediction (Hair et al., 2019).

Using efficiency, flexibility and reliability as measures of banking service performance, provides a comprehensive view of the effects of digital transformation on service banking service outcomes (Uka, 2025).

3.8 Study Variables

3.8.1 Dependent Variables

Dependent variables are variables that are influenced by independent variables. (Creswell & Creswell, 2018) The dependent variable in this study is banking service performance.

3.8.2 Independent Variables

Variables that affect outcome of studies are called independent variables. (Creswell & Creswell, 2018) The independent variables in this study are automation, real time tracking and digital documentation.

3.9 Validity and Reliability

Validity is the degree to which an instrument really measures the concept it was supposed to measure and allows results to be meaningfully interpreted. This study aims to show validity using literature-based questionnaire items that are consistent with the study variables and objectives; hence content and construct validity is sought. (Creswell & Creswell, 2018) The first and most important item here is construct validity, whether the test demonstrates theoretical concepts that the researchers intend or is in keeping with the research purpose.

Reliability is the probability that an instrument delivers consistent results over multiple trials. Internal consistency reliability can be viewed in terms of Cronbach's alpha coefficient, which is generally accepted

to be considered acceptable for quantitative studies in values of 0.70 or more (Creswell & Creswell, 2018). A reliability analysis is conducted during the data analysis to ensure that the instrument is stable and consistent with the study framework.

3.10 Ethical considerations

Ethical standards were maintained throughout the study. Participation was voluntary. Respondents was treated respectfully. Confidentiality of respondents was ensured, and data was used only for academic purposes. Permission was obtained from BoA before data collection.

CHAPTER FOUR: DATA ANALYSIS AND DISCUSSION

4.1 Introduction

In this chapter, the results of the study, analysis and interpretation of the collected data are presented. The purpose of the analysis was to explore whether digital transformation practices influence banking service performance. The following sections describe demographics of respondents, reliability analysis, descriptive statistics, correlation analysis, multiple regression analysis, moderation analysis, qualitative findings from interviews and open-ended questions, discussion of the findings, and a summary of the chapter.

4.2 Demographic Characteristics

4.2.1 Gender of Respondents

Gender Distribution-There were 100 participants in the study. Males constituted 63.0% of the sample, while female were 37.0% of the sample.

Table 4: Gender distribution of Respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Female	37	37.0	37.0	37.0
	Male	63	63.0	63.0	100.0
	Total	100	100.0	100.0	

Source: SPSS Output (2026)

4.2.2 Age of Respondents

The age distribution of the sample shows that the respondents are in their young and middle careers. A significant 55% of the respondents belongs to the age group 20-30 while The second biggest category, comprising 40% of the total participants (which is 40 persons), is the age group 31-40 years. The study

population which falls to 41-50 years age group is only 5 persons or 5.0% of the sample. Per this, the data would mostly reflect the thoughts of people below 40 years in the workforce.

Table 5: Age distribution of Respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	20 - 30	55	55.0	55.0	55.0
	31 - 40	40	40.0	40.0	95.0
	41 - 50	5	5.0	5.0	100.0
	Total	100	100.0	100.0	

Source: SPSS Output (2026)

4.2.3 Educational level of Respondents

Of the participants in this survey, 64.0% of respondents have a master's degree. 35.0% of the participants in this survey have a bachelor's degree. 1.0% of respondents within the survey has higher than a master's degree. Furthermore, 100% of those who participated in the survey have at least a bachelor's degree, indicating the level of education of the professionals in this target group.

Table 6: Educational Level of Respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Above Master's	1	1.0	1.0	1.0
	Bachelor's	35	35.0	35.0	36.0
	Master's	64	64.0	64.0	100.0
	Total	100	100.0	100.0	

Source: SPSS Output (2026)

4.2.4 Years of Experience of Respondents

Most of the participants in this survey indicated that they have experience in the early-to-mid career stage of their careers. Specifically, 49.0% of the participants indicated that they have 2-5 years of experience in their current field of work. Additionally, 40.0% of the participants (40 respondents) indicated that they have 6-10 years of experience in their field. Finally, 11.0% of the participants indicated that they have over 10 years of experience in their fields of work. These results indicate that the majority of the professionals included in this survey have reached the end of their entry-level careers in their fields of work.

Table 7: Years of Experience of Respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2 to 5	49	49.0	49.0	49.0
	6 to 10	40	40.0	40.0	89.0
	Above 10	11	11.0	11.0	100.0
	Total	100	100.0	100.0	

Source: SPSS Output (2026)

4.3 Reliability Analysis

Prior to undertaking any additional statistical analysis, the study scales' reliability was tested to figure out how consistent they are. Cronbach's Alpha coefficient was the tool of choice since it is one of the most utilized measures of internal consistency. Internal consistency reliability can be viewed in terms of

Cronbach's alpha coefficient, which is generally accepted to be considered acceptable for quantitative studies in values of 0.70 or more (Creswell & Creswell, 2018).

Table 8:Reliability Analysis

Variable	Number of Items	Cronbach's Alpha
Automation	4	0.711
Real time tracking	4	0770
Digital documentation	4	0.814
Infrastructure	4	0.700
Organizational Policy	4	0.804
Banking service performance	4	0.797

Source: SPSS Output (2026)

The results for the variables indicate that all of them have achieved a Cronbach's Alpha value that is above the minimum threshold of 0.70. The reliability coefficient for the infrastructure variable is 0.700. Cronbach's Alpha value for the Automation variable is 0. 711.The coefficient for the Real-Time Tracking variable is 0.770. The Digital Documentation variable achieved the highest coefficient of 0.814. Both the Organizational Policy and banking service Performance variables have coefficients of 0.804 and 0.797 respectively. These results indicate that all the questionnaire variables have achieved acceptable and reliable results. Thus, none of the items on the questionnaire were removed for further analysis.

4.4 Descriptive Analysis

To identify central tendency and dispersion of responses to the study variables, descriptive statistics were computed.

Table 9: Descriptive Analysis

	Mean	Std. Deviation
Automation	3.9050	.65979
Realtime tracking	3.7875	.68569
Digital documentation	3.9525	.70415
Infrastructure	3.2375	.74483
Organizational Policy	3.6675	.78821
Banking service performance	3.7750	.72779

Source: SPSS Output (2026)

The table provides the descriptive statistics of the variables used in the study. From the results, all variables obtained mean values above the midpoint of 3.00. This implies that there is a general agreement by the respondents concerning the constructs measured through the statements.

Of the different aspects of digital transformation, the highest mean score was obtained from digital documentation (M = 3.95, SD = 0.70), showing a high level of agreement about the existence of the practice of digital documentation in the organization. This was followed by automation (M = 3.91, SD = 0.66) and real-time tracking (M = 3.79, SD = 0.69), implying that respondents viewed the above practices as being implemented to some extent in the organization.

A favorable attitude towards organizational policies for digital transformation was indicated by the mean value of 3.67 (SD = 0.79). On the other hand, the aspect of infrastructure was rated at a comparatively low mean score of 3.24 (SD = 0.74).

