



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

**FACTORS AFFECTING THE PERFORMANCE OF ERP
SYSTEM: THE CASE OF COMMERCIAL BANK OF
ETHIOPIA**

BY
NETSANET ATOMSA

ADVISOR
ZEGEYE MULUYE (PHD)

JULY, 2023
ADDIS ABABA, ETHIOPIA

**ADDIS ABABA UNIVERSITY
COLLEGE OF BUSINESS AND ECONOMICS
DEPARTMENT OF PROJECT MANAGEMENT**

**FACTORS AFFECTING THE PERFORMANCE OF ERP SYSTEM: THE CASE OF
COMMERCIAL BANK OF ETHIOPIA**

**A PROJECT REPORT SUBMITTED TO THE DEPARTMENT OF PROJECT
MANAGEMENT OF ADDIS ABABA UNIVERSITY IN PARTIAL FULFILMENT OF
THE REQUIREMENTS FOR THE DEGREE OF MASTER OF ART IN PROJECT
MANAGEMENT.**

**BY
NETSANET ATOMSA**

**ADVISOR
ZEGEYE MULUYE (PHD)**

**JULY, 2023
ADDIS ABABA, ETHIOPIA**

DECLARATION

I, **NETSANET ATOMSA** declare that this thesis is my original work and that all sources of the materials in the research paper have been properly acknowledged. The matter embodied in this research paper has not been submitted earlier for award of any Master degree.

By: Netsanet Atomsa

Advisor

Signature

Date

Internal Examiner

Signature

Date

External Examiner

Signature

Date

Statement of Certification

This is to certify that this project work is prepared by NETSANET ATOMSA, entitled; “Assessing the factors impacting the implementation and performance of enterprise resource planning (ERP) systems: A case study on commercial bank of Ethiopia and submitted in partial fulfillment of the requirements for MA Degree in Project management with the regulations of the university and meets the accepted standard with respect to originality and quality.

Signed by the Examining Committee:

Advisor

Signature

Date

Internal Examiner

Signature

Date

External Examiner

Signature

Date

Acknowledgements

First and foremost, I would like to thank the almighty GOD for helping me finish this research. Next I would like to thank my supervisor Dr. Zegeye Muluye for his invaluable guidance, unwavering support, and insightful feedback throughout the research process. Their expertise and encouragement have been instrumental in shaping the direction and quality of this study.

I am deeply thankful to the management and staff of the Commercial Bank of Ethiopia for their willingness to participate in this research. Finally, I extend my heartfelt appreciation to my family, friends, and colleagues for their unwavering support and encouragement.

Abstract

An Enterprise Resource Planning (ERP) system is a technology-based system used by organizations to manage their operations. It collects and combines data from various parts of the organization to create a centralized and manageable format for resource management. ERP systems support vital business processes such as accounting, human resources, manufacturing, and supply chain management. This research study focuses on examining the factors that influence performance of ERP systems in the Commercial Bank of Ethiopia. The study adopts a quantitative research approach and utilizes a descriptive research design to explore the factors related to ERP performance. The study collects quantitative data through questionnaires completed by 109 respondents, and the data is analyzed using SPSS. The factors discussed include organizational culture, top management support, user training, system complexity, data quality, vendor support, and user acceptance. Understanding and addressing these factors can guide organizations in optimizing the performance of their ERP systems and achieving improved operational efficiency and business outcomes. By focusing on fostering an organizational culture that embraces change, promoting user acceptance, securing strong support from top management, effectively managing system complexity, ensuring data quality, seeking reliable vendor support, and providing comprehensive user training, CBE can enhance the implementation and performance of ERP systems.

Keywords: Enterprise Resource Planning (ERP) Systems, Implementation, Performance, Success Factors, Commercial Bank of Ethiopia.

Table of Contents

DECLARATION.....	ii
Statement of Certification	iii
Acknowledgements	iv
Abstract.....	v
List of Tables	viii
List of Acronyms	x
CHAPTER ONE : INTRODUCTION	1
1.1 Background of the Study	1
1.2 Statement Of The Problem.....	2
1.3 Research Questions	3
1.4 Research Objective	3
1.4.1 General Objective	3
1.4.2 Specific Objective	3
1.5 Significance Of The Study	4
1.6 Scope Of The Study	4
1.7 Limitation Of The Study	4
1.8 Organization Of The Research Report.....	5
CHAPTER TWO: REVIEW OF RELATED LITERATURE.....	6
2.1 Theoretical Review	6
2.1.1 What Is ERP System?	6
2. 1.2 The Origin Of ERP	6
2.1.2 Phase Of ERP Implementation	7
2.1.3 Things To Consider Before Implementing ERP In Banking Industry?	8
2.1.4 Expectations From ERP In CBE.....	8
2.2 Critical Factors Affecting ERP Performance	9
2.3 Empirical Studies	12
2.3 Conceptual Framework.....	13
.....	15
CHAPTER THREE: RESEARCH METHODOLOGY	16
3.1 Research Approach	16
3.2 Research Design.....	16
3.3 Target Population, Sampling And Sampling Technique.....	17

3.3.1 Target Population.....	17
3.3.2 Sampling And Sampling Technique	17
3.4 Data Type And Source.....	18
3.4.1 Primary Data Source	18
3.4.2 Secondary Data Source	18
3.5 Strategies For Data Collection	18
3.5.1 Data Collection Method and Tools	19
3.7 Method Of Data Analysis	19
3.7.1 Descriptive Statistical Analysis	19
3.8 Measurement Instruments	19
3.9 Instrument Reliability	20
3.10 Validity	21
3.11 Ethical Consideration.....	21
CHAPTER FOUR: DATA ANALYSIS, INTERPRETATION AND DISCUSSION	22
4.1 Introduction.....	22
4.2. Demographic composition of Respondents	22
4.3 Result of Survey Data	25
CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECOMMONDATIONS	34
5.1 Summary of Findings.....	34
5.2 Conclusion	35
5.3 Recommendation	35
5.4 Future Direction of Research	36
References	37
APPENDIX.....	40
Appendix 1: Questionnaire	40