Banking service performance had a mean value of 3.78 (SD = 0.73), meaning that the performance of banking service of the organization was rather high by the respondents. The values of standard deviation varied between 0.66 and 0.79, which means that there were no variations in the answers provided by the respondents.

4.5 Correlation Analysis

Pearson correlation method was used to explore the degree of association and the sense of the relationships among the study variables. Pearson's correlation coefficient (r) has a range of −1 and +1, where values greater than zero denote a direct relationship, values less than zero denote inverse relationship, and values around zero denote lack of a linear relationship.

Table 10:Correlation Analysis

		Automation	Realtime tracking	Digital documentation	banking service performance
Automation	Pearson Correlation	1			
	Sig. (2-tailed)				
Realtime tracking	Pearson Correlation	.605**	1		
	Sig. (2-tailed)	.000			
Digital documentation	Pearson Correlation	.614**	.608**	1	
	Sig. (2-tailed)	.000	.000		
banking service performance	Pearson Correlation	.681**	.685**	.633**	1
	Sig. (2-tailed)	.000	.000	.000	

Source: SPSS Output (2026)

Pearson correlation coefficients were evaluated using criteria, where correlation coefficients ranging from 0.10 to 0.39 imply weak association, those between 0.40 to 0.69 moderate association, 0.70 to 0.89 strong association, and those above 0.90 very strong association. (Schober & Schwarte, 2018)

The results of the correlation tests show that all digital transformation practices are correlated with banking service performance. The strongest correlation between digital transformation practice and banking service performance is exhibited by the practice of Real-Time Tracking ($r = 0.685$, $p < 0.01$). Companies that utilize real-time tracking technology experience better banking service performance than companies that do not implement this practice.

The second highest correlation value is for the practice of Automation ($r = 0.681$, $p < 0.01$). Automation of banking service processes leads to increased efficiency, which results in improved banking service performance of the organization.

The third highest correlation value is for the practice of implementing Digital Documentation ($r = 0.633$, $p < 0.01$). Banking service performance will be increased by improving the documentation that is performed by digital transformation.

4.6 Multiple Regression Analysis

Before carrying out regression analysis, the assumptions of regression were reviewed to verify the validity and reliability of the statistical findings. Some important assumptions for regression analysis include normality, multicollinearity, linearity, homoscedasticity, and error independence. Any violation of such assumptions could result in biased estimations and incorrect standard errors. Thus, all assumptions had to be validated prior to regression analysis. (Field, 2009)

Test 1: Normality

The assumption of normality means that residuals should be random and normally distributed with a mean equal to zero. As such, this assumption assumes that there will not be many differences between the observed and predicted values. The assumption of normality pertains to the residuals and not to predictors.(Field, 2009)

To test the assumption of normality, skewness and kurtosis values were calculated. According to Curran, skewness values should be less than 3 and kurtosis less than 10 if one wants to claim acceptable normality for most multivariate methods. Showed that skewness at 2 and kurtosis at 7 is a demonstration of modest non-normality, while severe non-normality can be achieved by using even larger numbers.(Curran et al., 1996)

Table 11: Skewness and kurtosis

	Mean	Skewness		Kurtosis	
	Statistic	Statistic	Std. Error	Statistic	Std. Error
Automation	15.6200	-1.075	.241	2.718	.478
Realtime tracking	15.1500	-.903	.241	1.518	.478
Digital documentation	15.8100	-1.415	.241	4.757	.478
Infrastructure	12.9500	-.486	.241	.046	.478
Organizational Policy	14.6700	-.617	.241	.047	.478
Banking service performance	15.1000	-.735	.241	1.611	.478
Valid N (listwise)					

Source: SPSS Output (2026)

From the obtained data, skewness was observed to vary between -1.415 and -0.486, and kurtosis between 0.046 and 4.757. Even though the largest kurtosis value belonged to Digital Documentation (4.757), all variables were far from the critical values.

Test 2: Multicollinearity

When predictor variables have high correlations among themselves, then such phenomena can be termed as multicollinearity. Multicollinearity causes difficulties in identifying the independent contribution of each variable because variables share substantial proportions of variance.(Field, 2009)

We need to consider both Variance Inflation Factor (VIF) and Tolerance statistics. The value of VIF helps in assessing the linear dependency of each predictor on other predictors within the model. VIF values above 10 suggest serious cases of multicollinearity. Tolerance values that represent reciprocals of VIF should normally be above 0.10.(Field, 2009)

Table 11: Collinearity test

Model	Collinearity tests	
	Tolerance	VIF
Automation	.538	1.860
Real time tracking	.544	1.838
Digital documentation	.535	1.869

a. Dependent Variable: Banking service performance

Source: SPSS Output (2026)

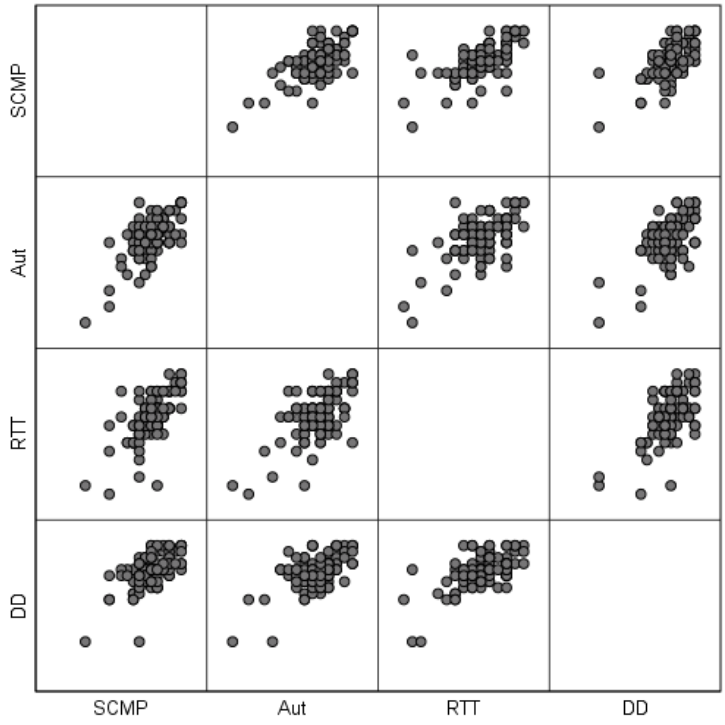
The analysis indicated tolerance values varying from 0.535 to 0.544 and VIF values ranging between 1.838 to 1.869. Since tolerance values surpassed 0.10 in all cases, while VIF values remained well below 10, no evidence of problematic multicollinearity was present.

Thus, multicollinearity assumption was deemed to be satisfied.