List of Tables

TABLE 3.1 : RELIABILITY TEST OF VARIABLE'S BY USING CRONBACH'S ALPHA .	20
TABLE 4.1 : DEMOGRAPHIC COMPOSITION OF RESPONDENTS	22
TABLE 4.2 :USED MODULES OF ERP SYSTEMS	25
TABLE 4.3 : SUMMARY OF SURVEY RESULT FOR THE INDEPENDENT VARIABLES-	25
TABLE 4.4 :MEAN VALUE OF INDEPENDENT VARIABLES.....	31
TABLE 4.5: SUMMERY OF SURVEY RESULT FOR THE DEPENDENT VARIABLE.....	31

List of Figures

FIGURE 1 CONCEPTUAL FRAMEWORK.....	15
------------------------------------	----

List of Acronyms

ATM	Automated Teller Machine
CBE	Commercial Bank of Ethiopia
CIM	Computer integrated manufacturing
CM	Change management
COM	Compensation and benefit
ERP	Enterprise resource planning
IT	Information Technology
HRIS	Human Resource Information System
HRM	Human Resource Management
MRP	Material requirements planning
MRPII	Manufacturing resource planning
PS	Performance of the system
SPSS	Statistical package for social science
TMS	Top Management Support
TR	Training and Development
T-24	Temenos 24/7
UA	User Acceptance
UT	User Training
UAU	User adoption and usage
VS	Vendor Support
V27	Version 27

CHAPTER ONE

1. INTRODUCTION

1.1 Background of the Study

Project management is a general concept that involves planning, organizing, executing, and controlling various activities to achieve specific goals and objectives. One of the applications of project management is in the implementation and performance of Enterprise Resource Planning (ERP) systems. ERP systems are integrated software solutions that support the core business processes of an organization, such as accounting, human resources, manufacturing, and supply chain management.

According to (Almgren & Bach, 2014) , Enterprise resource planning system is basically an information system that combines different subsystems into one system. This operation is called integration, whereby subsystems are integrated into one system. The history of Commercial Bank of Ethiopia (CBE) dates back to the establishment of the State Bank of Ethiopia in 1942. CBE was legally established as a share company in 1963. Since then, it has been playing significant roles in the development of the country. The bank is a pioneer to introduce modern banking to the country like Western Union Money Transfer Services and currently working with other 20 money transfer agents like Money Gram, Atlantic International (Bole), Xpress Money. Currently CBE has over 38,880 permanent employees and several non-clerical staffs and over 1842 branches across Ethiopia ([CBE], 2023) .

The ERP system is not only about integrating different subsystems into one massive system. It is much more than that. It is a system whereby you have an entire electronic organization. However, everything new brings new challenges. ERP has not only brought obstacles to system developers, but to organizations, as well (Gunasekaran, 2007).One of the main reason to implement ERP system in CBE is to efficiently and effectively manage resources of the bank. Some major benefits of implementing ERP systems in the commercial bank is to increase employee motivation by reducing paper work, efficient data analyses and decision making, to ensure data integrity, availability and reliability because of integration on common system and by control access. The

implementation of ERP at the Commercial Bank of Ethiopia involves several consultants, IT staff (junior and senior), business analysts from functional units, and Tech Mahindra techno-functional consultants. ERP is a web based client –server architecture license directly procured from vender, it is implemented by an Indian company called TECH MAHINDRA, and ERP is customized according to CBE requirements with CBE staffs and TECH MAHINDRA consultants. It took two years to customize and implement the system. Cost of implementation is more than USD 9,000,000 including annual support. Modules implemented in CBE are oracle E-business suit, oracle enterprise performance management and oracle enterprise data warehouse and business intelligence, under each module there are several modules which have been implemented and is briefly discussed later in this thesis.

The research will examine the implementation and performance of ERP systems in the Commercial Bank of Ethiopia. It will also determine the factors that contributed to the success or failure of the implementation and the performance of the system after it was put into use.

1.2 Statement Of The Problem

Despite the significant investment of time and money required for ERP implementation, managing the bank's resources is a crucial activity that leads to efficient and effective management. Before implementing ERP at CBE, the bank sought to learn from the experiences of other companies that had implemented ERP. Although CBE is the first in the banking industry to implement ERP, many studies and experienced companies support its implementation for the efficient and effective management of resources. ERP implementation is a large and intricate project that requires a significant number of resources, including staff for customization and implementation, as well as time and money. There are many risks associated with implementing an ERP system, particularly when it is being applied by an outside company (TECH MAHINDRA) and integrated with several systems within the bank, including the bank's core application (T24).

The Commercial Bank of Ethiopia is experiencing growth and profitability, and aims to become a world-class bank by 2025. This requires a shift from a manual-based working structure to a system-based one. Since ERP is a system that completely replaces the previous system with a new one, it has gone through several risk factors.

The Commercial Bank of Ethiopia (CBE) has recently adopted ERP systems to improve its operations and remain competitive. However, the implementation and effective use of these systems can be challenging. There is a significant problem with the lack of understanding of the factors that affect the implementation and performance of ERP systems in CBE.