Test 3: Linearity

Linearity postulates that there is a linear association between the predictor variables and the dependent variable. Regression models seek to establish linear associations, and hence modelling a non-linear association using a linear model could lead to inaccurate results.(Field, 2009)

Figure 2:Matrix Scatter Plot



Source: SPSS Output (2026)

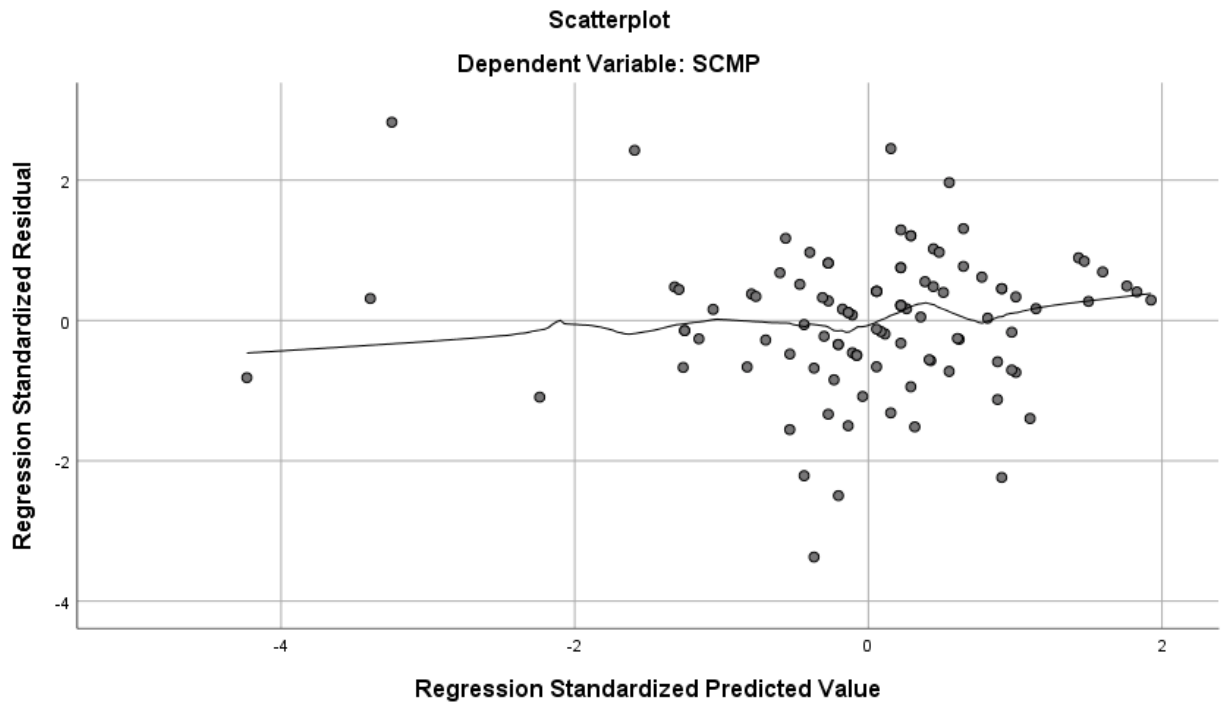
The assumption of linearity was tested using scatterplots and partial regression plots. From the visual examination, it can be observed that there is a near-linear association between Automation, Real-Time Tracking, Digital Documentation, and S banking service Performance, with no significant deviation from the linearity assumption. Therefore, the assumption of linearity holds true in this study.

Test 4: Homoscedasticity

Homoscedasticity is defined as an assumption that the variance of residuals does not change at any level of predictor variables. That is, there must be an approximate equality of variance of residuals at all

predicted values. If variance of residuals changes considerably at different levels of predictor variables, then the heteroscedasticity is observed. (Field, 2009)

Figure 3:Scatter plot of standardized residuals



Source: SPSS Output (2026)

Checking homoscedasticity, the author analyzed a scatterplot of standardized residuals and standardized predicted values. The analysis showed that residuals were distributed randomly on both sides of the zero line without forming a specific funnel-shaped form.

If residuals were distributed randomly, then the variance of residuals would not change at different predicted values. (Field, 2009) This means that homoscedasticity assumption was met.

Test 5: Independence

Independence of errors is considered when the variance of residuals in one observation is independent from the variance of residuals in the second observation. Failure to meet the assumption leads to autocorrelation.(Field, 2009)

The independence of errors was tested using the Durbin-Watson statistic. The value of the Durbin-Watson statistics varies between 0 and 4, and a score of 2 shows no autocorrelation. Scores considerably below 2 imply positive autocorrelation, while scores significantly above 2 imply negative autocorrelation. A rule of thumb states that scores below 1 or above 3 should cause concern.(Field, 2009)

Table 12: Durbin-Watson

Model	Durbin-Watson
1	2.175

a. Predictors: (Constant), Digital documentation, Realtime tracking, Automation

b. Dependent Variable: banking service performance

Source: SPSS Output (2026)

In this study, the value of the Durbin-Watson statistics was 2.175. Being near 2 and within the desirable range, the score implied no signs of autocorrelation among residuals. It was concluded that the assumption about the independence of errors was met.

4.6.1 Model Summary

The model below has an R value of 0.778, which indicates a strong positive relationship between the predictors and banking service performance. The R^2 value of 0.605 indicates that automation, real-time tracking and digital documentation explain the banking service performance of 60.5%. The remaining 39.5% of banking service performance is explained by other factors outside the model. The adjusted R^2 value of 0.593 indicates that the model has strong explanatory power for banking service performance even after adjusting for the sample size of the study and the number of predictors in the model.

Table 13: Model summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.778[a]	.605	.593	1.85778

a. Predictors: (Constant), Digital documentation, Realtime tracking, Automation

b. Dependent Variable: banking service performance

Source: SPSS Output (2026)

4.6.2 ANOVA

The ANOVA table demonstrates that the model is statistically significant ($F(3, 96) = 49.031$, $p < 0.001$). Thus, the three independent variables significantly impact banking service performance.

The results show that real-time tracking has the highest impact on banking service performance, followed by automation. Digital documentation also has a statistically significant impact on banking service performance.

As a result of the study, companies that choose to automate their banking service processes and implement systems for real-time tracking and digital documentation will experience significantly improved.

Table 14:ANOVA

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	507.670	3	169.223	49.031	.000[b]
	Residual	331.330	96	3.451		
	Total	839.000	99			
a. Dependent Variable: banking service performance						
b. Predictors: (Constant), Digital documentation, Realtime tracking, Automation						

Source: SPSS Output (2026)

4.6.3 Beta Coefficients

The following table illustrates the regression coefficients of the impact of automation, real-time tracking, and digital documentation on banking service performance. According to the results of the regression analysis, all the three independent variables have a statistically significant impact on banking service performance.

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	.161	1.251		.128	.898
	Automation	.373	.096	.338	3.862	.000
	Realtime tracking	.373	.092	.352	4.047	.000
	Digital documentation	.219	.091	.212	2.416	.018

Table 15:Beta coefficients

Source: SPSS Output (2026)

It is noteworthy that real-time tracking made the greatest impact on banking service performance (β = .352, p < .001). Automation was ranked second (β = .338, p < .001) followed by digital documentation (β = .212, p = .018).