While numerous studies have examined the adoption and implementation phases of Enterprise Resource Planning (ERP) systems, the post-implementation stage of ERP within the context of CBE has been largely overlooked. This neglect has led to a gap in understanding the activities required to ensure optimal performance of ERP systems in the CBE after implementation. Such activities include post-implementation review, support, and maintenance, which are essential for mitigating the risks of ERP project failure. Consequently, there is a pressing need to investigate the specific factors that affect the performance of ERP systems in the post-implementation stage within the CBE. By identifying and comprehending these factors, CBE can proactively address performance issues, enhance system efficiency, and maximize the benefits derived from their ERP implementation

1.3 Research Questions

1. What are the key factors that impact the performance of ERP systems in CBE?
2. What are the benefits achieved from the implementation of ERP?
3. What measures can be taken to improve the performance of the ERP system in the Commercial Bank of Ethiopia?
4. How do the key factors impact the performance of ERP systems in CBE?

1.4 Research Objective

1.4.1 General Objective

The general objective of this study is to investigate and understand the factors that influence the performance of the Enterprise Resource Planning (ERP) system implementation in the Commercial Bank of Ethiopia (CBE), with the aim of identifying critical success factors and their impact on organizational performance, as well as evaluating user satisfaction and the differences in bank performance after the implementation of the ERP system.

1.4.2 Specific Objective

The study specifically aims to:

1. To identify the organizational factors that significantly impact the performance of ERP systems in the project, including organizational culture, top management support, and collaboration efforts.
2. To analyze the technological factors that influence the performance of ERP systems in the project, such as user-friendliness, integration with other applications, data accuracy and accessibility, and data integrity and security measures.
3. To examine the impact of training and support on the performance of ERP systems in the project, including the effectiveness of training programs, availability of support resources, and user satisfaction with the provided assistance.
4. To assess the perceived outcomes and benefits achieved from the implementation of ERP systems in the project, including the improvement in overall efficiency, operational performance, employee productivity, and user satisfaction

1.5 Significance Of The Study

The findings of the study will ensure the implementation of ERP in banks will help management of resources and increase the efficiency and effectiveness of bank specially leading it to world class bank. The study will also contribute for other bank sectors to encourage to implement ERP technology, changing manual- based work to the efficiency of work that contribute in employee satisfaction and accordingly it will have huge impact in the development of banking industry.

It may also help other companies to adapt the success factors while implementing ERP and avoid risk that could occur.

1.6 Scope Of The Study

The study will focus on the critical factors influencing performance of ERP System after implementation on the banking industry specifically CBE from different banks and enterprises in Ethiopia, Addis Ababa.

1.7 Limitation Of The Study

Despite extensive efforts, the researcher faced significant limitations in completing the paper. There was a lack of adequate quantitative data due to limited interaction with end-users, support-users, and managerial staff involved in key aspects of the ERP implementation. This resulted in

insufficient information about the processes and challenges experienced by active users of the system. Furthermore, distributing questionnaires to collect primary data was time-consuming and respondents were sometimes reluctant to provide relevant information. The researcher faced difficulties in collecting questionnaires and some respondents failed to return them

1.8 Organization Of The Research Report

The study is organized in four chapter,

- Chapter one contains introduction, Background, Statement of the problem, Objective of the study, Significance of the study, Scope and limitations
- Chapter two contains literature review, theoretical review, empirical review and conceptual framework
- Chapter three contains Research Methodology, Research Design, Data Type and Source, Research strategy, Sampling procedure, Strategies for data collection, Data collection method and tools, Data presentation.
- Chapter four focuses about analyzing the data, discussion, and results.
- The final, chapter; chapter five gives conclusion and recommendation for future works.

Chapter Two

2. Review of Related Literature

In this chapter, both conceptual and empirical relevant concepts of the study is reviewed. The theoretical review will explain the meaning of ERP systems, what to consider before implementing the system in the banking industry, and what banks expect from them by taking into account their historical background. The empirical review will discuss the experiences of other companies and share their insights. The conceptual framework will illustrate the influence of dependent and independent variables through a diagram.

2.1 Theoretical Review

2.1.1 What Is ERP System?

An Enterprise Resource Planning (ERP) system is a technology-based system used by organizations to manage their operations. It collects and consolidates data from across the organization to provide a single, manageable format for managing resources. ERP systems include modules for managing various aspects of an organization, such as human resources, finance, procurement, project management, and strategic office functions. Originally developed for use in manufacturing with the Economic Order Quantity (ECQ) model, ERP systems have evolved from paper-based systems to material resource planning tools developed in the 1960s and eventually to manufacturing resource planning tools. ERP practices began in the 1990s and are now used across a variety of industries (Almgren & Bach, 2014). Oracle is one of many vendors and implementers of ERP systems worldwide. Implementing an Oracle ERP system can provide numerous benefits, including improved decision-making through better organizational performance and cost reduction, easier reporting, and other benefits. As technology continues to evolve, new versions of Oracle ERP are released with added features. For these reasons, certified Oracle developers recommend implementing an ERP system to meet business needs.

2. 1.2 The Origin Of ERP

A commonly accepted viewpoint on Enterprise Resource Planning (ERP) is one that focuses on the historical development of business integration concepts. The term "ERP" is believed to have originated from the combination of Material Requirements Planning (MRP) and Manufacturing Resource Planning (MRPII) (Chung & Synder, 1999). MRP was initially developed to improve the

efficiency of material requirements calculations. It later evolved into MRPII, which encompassed additional functionalities such as sales planning, capacity management, and overall planning. However, organizations soon realized that profitability and customer satisfaction are objectives that extend beyond manufacturing and encompass the entire enterprise, including finance, sales and distribution, and human resources.

The subsequent step, known as Computer Integrated Manufacturing (CIM), involved integrating at least the technical aspects of product development and production within a comprehensive framework. This concept of a fully integrated enterprise solution is now referred to as ERP (Klaus, et al., 2000). ERP systems emerged in the late 1980s and early 1990s, offering the capability of enterprise-wide coordination and integration across functions. Building on the technological foundations of MRP and MRPII, ERP systems integrate various business processes such as manufacturing, distribution, accounting, finance, human resource management, project management, inventory management, service and maintenance, and transportation. They provide accessibility, visibility, and consistency throughout the organization (O'Leary, 2000.). In the 1990s, the scope of MRPII expanded to encompass all resource planning aspects of the entire organization, including human resources, giving rise to Enterprise Resource Planning Systems (Muscatello, et al., 2003)

2.1.2 Phase Of ERP Implementation

The implementation of an ERP system in an organization is a very complex project. The implementation of such systems is difficult and involves a high costs, as well as considerable time and resources. The implementation of an ERP system is a significant undertaking that can potentially transform the entire business framework of an organization. Once implemented, ERP enables smooth functioning of daily business activities. The implementation phases may vary across organizations, depending on their unique structures. (Khanna & Arneja, 2011) Provide a concise analysis of the different phases involved in ERP implementation.

The initial stage of ERP Implementation is referred to as planning. During this phase, the organization engages in consultations with various vendors and the top management. A detailed plan is developed, roles and responsibilities are assigned, and overall preparations are made for the implementation of ERP. The second phase, known as designing, involves creating models that outline how the project will be executed within the organization. Additionally, a project team is

selected to participate in this phase. The third phase is referred to as Transition. During this stage, responsibilities are assigned based on requirements, and training and knowledge sharing are conducted. The fourth phase, called testing, entails the organization running test case scenarios. Installation and customization are carried out to meet the organization's specific requirements. The fifth and final phase is post-implementation analysis. After the implementation is completed, the level of user acceptance is assessed, and any necessary changes and updates are made over time during this phase of implementation.

2.1.3 Things To Consider Before Implementing ERP In Banking Industry?

In the banking industry, there are several factors to consider before implementing any application that could affect the bank's operations. Security is a major concern and any application that could impact the bank's business functionality should be certified and implemented by a well-known vendor. Banks may also develop their own in-house software, which must pass through a security checklist and undergo various validations by the organization. Oracle ERP is an application developed by Oracle that can be customized to meet the needs of different organizations. It is known for its secure data management, making it a safe choice for implementation in banks. Other factors to consider include quality control, data consolidation, and accuracy. Business owners must decide what data is necessary for business functionality and both business owners and technical teams must verify the accuracy of the data. A project plan and strategy must be developed before implementation, focusing on vendor selection and meeting the bank's requirements. Change management should also be considered throughout the planning and implementation stages.

2.1.4 Expectations From ERP In CBE

CBE expects to effectively and efficiently manage its resources using an ERP system. CBE has implemented various modules of the Oracle ERP application, including human resource modules such as Oracle Core Human Resource, Oracle Payroll, Oracle SSHR, Oracle I-Recruitment, Oracle Time and Labor, Oracle Learning Management, Oracle PMS, and Oracle Succession. Procurement modules include Purchasing, Sourcing, Inventory, Fleet Management, and finance modules include Cash Management, Fixed Assets Management, Treasury (bond management), Expense and General Ledger. The Hyperion Planning module is used by the Office of Strategy and includes Hyperion Financial Management (HFM), Scorecard and Strategic Management, Hyperion Planning and Hyperion Project Financial Planning. The Oracle Business Intelligence and Data

Warehouse modules include Interactive Dashboard, Business Intelligence and Business Intelligence Mobile. CBE has high expectations for these modules to improve interactions, satisfaction and capability across the organization by providing easy access to information, fast response times and increased interaction. According to the agreement between CBE and the vendor of the Oracle ERP system, TECH MAHINDRA, all expectations is met.

2.2 Critical Factors Affecting ERP Performance

Implementing an ERP system is a complex undertaking that requires careful planning, execution, and consideration of various factors. To ensure a successful implementation, organizations must address critical factors that can significantly impact the outcome. Several factors were reviewed and the critical ones were chosen which can be categorized in to 7 critical success factors.

Vendor Support

According to (Vipola, 2008), having support from a qualified vendor is crucial during the implementation stage of an ERP system. The system must be initialized accurately and professionally to ensure a successful launch. Essential tasks and operations should be examined to detect and reduce bugs and errors. However, technical and operational issues may still arise, and the organization may need consultation and guidance to solve them. Customization may be necessary for processing certain transactions. Regular consultancy help may also be needed for implementing transactions and monitoring user practices.

User Training And Education

Proper training and education of users is a crucial factor for the successful implementation of ERP systems. ((Kumar & van Hillegersberg, 2000), (Al-Mashari, M, et al., 2006). Many researchers have identified the importance of training programs to increase the knowledge and expertise of users and make them comfortable with the system. The training should cover ERP concepts, features, and hands-on experience to understand the integration within the system and how it affects the work of different employees.

(Nicolaou & Bhattacharya, 2005) Suggested that employees may not willingly participate in training sessions or acquire updated knowledge if they lack proper guidance. However, when employees receive appropriate guidance, the likelihood of failure decreases. It is crucial for

management to have a clear understanding of the nature and timing of system implementation, as well as the necessary training programs to achieve a positive impact. This requires addressing key questions related to training sessions, such as determining the type of training and trainers required, identifying the employees who should be trained, and considering the necessary adjustments and abandonment of processes to ensure smooth operations

Data Availability And Integrity

As (Xu, et al., 2002.) Stated Data quality is a crucial factor to consider when implementing an enterprise resource planning (ERP) system. Poor data quality can negatively impact an organization's information system, making it essential to understand and address data quality issues to ensure successful implementation of ERP systems.