4.7 Moderation Analysis

Moderation analysis was done to investigate if Infrastructure and Organizational Policy moderate the strength and direction of the relationship between digital transformation components and banking service Performance. Moderation involves a change in the nature of the effect of one variable, termed the independent variable, on another variable called the dependent variable, depending on the level of another variable referred to as the moderator. Moderation analysis makes it possible to know the precise conditions that determine when relationships take place and hence offers a deeper explanation of various phenomena. The moderation effect in this study was tested using Hayes' PROCESS Macro (Model 1).

4.7.1 Infrastructure

The table below shows the moderating role played by infrastructure in relation to the relationship between digital transformation practices and banking service performance. To measure the level of moderation, interaction term (Int_1) was utilized in such a way that if interaction had a p-value < 0.05 with non-inclusion of zero in its confidence interval, then there would be an indication of a significant moderating effect.

From the results, the interaction term between automation and infrastructure was not statistically significant (β = -0.0033, p = .8905). Also, the interaction effects between real-time tracking and infrastructure (β = -0.0357, p = .0840) and digital documentation and infrastructure (β = -0.0121, p = .6202) were not statistically significant. Moreover, confidence intervals in all interactions intersected with zero.

Table 16: Infrastructure Moderation

Interaction Term (Int_l)	Coeff	P	LLCI	ULCI	Decision
Automation× Infrastructure	-.0033	.8905	-0.0511	0.0444	Not supported
Real-time tracking × Infrastructure	-0.037	.840	-0.0763	0.0049	Not supported
Digital documentation × Infrastructure	-0.0121	.6202	-0.0603	0.0362	Not supported

Source: SPSS Output (2026)

Since all interaction terms gave p-values more than 0.05 and confidence intervals including zero, then infrastructure did not have any moderating influence on the relationship between digital transformation practices and banking service performance.

4.7.2 ORGANIZATIONAL POLICY

The table below provides information on the moderation impact of organizational policy on the relationship between digital transformation and banking service performance. The determination of the statistical significance of the moderation impact was based on the interaction term (Int_1). Moderation impact can be considered statistically significant only if the probability associated with the interaction term is below 0.05, and the confidence interval does not contain zero values.

The test findings revealed that there was no statistical significance of the interaction between automation and organizational policy (β = -0.0067, p = .7311). Similarly, the interaction between real-time tracking and organizational policy (β = 0.0192, p = .2684) and digital documentation and organizational policy (β = -0.0032, p = .8567) had no statistical significance. Further, all confidence intervals contained zero values, implying statistical insignificance of the interaction effects.

Table 17: Organizational Policy Moderation

Interaction Term (Int_l)	Coeff	P	LLCI	ULCI	Decision
Automation× Organizational Policy	-.0067	.7311	-0.0451	0.0318	Not supported
Real-time tracking × Organizational Policy	0.0192	.2684	-0.0151	0.0535	Not supported
Digital documentation × Organizational Policy	-0.0032	.8567	-0.0381	0.0317	Not supported

Source: SPSS Output (2026)

Thus, organizational policy failed to provide significant moderation to the relation between digital transformation practices and banking service performance. Since none of the interaction terms met the required criteria of $p < 0.05$ and confidence intervals contained zero values, the moderation hypothesis for organizational policy could not be accepted.

4.8 Interview and Open-Ended question Findings

4.8.1 Introduction

Qualitative data along with quantitative data was gathered to provide readers with a complete view of the research conducted. The methodology used in the data collection was semi-structured interviews with two employees from the Digital Channels and Acquisition Department and Card Banking Operations Department and 43 open-ended responses with thematic analysis to identify the qualitative theme of digital transformation and banking service performance in the bank.

4.8.2 Impact of Digital Transformation on Banking service Performance

According to the findings, both interviewees revealed that the bank has undergone large changes due to digital transformation. They both agreed that automation and digital documentation have reduced

processing time and reduced human error. Also, mobile banking and cloud-based services have positively affected service delivery in terms of faster transactions, better monitoring and immediate access. This finding is based on quantitative findings, which show a positive effect of digital transformation on banking service performance in the bank. The introduction of digital transformation along with tools such as real-time tracking and automation has a positive impact on banking service performance.

4.8.3 Challenges

Overall, the main challenges in the adoption of digital banking services are highlighted in this paragraph. This includes the technological challenges of digital banking such as insufficient digital literacy, insufficient infrastructure, system reliability and cybersecurity risks in digital banking. There are also the user challenges which include resistance to change, need assistance using digital technology, lack of digital literacy and other user barriers to digital banking. Traditional banking still is preferred by customers who need assistance. So, digital banking will gain large benefits from success only if these challenges are surmounted.

4.8.4 Organizational Readiness and Support

To summarize, it is clearly stated that the support of the company is a determining factor for the success of digital transformation. In particular, the interviewees pointed out the presence of leadership, training of human resources, agile structures and supportive policies as key factors for success. On the other hand, they emphasized the reluctance of employees towards change due to concern about job security and unfamiliarity with new technologies.

4.8.5 Opportunities and Integration of Findings

Many of the big respondents have found the advantage of using digital transformation from a qualitative point of view. They found qualitative service improvement, cost reducing in their operations and to their

customer services such as customer service convenience, improving digital record keeping and increasing employee efficiency.

The qualitative data from the surveys supported quantitative data from the digital transformation measures to improve banking service performance. However, the results revealed that the most important impact in terms of improving banking service performance can be achieved if companies overcome some of the challenges they faced during the period of the adoption of digital technologies in their organization. Some challenges were mentioned, which include digital literacy and customer adoption, technology related challenges, cybersecurity and so forth.

The findings of this study confirm that there is the Truth which digital transformation has a positive impact on the banking service performance of the organizations in relation to appropriate organizational policy, culture and technology.

4.9 Discussion

The study aimed at assessing the impact of digital transformation on banking service performance in Bank of Abyssinia. From the results of the quantitative and qualitative data analysis, it is evident that digital transformation has significant contribution to banking service performance.

Descriptive statistics have shown that there were high mean scores for automation, real-time tracking, digital documentation and banking service performance. These results imply that digital technologies are highly utilized within the bank and are important in ensuring effective service delivery. These results show that there has been significant utilization of digital technologies within the bank to improve service delivery.

Pearson correlation test has shown that all digital transformation dimensions have positive and significant relationships with banking service performance. The highest correlation has been between real-time

tracking and banking service performance. Next to that is the correlation between automation and banking service performance and digital documentation and banking service performance. According to the multiple regression analysis, automation, real-time tracking, and digital documentation significantly influence banking service performance. Of all these variables, the strongest predictor was real-time tracking. The result is supported by Organizational Information Processing Theory. The theory explains that an organization improves its performance when there is an improvement in its ability to process information and decrease uncertainty. Real-time tracking allows banks to get immediate operational and customers' data, thus making decisions, responding, and providing services more quickly. The result indicates that getting information promptly is crucial for improving the performance of banking services(Oehlschläger et al., 2024).

It was found out that automation positively influences banking service performance. The finding supports the Resource-Based View. According to it, organizational capabilities and technological resources are considered assets, which positively affect the performance of organizations. Automation makes it possible for the bank to cut down routine operations, eliminate errors, make services available fast, and be efficient in terms of costs. As for qualitative results, participants of the interview noted that thanks to the automation system, they were able to avoid routine work and concentrate on performing other activities that were much more valuable(Tiwari et al., 2024).