(Fu & Easton, 2017) Define data integrity as widely used to represent a set of characteristics data, such as its accuracy, completeness, consistency, and timeliness. They also mentioned poor level of data quality can have a severe impact on effectiveness of the project. The data quality which is feed to the application during and after implementation will identify the accuracy of the result of the application which is part of the success of project.

Top Management Involvement

As ((Somers & Nelson, 2001)) stated Top management support is crucial for the success of ERP system implementation projects. This support involves providing the necessary resources and authority for project success, as well as providing leadership and clear direction for the project. Management must be willing to embrace a mindset change and accept that learning is necessary at all levels, including themselves (Rao, 2000)

System Complexity

Enterprise resource planning systems, similar to other management information systems, are often perceived as very complex and difficult to implement (Xue, et al., 2005.). (Aiman-Smith & Green, 2002.) Defined technological complexity as the extent to which a new technology is more complicated for its user than the previous technology used for the same or similar work, and represents an increase in the number of things the user must do at once. The complex nature of ERP systems limits the amount of knowledge that users can absorb before actual usage (Yi &

Davis, 2003.) Higher complexity results in higher mental workload and stress (Sokol, 1994). The complexity of the ERP system could negatively affect user's attitudes towards using the system (Basoglu et al., 2007, Chang et al., 2008).

User Acceptance

As (Wang & Chen , 2006)) stated User acceptance of the technology is a key factor in the successful implementation of an ERP system .Users of an ERP system must adapt their daily work practices to the requirements of the new system. Learning to use a new ERP system can be challenging and requires effort and patience from users.

Researchers have identified user-related factors as critical risk factors for ERP implementation projects, including the complex nature of the projects (Migdadi, 2009). Even if a system is installed on time and within budget, it may be considered unsuccessful if users perceive it as useless for their work processes or if they have to spend a long time figuring out how to use it.

The fact that most users are not IT experts may result in them only using the most basic applications of the ERP system in their work processes (Chung , et al., 2008).A lack of understanding of the system's technological capabilities and limited exposure to best practices can make it difficult for users to fully utilize the system (Tatari, et al., 2007). A high level of interdepartmental collaboration is recommended to reengineer the flow of information and communication.

Organizational Culture

As Huang and Palvia (2001) stated organizational culture is an important determinant of the success of implementation. Implementation of ERP implies a huge change in the organization's business processes that can be very radical. Therefore, it is convenient to have business culture that focuses on the importance of learning, knowledge, and past experience to enable these sorts of changes ((Al-Mashari, et al., 2003).

As (Holland & Light, 1999) Stated The amount of customization an organization requires for their ERP system depends on whether they are willing to change their business processes to fit the software or if they prefer to change the software to fit their existing processes. And overall, failing to manage the gap between legacy systems and ERP processes can hinder an organization's ability

to leverage the full benefits of the ERP system, resulting in operational inefficiencies, data inconsistencies, limited scalability, reduced competitiveness, and potentially increased costs.

2.3 Empirical Studies

ERP systems have been successfully implemented in various Ethiopian enterprises. In the banking industry, the Commercial Bank of Ethiopia was the first to implement a new ERP application called Oracle. The implementation of ERP software has resulted in numerous benefits such as quality improvements, optimal use of resources, and cost reduction. ERP plays a crucial role in integrating and automating business processes within an enterprise. In Ethiopia, ERP has introduced enterprises to international best practices and processes, serving as a catalyst for increased productivity and efficiency. As a result, more and more Ethiopian enterprises are adopting ERP systems.

(Tadesse, 2018) Conducted a study to assess ERP post-implementation success at Ethio telecom. The study used a combination of quantitative and qualitative methods and questionnaires and interviews for data collection. In his findings, it was found that the implemented ERP system has brought positive impact at individual level by enhancing the employees' awareness and recall of job-related information. The ERP system has also been found to have brought significant contribution to give effective and fast decision making on their work activities during post implementation phases. And it is found that the implemented ERP System has brought a positive impact at organization by increasing efficiency and productivity

(Shehu & Masunda, 2020) Conducted a comprehensive examination of existing literature on enterprise resource planning (ERP) using a systematic document review approach. Their main objective was to assess the current and previous studies on ERP, specifically focusing on the critical factors that contribute to the successful implementation of ERP systems. The authors aimed to review research conducted between 2002 and 2016, with a particular emphasis on the benefits and successes of ERP implementation, factors influencing implementation, and instances of successful ERP implementation. The study's findings identified critical success factors (CSFs) and categorized them into four main dimensions: organization-related factors, project-related factors, customization of ERP factors, and individual-related factors. The reason behind analyzing these factors within these dimensions was to guide management in identifying key elements for successful ERP implementation and ensuring that they align the attributes accordingly.

In their study, (Karia & Soliman, 2017) explored the various factors that influence the adoption of Enterprise Resource Planning (ERP) systems in higher education institutions (HEIs) in Egypt. The primary aim of this research paper was to propose a conceptualized research model that could be utilized to examine the adoption of ERP systems in HEIs. By employing the Technology-Organization-Environment (TOE) framework, the article aimed to contribute to the development of a theoretical framework for understanding the adoption of ERP systems and its impact on gaining a competitive advantage within HEIs. Furthermore, the study intended to provide practical guidance to ERP providers, the government, and HEIs in Egypt to facilitate and expedite the adoption of ERP systems.