Moreover, digital documentation also had a considerable impact on the performance of banking services. This result is in line with the theory of Dynamic Capabilities according to which an organization should be able to change and reshape its resources in response to changing conditions in the business environment. Digital documentation ensures better access to information, decreases paperwork, helps with communication and document management. According to the interviewees, digital documentation contributed to improving information exchange, decreasing delays and increasing efficiency of services

provided by banks. Thus, the results confirm the contribution of digital documentation to the flexibility of an organization and improve its performance (Shiferaw & Amentie Kero, 2024).

In addition to the above-mentioned variables, the present research also investigated the impact of infrastructure and organizational policy as moderators on the relationship between digital transformation and banking service performance. As a result of the moderation analysis, it became clear that both infrastructure and organizational policy did not moderate the effect of digital transformation on banking service performance. There was no statistical significance in the interaction terms.

The lack of any notable effect of infrastructure as a moderator variable contradicts the Technology–Organization–Environment (TOE) approach, according to which the role of technological readiness and infrastructure is important in enhancing the efficiency of implementing technological innovations (Wang et al., 2024). Nevertheless, the findings show that the current state of infrastructure at Bank of Abyssinia is sufficient for the performance of digital activities, which made it ineffective in further enhancing the effect of digital transformation on performance. However, qualitative results showed that the respondents faced occasional problems with networks and internet connectivity, thus impacting the availability of systems. Despite the inconveniences that have been caused by those issues, they have not been sufficiently influential in changing the relationship between digital transformation and banking service performance.

In a similar fashion, there was no effect of the organizational policy on the relationship between digital transformation and banking service performance. Thus, the findings show that the positive effect of digital transformation practices takes place quite independently of any policy difference. It is crucial to note that despite the importance of supportive policy for conducting any digital activities, its effect on performance has not been significant enough. Therefore, Hypothesis 5 was not supported.

Qualitative results provide evidence for this claim. Respondents recognized the significance of management commitment, training of employees, and strategic support for digital transformation efforts. Nonetheless, the respondents noted that the direct gains from automation, real-time monitoring, and digitization were clear irrespective of differences in policies. This is an indication that the effectiveness of digital technologies as tools for enhancing service delivery may depend more on the digital technologies themselves than policy differences between organizations.

Generally, the results confirm the significant contribution of digital transformation to banking service performance due to increased service efficiency, responsiveness, reliability, information management, and service quality. The results prove the validity of the Resource-Based View, Dynamic Capabilities Theory, and Organizational Information Processing Theory because digital technologies act as organizational resources, adaptive capabilities, and information processing mechanisms that contribute to performance. Contrary to what was expected from the TOE framework, infrastructure and organizational policy did not have any moderating effects on the relationships under examination. Despite issues such as interruption of network connections and other operational challenges, digital transformation is an important factor influencing banking service performance at Bank of Abyssinia.

4.10 Summary

The findings suggest that automation, real-time tracking, and documentation using digital technology have considerable impacts on banking service performance, especially real-time tracking. The findings are consistent with the Resource Based View, Dynamic Capability Theory, and Organizational Information Processing Theory since digital technology enhances service efficiency, reliability, responsiveness, and quality. Nevertheless, there were no statistically significant differences between digitalization and banking service performance because of the presence of infrastructures and organization policy. The qualitative findings also suggest that digital transformation enhanced service delivery, information management, and

efficiency even though there were certain challenges with respect to network connection, client readiness, and security issues.

CHAPTR FIVE: MAJOR FINDINGS AND RECOMMENDATION

5.1 Introduction

This chapter summarizes the results, conclusions, recommendations, the contribution of this study, and recommendations for future research. The present study assessed the effect of digital transformation on the banking industry in terms of automation, real-time tracking, and Digital documentation, as well as moderating factors such as infrastructure and policies. Participants consisted of 100 participants.

5.2 Major Findings

The objective of this study was to explore the effects of digitalization practices on banking service performance. The following table presents the results in accordance with the goals of the study.

5.2.1 Influence of Automation on banking service Performance

Results show that automation has a positive and significant impact on banking service performance. There is a strong positive correlation between automation and banking service performance ($r = 0.681$, $p < 0.01$). A multiple regression analysis indicated that automation significantly predicts banking service performance ($r = 0.338$, $p = 0.000$) using automation. Respondents noted that automation essentially eliminates repetitive tasks, reduces human errors, improves process speed, and allows the bank to process large numbers of transactions without the need for additional employees.

5.2.2 Influence of Real-time Tracking on banking service performance

The results of the analysis show that there is a significant and positive impact of real-time tracking on banking service performance. According to the correlation coefficient analysis, a significant positive correlation exists between real-time tracking and banking service performance ($r = 0.685$, p

< 0.01), implying that any changes in the effectiveness of the former positively influence the performance of the latter. Additionally, it should be noted that the regression analysis confirmed that real-time tracking impacts banking service performance significantly and that it is the best predictor among the other digital transformation practices investigated. (($\beta = 0.352$, $p = 0.000$).

Moreover, qualitative data showed that the practice of real-time tracking leads to better visibility of operational processes, faster decision-making, better collaboration, and quick problem-solving by managers. Respondents also stressed that real-time information leads to more efficient use of resources and improves service delivery.

Based on the results obtained, one may state that real-time tracking is crucial for improving banking service performance since it allows for getting proper information about operational processes in a timely manner.

5.2.3 Influence of Digital Documentation on banking service Performance

The results revealed that there is a significant contribution of digital documentation to banking service performance. The findings from the correlation analysis indicate a strong positive correlation between digital documentation and banking service performance ($r = 0.633$, $p < 0.01$). The regression analysis also confirms the significant positive effect of digital documentation on banking service performance ($\beta = 0.212$, $p = 0.018$).

Furthermore, the qualitative analysis indicated that digital documentation enhances information accessibility, improves record management, reduces paperwork, and enhances communication within the organization.

From these findings, it can be said that digital documentation plays a significant role in enhancing the banking service performance effectiveness of the organization through improved information management and enhanced communication.

5.2.4 Moderating Effect of Infrastructure

The moderation analysis assessed whether the presence of infrastructure affected the relationship between digital transformation practices and banking service performance. It was found that the presence of infrastructure had a positive effect on banking service performance, but it did not have a statistically significant moderating effect. In fact, adding the interaction term to assess moderation effect made only marginal improvement on the explanatory power of the model, and that improvement was not statistically significant.

This finding was further explained by the qualitative results. While the respondents indicated that the infrastructure possessed by the bank is adequate, they still pointed out various issues associated with networks, internet stability, system downtime, and other technical failures. From this perspective, it can be stated that infrastructure merely supports the processes rather than amplifies them or mitigates their effects on the studied outcomes.

Thus, the conclusion from both sets of findings is clear – infrastructure is indeed an important element that allows improving organizational performance through implementing digital transformation practices, but it is not a significant moderator.

5.2.5 Moderating Effect of Organizational Policy

The moderation analysis also looked at the influence of organizational policy on the connection between digital transformation practices and banking service performance. The findings reveal that organizational policy does not have a statistically significant moderating influence. The interaction

between organizational policy and automation, real-time monitoring, and digital documentation was all found to be insignificant, with confidence intervals encompassing zero. This implies that organizational policy had no influence on the intensity or orientation of the relationship between digital transformation and banking service performance.

Qualitatively, the influence of leadership support, training, and organizational flexibility are crucial components of a successful digital transformation, but their impact in this research was insufficient to have a moderating influence. Some respondents mentioned the existence of supporting policies, but they were also aware of some difficulties in implementing these policies and changing the current processes.

Therefore, organizational policy is crucial for the success of digital transformation, but based on the findings presented in chapter 4, its role is not significant in moderating the influence of digital transformation on banking service performance.

5.2.6 Challenges Affecting Digital Transformation Implementation

From the findings made through the application of the qualitative method, it is evident that there are various challenges that hinder digital transformation in the case of the bank. One such challenge was customer reluctance to accept and adopt digital banking services due to their inability to make use of the digital platforms owing to poor digital literacy levels. There were also challenges related to infrastructure where respondents indicated poor network connectivity, internet disruptions, and computer downtime. Another challenge that arose from the application of the qualitative research method involved cybersecurity risks that are associated with digital transformation and the risk of digital fraud.

It should also be noted that some organizational challenges were identified including resistance to change among staff members. Job insecurities due to the rise of automation were another organizational challenge. Shortages of technology experts have also been identified as a major hindrance to digital transformation and management. These challenges indicate that digital transformation involves more than just technology but also other aspects.

5.2.7 Opportunities Associated with Digital Transformation

From the findings made through the application of the qualitative method, it is evident that there are various challenges that hinder digital transformation in the case of the bank. One such challenge was customer reluctance to accept and adopt digital banking services due to their inability to make use of the digital platforms owing to poor digital literacy levels. There were also challenges related to infrastructure where respondents indicated poor network connectivity, internet disruptions, and computer downtime. Another challenge that arose from the application of the qualitative research method involved cybersecurity risks that are associated with digital transformation and the risk of digital fraud.

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5.3 Conclusions

Determining the impact of these findings, several conclusions can be drawn.

First, in the banking sector, digitization significantly increases operating performance. Automation, real-time tracking, and digital documentation improve efficiency, service quality, visibility, and decision-making.

Second, real-time tracking was the largest digital transformation practice affecting business outcomes. This suggests that it is important for organizations to have access to timely and accurate banking service performance information.

Automation plays an important role in reducing manual activities, improving productivity, and improving service delivery. Digital documentation contributes to better information management and banking service Performance efficiency.

Fourth, infrastructure is an important factor supporting digital transformation, but it is not the major causal factor between digital transformation practices and performance. It is important, but it is not sufficient to drive digital transformation optimally.

Fifth, organizational policy was shown to facilitate the implementation of digital transformation; but it had no significant moderating influence on the relationship between digital transformation and banking service performance. While organizational policies, organizational commitment from management and employees, as well as organizational flexibility may be important in developing an enabling environment for the digital process, the results indicate that they did not have any significant role in enhancing the effect of digital transformation on banking service performance at the Bank of Abyssinia.

Lastly, despite the positive effects of digital transformation, customer resistance, low digital literacy, infrastructure limitations, cybersecurity risks, and organizational resistance prevent full adoption of the benefits of digital transformation.

Overall, the study found that a successful digital transformation requires a balance between technology, infrastructure, organizational support, employees' readiness and acceptance by customers.

5.4 Recommendations

Following the results and conclusions of this study, the following recommendations are made.

5.4.1 Recommendations for Bank Management

Based on the results obtained from this research, the bank needs to continue automating its main processes since the use of automation improved the performance of banking service. It will have to follow a gradual process where it initially starts to automate high-volume operations such as transaction processing, document verification, generation of reports, and even approval for processes within the organization. Management will first start by analyzing the current processes and identifying those that require automation due to their repetitive nature, costs incurred, and delays resulting from manual execution. The next step will involve the allocation of funds for the automation process, the formation of a project team, and providing training on how to implement automation in the processes. Monitoring is necessary through the use of performance measures like processing times, error rate, processing speeds, and productivity.

5.4.2 Recommendations for real-time tracking

As an essential element of digital transformation, it would be reasonable for the bank to implement practices aimed at improving real-time monitoring of all operations, especially in terms of being able to address any delays and other issues promptly. This could be done using dashboards featuring current data on transactions, lines, customer needs, system performance, and branches' activities. The management is supposed to make sure that the data used to fill in such dashboards would be both

reliable and automatically gathered. Furthermore, the bank must enhance data integration among departments to avoid the fragmentation of all available information on different platforms. Lastly, those individuals working in charge of supervising processes would need to get properly trained in analyzing data in real-time and making decisions based on it.

5.4.3 Recommendation for Digital Documentation

The bank should also enhance the process of using digital documentation as it provides better access to information, efficient document processing, and internal communication. This strategy may involve switching from existing paper documentation to electronic document management systems that enable employees to create, store, exchange, and manage documents electronically. In addition, it is important to establish appropriate document-naming conventions, classification schemes, approval processes, and archiving guidelines to ensure easy access and prevent information overlapping or loss. Training sessions should be organized to help staff members understand how to use the system correctly and adhere to document management policies. Managers should consider providing appropriate access privileges, backups, and document retention periods to ensure confidentiality and security. Thus, using digital documentation will not only reduce the amount of paperwork but also facilitate effective document processing.

5.4.4 Customer Adoption Recommendations

To minimize the resistance shown by customers and make them adopt digital banking, the bank needs to have an elaborate customer education plan. Such a plan could include awareness campaigns, branch presentations, tutorials in video form, messages via SMS, advice via social media, as well as branch-based assistance on how to perform operations digitally safely and efficiently. It is particularly necessary to pay attention to low-literacy clients, who need help in learning how to carry out their operations in mobile banking, online banking, and digital payments. Special services at the

customer service desks and call centers must be set up to provide instant help in case of any problems. At the same time, the bank can collect feedback from clients, thus identifying what aspects of the application are hard to use and improving them.

5.4.5 Cybersecurity Recommendations

With the rise of the digital transformation process, the bank needs to become more concerned about its security because otherwise, it may be prone to fraud, thefts, or even data breaches of various kinds. The security issue must be addressed through adopting a multi-layered approach to cybersecurity, which may involve the use of multi-factor authentication, fraud detection techniques, control of access to the system, encryption, and constant monitoring of the system. Moreover, it is important for the bank to regularly assess the existing vulnerabilities of its network and fix them. The employees should be trained periodically on the use of digital technologies, the management of passwords, phishing, and the report on various incidents. At the same time, the bank should take responsibility for educating its clients on these matters.

5.5 Contribution of the Study

This study contributes to the growing body of research on digital transformation and bank banking service performance.

This study provides evidence of the impact of automation, tracking in real-time, and digital documentation on the working environment. It also provides evidence of the role played by infrastructure and organizational policy.