(Solomon, 2018) Conducted a descriptive research study to evaluate the implementation practices and challenges of Enterprise Resource Planning (ERP) projects in the banking sector. The objective was to identify gaps in the implementation process and propose potential solutions to address those gaps. The research primarily focused on examining the practices, success factors, and challenges associated with ERP implementation. Among the critical success factors, the study found that top management commitment, project team composition, training and education, as well as system customization and integration, were of utmost importance. The study also observed that the ERP system was effectively implemented across different divisions of the organization. However, certain challenges impeded the smooth operation of the system, including technological, organizational, people, and process-related issues. These challenges encompassed data cleansing, user adaptability, system performance and network interruptions, module integration with existing systems, standardization, knowledge and skill gaps in ERP implementation, and technical obstacles, which were identified as the major hurdles encountered during the ERP project implementation.

2.3 Conceptual Framework

This conceptual framework aims to provide a structured approach for assessing the factors that influence the implementation and performance of ERP systems in CBE. ERP systems are complex integrated software solutions that streamline business processes, enhance data management, and support decision-making. Understanding the factors that affect their successful implementation and subsequent performance is crucial for organizations aiming to leverage ERP technology

effectively. This framework will identify and analyze key variables within the implementation process and evaluate their impact on ERP system performance. Independent variables, a dependent variable and mediating variable are considered in this study. Several success factors contribute to the effective implementation, while certain limitations have impacted the implementation process.

A conceptual framework for assessing the factors impacting the implementation and performance of ERP systems can be summarized as follows:

1. Dependent Variable: The performance of ERP systems, which represents the outcome or result influenced by various factors.

2. Independent Variables:

a. Organizational culture: The beliefs, values, and practices within an organization that can impact ERP implementation and performance.

b. Top management support: The level of support and involvement from top management in driving successful ERP implementation.

c. User training: The extent and quality of training provided to users to ensure their competency in using the ERP system.

d. System complexity: The complexity of the ERP system, including its features, functions, and integration requirements.

e. Data quality: The accuracy, completeness, and reliability of data within the ERP system.

f. Vendor support: The quality and responsiveness of support provided by the ERP system vendor.

g. User acceptance: The degree to which end-users embrace and adopt the ERP system.

4. Relationships

a. Independent variables directly influence performance of ERP systems

Independent Variable

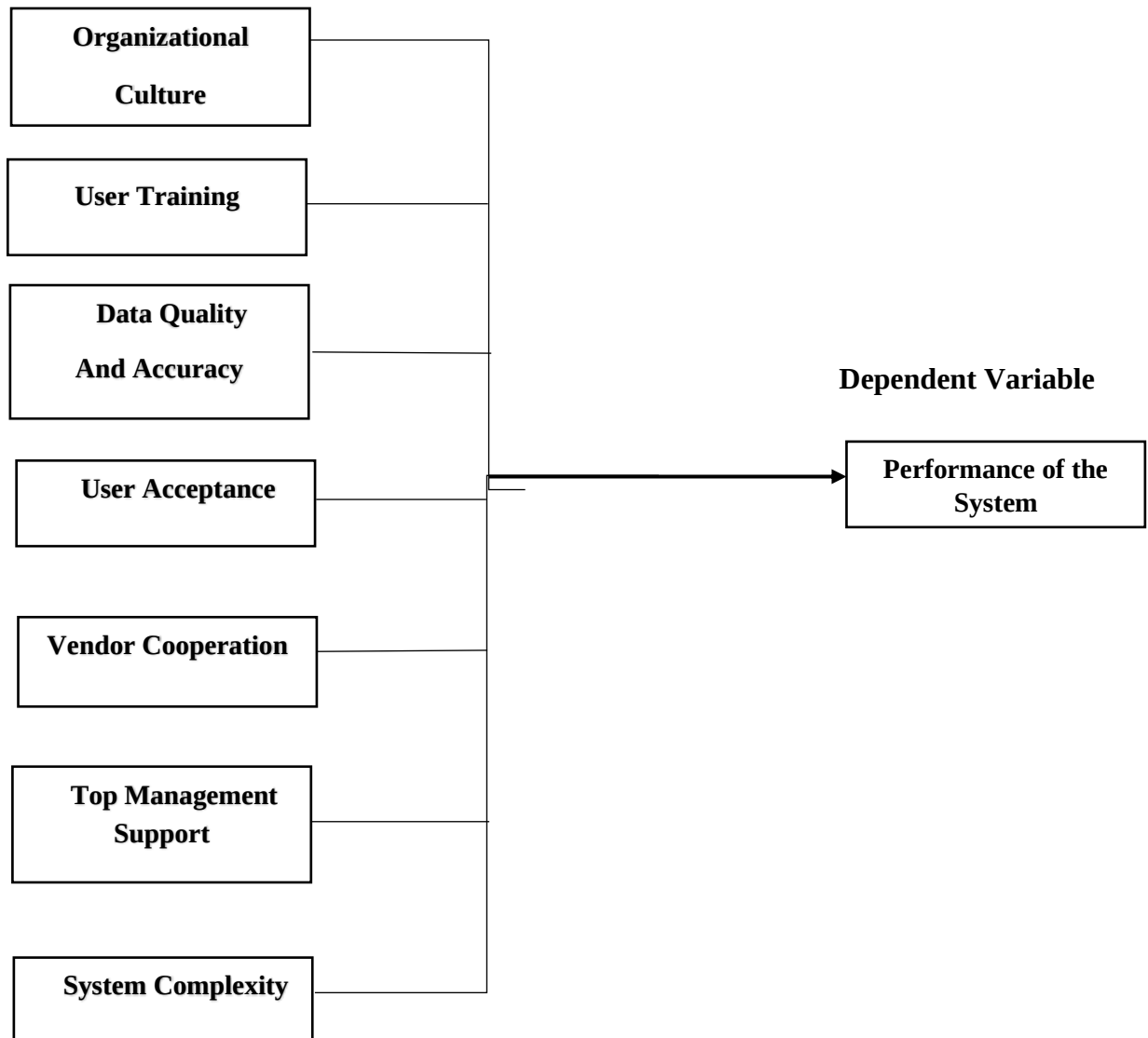


Figure 1. Conceptual framework

Source: Researcher construction based on Literature review (2023)