As well, the quantitative and qualitative analyses provide a holistic picture of how digital transformation is being implemented in the banking sector in Ethiopia.

5.6 Suggestions for Future Research

Future research studies may consider:

- Examining other aspects of digital transformation, including artificial intelligence, blockchain and big data analysis.
- Comparing the performance of different banks.
- Examining customer views on digital transformation adoption.
- The long-term effects of digital transformation on organizational performance.
- Culture and the impact of successful digital transformation.

Reference

Akindote, O. J. (2023). *Digital Era: Navigating VMI and Supply Chain for Sustainable Success*. 33–39. https://doi.org/10.5121/csit.2023.130904

Alabdali, M. A., & Salam, M. A. (2022). The Impact of Digital Transformation on Supply Chain Procurement for Creating Competitive Advantage: An Empirical Study. *Sustainability (Switzerland)*, *14*(19). https://doi.org/10.3390/su141912269

Baskerville, R., Capriglione, F., & Casalino, N. (2020). *LAW AND ECONOMICS YEARLY REVIEW*. *9(2)*, 341–362. www.laweconomicsyearlyreview.org.uk

BoA. (2024). *Annual Report 2023/2024*.

Bogale, H. (2025). *THE EFFECT OF DIGITALIZATION ON THE FINANCIAL PERFORMANCE OF SELECTED PRIVATE COMMERCIAL BANKS IN ETHIOPIA*.

Chang, Y. H., Silalahi, A. D. K., Eunike, I. J., & Riantama, D. (2024). Socio-technical systems and trust transfer in live streaming e-commerce: analyzing stickiness and purchase intentions with SEM-fsQCA. *Frontiers in Communication*, *9*. https://doi.org/10.3389/fcomm.2024.1305409

Creswell, J. W. (2009). *Research Design Qualitative, Quantitative and Mixed Methods Approaches*.

Creswell, J. W., & Creswell, J. D. (2018). *John_W_Creswell_&_J_David_Creswell_Research_De_2_241219_083425* (Vol. 5). Sage.

Curran, P. J., West, S. G., & Finch, J. F. (1996). *The Robustness of Test Statistics to Nonnormality and Specification Error in Confirmatory Factor Analysis* (Vol. 1). Psychological Association, Inc.

Damtew, A. W., & Brihane, E. (2022). *Impact of the Technological Revolution on the Supply Chain Integration Process Performance and Productivity (Case of Ethiopian Basic Metal Industries)*.

Egodawele, M., Sedera, D., & Bui, V. (2022). *Australasian Conference on Information Systems A Systematic Review of Digital Transformation Literature (2013-2021) and the development of an overarching a-priori model to guide future research*.

Fan, J., & He, L. (2025). The impacts of digital transformation on firm performance in China: the moderating role of supply chain concentration. *International Journal of Logistics Research and Applications*, *28*(8), 910–929. https://doi.org/10.1080/13675567.2023.2272830

Field, A. P. . (2009). *Discovering statistics using SPSS.* SAGE.

Finio, M., & Downie, A. (2026, January 20). *What is banking automation?* IBM Think.

Geda, A. (n.d.). *The Growth Effect of Disruptive Technology in Ethiopia: With a Case Study of Digitalization in the Financial Sector*.

Geda, A. (2022). *The Growth Effect of Disruptive Technology in Ethiopia: With a Case Study of Digitalization in the Financial Sector*.

Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2019). *MULTIVARIATE DATA ANALYSIS EIGHTH EDITION*. www.cengage.com/highered

Jaleta, M. E. (2023). Logistics and Customs Digital Transformation: Digital Maturity Model as A Comprehensive Assessment Framework. *Ethiopian Journal of Business and Economics, EJBE*, *13*(2). https://doi.org/10.4314/ejbe/v12i1.1

Kuphanga, D. (2024). *Questionnaires in Research: Their Role, Advantages, and Main Aspects*.

Li, P., Chen, Y., & Guo, X. (2025). Digital transformation and supply chain resilience. *International Review of Economics and Finance*, *99*. https://doi.org/10.1016/j.iref.2025.104033

Linda Onyeanuforo, U., & Bilkisu Mohammed Affiliations, B. (2024). Data-Driven Decision-Making in Global Supply Chain Management: Transforming Operations through Analytics and Intelligence. In *Nigerian Journal of Sustainability Research* (Vol. 2, Number 2). https://njsr.com.ng/index.p

Mazhar, S. A. (2021). Methods of Data Collection: A Fundamental Tool of Research. *Journal of Integrated Community Health*, *10*(01), 6–10. https://doi.org/10.24321/2319.9113.202101

Mbeca, V. N. (2022). *EFFECT OF ARTIFICIAL INTELLIGENCE ON COMPETITIVE ADVANTAGE IN THE KENYAN BANKING INDUSTRY: A CASE OF ABSA BANK KENYA*.

Melesse, S. A., Scholz, O., & Ahmad, A. Y. (2025). Navigating the Digital Landscape: Digital Innovation Readiness in Ethiopia's Financial Sector. *Ethiopian Journal of Science and Sustainable Development*, *12*(1), 2025. https://doi.org/10.20372/ejssdastu:v12.i1.2025.973

Mwenda, D., & Muthimi, J. (2025). Organizational performance of commercial banks in Kenya: The paradoxical effects of the digital transformation strategies. In *International Journal of Education and Research* (Vol. 13, Number 5). www.ijern.com

Nguyen-Thi-Huong, L., Nguyen-Viet, H., Nguyen-Phuong, A., & Van Nguyen, D. (2023). How does digital transformation impact bank performance? *Cogent Economics and Finance*, *11*(1). https://doi.org/10.1080/23322039.2023.2217582

Ning, L., & Yao, D. (2023). The Impact of Digital Transformation on Supply Chain Capabilities and Supply Chain Competitive Performance. *Sustainability (Switzerland)*, *15*(13). https://doi.org/10.3390/su151310107

Oehlschläger, D., Glas, A. H., & Eßig, M. (2024). How Digital Twins Impact Responsiveness: A Dynamic Fit Approach to Information Processing for High-Involvement Product Demand

Management. *Schmalenbach Journal of Business Research*, *76*(4), 661–706. https://doi.org/10.1007/s41471-024-00202-5

Oluigbo, C. U., Ngozi, E. C., & Ohaegbu, P. M. N. I. (2024). *DETERMINATION OF SAMPLE SIZES IN RESEARCH USING TARO YAMANE FORMULA: AN OVERVIEW* (Vol. 1). AFSIC-NDU2024.

Özkanlısoy, Ö., & Akkartal, E. (2021). Digital transformation in supply chains: Current applications, contributions and challenges. *Business & Management Studies: An International Journal*, *9*(1), 32–55. https://doi.org/10.15295/bmij.v9i1.1673

Preindl, R., Nikolopoulos, K., & Litsiou, K. (2020). Transformation strategies for the supply chain: the impact of industry 4.0 and digital transformation. *Supply Chain Forum*, *21*(1), 26–34. https://doi.org/10.1080/16258312.2020.1716633

Saunders, M. N. K., Lewis, P., & Thornhill, A. (2019). *Research methods for business students* (Vol. 8).