CHAPTER THREE

3. RESEARCH METHODOLOGY

This study aims to analyze and explore the factors that impact performance of ERP systems at the Commercial Bank of Ethiopia. In this chapter, the approaches and methodologies used in the study is discussed, including the research design, data type and source, strategies for data collection, sampling and data analysis.

3.1 Research Approach

According to (Denzin & Lincoln, 2011) a qualitative approach employs various methods such as in-depth interviews, observations, and analysis of documents. To supplement the findings from the qualitative approach and to gain further understanding of bank-specific issues related to ERP implementation projects, a quantitative method is used. This will involve conducting statistical analysis on data gathered from survey questionnaires. (Pinsonneault & Kraemer, 1993) explain that quantitative research aims to answer questions like ‘what’, ‘how much’, or ‘how many’ by collecting numerical data that can be statistically analyzed and presented in the form of charts, graphs, or tables for further analysis. In this study, the quantitative approach is used to reach a large number of CBE staff and explore individual opinions in depth.

3.2 Research Design

According to (Yin, 2003) Studies can be classified as exploratory, descriptive, or explanatory. Exploratory studies are useful for gaining a better understanding of a problem by discovering new insights and asking questions to assess phenomena in a new way. On the other hand, explanatory studies are used to establish causal relationships between variables. Whereas, Descriptive studies are appropriate when one wish to describe phenomenon such as events, situations or process.

For the purpose of this study, Descriptive research design is applied. A descriptive research design aims to provide a detailed description, analysis, and understanding of a particular phenomenon, situation, or population. The primary goal of descriptive research is to accurately and systematically describe the characteristics, behaviors, attitudes, or opinions of the subjects or variables under investigation. It focuses on observing and documenting what exists or occurs without intervening or manipulating the variables. Descriptive research designs aim to answer questions such as "What is happening?" or "What is the current state?" by collecting data through

various methods, such as surveys, observations, interviews, or existing records. The information gathered is then analyzed and summarized using statistical measures or qualitative techniques to present a comprehensive and accurate picture of the subject of study. Descriptive research designs are commonly used in social sciences, marketing research, and other fields to provide a detailed snapshot or baseline understanding of a given phenomenon.

3.3 Target Population, Sampling And Sampling Technique

In the field of research and data analysis, it is crucial to carefully define the target population and employ appropriate sampling techniques to ensure the validity and reliability of the study's findings. The target population refers to the entire group of individuals or entities that possess the characteristics of interest to the researcher. Defining the target population sets the boundaries and scope of the study, allowing researchers to narrow down their focus and concentrate on specific attributes, behaviors, or characteristics. Then, sampling is needed to gather information about an entire population by selecting and analyzing a smaller group of individuals, objects, or events. This process allows researchers to make inferences about the larger population based on the results obtained from the sample.

3.3.1 Target Population

The population is categorized into different subgroups according to their roles and the extent of their involvement with the ERP system. These subgroups will consist of managers, technical support personnel, and end-users, among others. The total population of the target group is 150 project employees from which sample is drawn for this study

3.3.2 Sampling And Sampling Technique

The sample is chosen using a stratified random sampling technique, where the population of the project target group, which consists of 150 individuals, is divided into different departments such as finance, procurement, and human resource management, office of strategy management, and enterprise data warehousing and business intelligence. The process of sampling is driven by the practical constraints of time, cost, and resources that often make it impractical to collect data from the entire target population.

The sample size of this study is determined by using the formula developed by Taro Yamane (1967);

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

n is the sample size

Where,

N is the population size,

e is the level of precision or sampling error = (0.05)

$$n = \frac{150}{1 + 150(0.05)^2} = 109$$

Thus, sample size of 109 employees is selected from the population of 150.

3.4 Data Type And Source

3.4.1 Primary Data Source

Primary data is gathered from project team members who were involved in the implementation of the ERP project and from employees who use the ERP system. Questionnaires is used to assess the factors that affected the project during the implementation phase and to determine the effectiveness and performance of the system. The questionnaire data collection method is expected to provide accurate data, which is considered primary data.

3.4.2 Secondary Data Source

To support the primary data and to complete information missing from the primary data source, more information's is collected from organizational annual report which is reported during the project implementation phase, business process progress and other relevant data of CBE

3.5 Strategies For Data Collection

The study will use questionnaires as primary data collection methods. Secondary data is collected through analysis of the ERP system and feedback from business team members who have been using the system since its implementation. Questionnaires is distributed to technical and business team members who participated in the customization and implementation stages of the ERP project.

3.5.1 Data Collection Method and Tools

The study mainly is dependent on the primary data source. The questioner is well organized and standardized questions is delivered, which is used to collect data from previous project team members.

The questioners will include different parts by considering both technical and functional team members participated in the project and also end users which helps to get accurate data on the impacts that affect the project implementation and performance of the system.