Schober, P., & Schwarte, L. A. (2018). Correlation coefficients: Appropriate use and interpretation. *Anesthesia and Analgesia*, *126*(5), 1763–1768. https://doi.org/10.1213/ANE.0000000000002864

Shiferaw, R. M., & Amentie Kero, C. (2024). Dynamic capabilities view practices of business firms: a systematic literature review. In *Cogent Business and Management* (Vol. 11, Number 1). Cogent OA. https://doi.org/10.1080/23311975.2024.2336309

Soltani, H., Abida, M., & Bouraoui, M. A. (2025). *Exploring the Influence of Digitalization Strategies on Bank Performance: Evidence from Tunisian Banking sector*. *10*, 10–19. https://doi.org/10.1654/zkdx.2025.30.2-02

Tajik, O., Golzar, J., & Noor, S. (2024). | P a g e Purposive Sampling. In *IJELS* (Number 2).

Tarannum, T., Zobair Hossain, M., & Hossain, M. Z. (2024). *Pacific Journal of Business Innovation and Strategy https://scienceget.org/index.php/pjbis Impact of Real-Time MIS on Supply Chain Management: A Case Study Approach* (Vol. 1, Number 1). https://scienceget.org/index.php/pjbis

Tiwari, M., Bryde, D. J., Stavropoulou, F., & Malhotra, G. (2024). Understanding the evolution of flexible supply chain in the business-to-business sector: a resource-based theory perspective. In *International Studies of Management and Organization* (Vol. 54, Number 4, pp. 380–406). Routledge. https://doi.org/10.1080/00208825.2024.2324245

Uka, A. F. (2025). *THE EFFECT OF DIGITALIZATION ON FOOD SUPPLY CHAIN PERFORMANCES (IN THE CASE OF K.O.J.J FOOD PROCESSING COMPLEX PLC, ADDIS ABABA, ETHIOPIA)*.

Vial, G. (2019). Understanding digital transformation: A review and a research agenda. In *Journal of Strategic Information Systems* (Vol. 28, Number 2, pp. 118–144). Elsevier B.V. https://doi.org/10.1016/j.jsis.2019.01.003

Walid, T. (2026). The Impact of Digital Transformation on Banking Performance: Case Study of Saudi Banks. *IBusiness*, *18*(01), 1–6. https://doi.org/10.4236/ib.2026.181001

Wang, S., Gao, M., & Zhang, H. (2024). Strengthening SMEs competitiveness and performance via industrial internet: Technological, organizational, and environmental pathways. *Humanities and Social Sciences Communications*, *11*(1). https://doi.org/10.1057/s41599-024-03903-8

Appendix A: Questionnaire

ADDIS ABABA UNIVERSITY

COLLEGE OF BUSINESS AND ECONOMICS

DEPARTMENT OF MANAGMENT

Introduction:

Dear respondent,

Thank you for taking the time to participate in this survey.

This questionnaire is prepared to collect data for an academic research study conducted in partial fulfillment of the requirements for an MBA. The study focuses on assessing the influence of Digital Transformation on Supply Chain Management Performance at Bank of Abyssinia. Your participation is completely voluntary and all information you provide will remain completely confidential and will be used only for educational purposes.

If you require any clarification or need further information about this survey, you may contact the researcher using the details below:

Email: Rediettechane@gmail.com

Phone Number: +251936964965

Your cooperation is highly appreciated and will be very important to the success of this research.

General Instructions

- ✓ Do not write your name on the questionnaire.
- ✓ Read each question carefully before responding.

Section A: Demographic Information

Please provide general information by ticking (√) the option that best describes you

1. Gender

☐ Male ☐ Female

2. Age

☐ Less than 20 year ☐ 20–30 year ☐ 31–40 year ☐ 41–50 year ☐ Above 50 years

3. Educational Level

☐ Less than Diploma ☐ Diploma ☐ Bachelor's ☐ Master's ☐ Above Master's

4. Branch Type

☐ Premium ☐ Corporate ☐ Virtual

5. Years of Experience

☐ Less than 2years ☐ 2–5 years ☐ 6–10 years ☐ Above 10 years

Section B: Digital Transformation and Supply Chain Management Performance

Please indicate your level of agreement with the following statements using the scale provided:
1 = Strongly Disagree | 2 = Disagree | 3 = Neutral | 4 = Agree | 5 = Strongly Agree

S.no	Questions	1	2	3	4	5
AUTOMATION						
1	The bank's core systems effectively automate repetitive, high-volume tasks.					
2	Automated workflows have significantly reduced the level of manual data entry required in my department.					
3	The use of automated validation rules has improved the speed of service delivery.					
4	Automation has effectively minimized the occurrence of human errors in our operational processes.					
REAL-TIME TRACKING						
1	Our digital systems provide instant, real-time visibility into the status of customer requests.					
2	Real-time data tracking helps us quickly address problems in our daily operations.					
3	The information provided by our tracking systems is consistently accurate.					
4	We have full transparency across the supply chain, allowing us to track service flow from start to finish.					
DIGITAL DOCUMENTAITION						
1	Digital documentation has successfully replaced physical paper files in our daily operations.					
	The transition to electronic records has improved the speed and ease of information sharing between					

2	departments.					
3	Electronic signatures and digital forms have significantly shortened the document approval cycle.					
4	Digital documentation makes our records more reliable.					
INFRASTRUCTURE						
1	The bank's network stability is reliable enough to support digital operations without interruption.					
2	System downtime do not disrupt our service delivery.					
3	We have access to modern hardware and tools required to perform digital tasks efficiently.					
4	Internet connection is sufficient to handle the data demands of our digital banking applications.					
ORGANIZATIONAL POLICY						
1	Current organizational policies provide clear guidelines for daily operations.					
2	Internal regulations are flexible enough to allow for rapid adoption of new digital tools.					
3	Senior leadership demonstrates a strong strategic commitment to the bank's digital transformation.					
4	Management actively provides adequate training for new digital tools.					
BANKING SERVICE PERFORMANCE						
1	Digital processes have significantly lowered the operational cost of serving a customer.					
2	Our systems can quickly handle a sudden increase in transaction volume.					
3	Our digital platforms consistently deliver services with minimal errors.					
4	The bank can resolve service failures more quickly due to our digital capabilities.					

Section C: Open Ended Question

In your experience, what is the most significant challenge or opportunity regarding the implementation of digital transformation within your branch?

Thank you for your valuable participation in this research study!

Appendix B: Interview questions for DCA department

1. Can you briefly describe your role and responsibilities in the DCA department?

2. How has digital transformation changed operational processes and service delivery in the bank?

3. How effective are the bank's automation, digital documentation, and real-time tracking systems in supporting daily operations?

4. In your opinion, how adequate are the bank's IT infrastructure and organizational policies in supporting digital transformation implementation?

5. What major challenges does the bank face during digital transformation implementation?

6. Can you share a specific example where digital systems improved or affected operational performance?

7. What recommendations would you give to improve digital transformation and supply chain management performance at the bank?