3.7 Method Of Data Analysis

The data collected through field surveys using questionnaires was analyzed with the SPSS V27 computer software. Both primary and secondary data were presented in tables. The information from the questionnaires was checked for completeness, accuracy, and consistency. The responses were coded using numerical codes to create a coding framework, which was then entered into the SPSS software.

3.7.1 Descriptive Statistical Analysis

The collected demographic data was analyzed using measures of central tendency, including frequency distribution, valid and cumulative percentages, mean, and standard deviation. The results were presented in tabular format using SPSS V27 to provide a clear and organized representation of the findings.

3.8 Measurement Instruments

In this study, the questionnaire is the primary instrument used for data collection. As emphasized by Kothari (2004), the questionnaire proves to be a valuable tool due to its advantages of being time-efficient, cost-effective, and capable of reaching a large number of respondents, and easily accessible for gathering sufficient information. Additionally, questionnaires are considered effective in measuring behaviors, attitudes, preferences, opinions, and intentions of a relatively large population in a more affordable and expedient manner compared to alternative methods.

The survey used in this study consisted of four main sections: (1) demographic information, (2) ERP implementation factors, and (3) Performance of ERP system. Demographic information such as gender, age, educational level, and job position in the company, years of company experience, and years of experience in using ERP were collected. To assess the independent, mediating, and dependent variables, a five-point Likert scale was employed, ranging from Strongly Disagree (1)

to Strongly Agree (5) to measure the level of agreement. These Likert scales were adapted from various scholarly works and research studies.

3.9 Instrument Reliability

Reliability refers to the consistency and stability of measurements or scores obtained from a measurement instrument. It indicates the extent to which the instrument produces consistent and dependable results over repeated measurements. Cronbach's alpha is a commonly used statistical measure to assess the internal consistency reliability of a scale or a set of items within an instrument. As (George, D., & Mallery, P., 2003) stated, the worth of alpha should be greater than 0.7 to just accept the instrument. In this study, the Cronbach's Alpha (α) analysis are employed by the assistance of SPSS version 27.

Table 3.1 Reliability test of Variable's by using Cronbach's Alpha

S.No	Variable Name	Cronbach's Alpha	No of Items	Alpha (α) Reliability ranges
1	Top management support	.807	4	Acceptable
2	User Training	.850	3	Acceptable
3	System Complexity	.742	3	Acceptable
4	Organizational Culture	.786	3	Acceptable
5	Vendor Support	.856	3	Acceptable
6	User Acceptance	.856	6	Acceptable
7	Data Quality	.736	4	Acceptable
8	User Acceptance and Usage	.889	5	Acceptable
10	Performance of ERP System	.870	7	Acceptable
Overall		.953	38	Acceptable

Source: SPSS output survey V27 (2023)

3.10 Validity

The concept of research validity refers to the degree to which the research methodology meets the necessary criteria for generating reliable research findings. According to Oliver (2010), validity is a crucial aspect that should be addressed in all types of studies. Therefore, in order to ensure that the questionnaire accurately measures what it is intended to measure, careful adjustments and refinements are made.

3.11 Ethical Consideration

In this study, the privacy of the participants is given high priority, and their information is treated with strict confidentiality. The data collected is solely used for the purpose of this study and is not disclosed for any other purposes. The study adheres to the policy of the organization (CBE), specifically in relation to protecting any property rights. Proper acknowledgment is given to all materials and sources used as references in the study.

CHAPTER FOUR

4. DATA ANALYSIS, INTERPRETATION AND DISCUSSION

4.1 Introduction

This chapter presents data collected through questionnaires and organized according to the study's objectives. The research examines the factors that impact the implementation and performance of enterprise resource planning (ERP) systems in a case study on the Commercial Bank of Ethiopia.

It also focuses on the variable User Adoption and Usage, which mediates the relationship between ERP implementation factors and ERP system performance. Data was analyzed using SPSS version 27, with correlation and regression analysis applied in quantitative analyses. Out of the 109 questionnaires distributed, 102 were returned and used for analysis, resulting in a nonresponse rate of 7 (6%).

4.2. Demographic composition of Respondents

Demographic information includes the respondent's gender, age, education level, years of experience in CBE, position in the organization, years of experience in using ERP software, and level of usage of ERP system. Based on this, demographic characteristics are presented as follows.

Variable	Category	Frequency	Valid Percent
Gender of respondents	Male	67	66.3
	Female	34	33.7
	Total	101	100.00
	20 up to 30	64	63.4

Age of the respondents	31 up to 40	28	27.7
	41 up to 50	9	8.9
	Total	101	100.0
Level of Education	BA/BSC	80	79.2
	Masters	21	20.8
	Total	101	100.0
Years of Experience in CBE	< 1year	11	10.9
	1 to 3 years	28	27.7
	4 to 6 years	41	40.6
	7 to 10 years	16	15.8
	>10 years	5	5.0
	Total	101	100.0
Job Position of respondents	Finance	4	4.0
	Human resource	23	22.8
	Information technology	60	59.4
	Sourcing and facility	7	6.9
	Engineering	7	6.9
	Total	101	100.0
Years of experience in using ERP software	1 year	21	20.8
	2 years and above	80	79.2
	Total	101	100.0

Table 4.1 Demographic composition of respondents

The data presented in Table 4.1 illustrates the gender distribution among the 101 participants involved in the study. Of the total participants, 67 individuals (66.3%) identified as male, whereas the remaining 34 participants (33.7%) identified as female. These findings indicate a higher representation of males (66.3%) compared to females (33.7%) in terms of gender diversity among the participants. Consequently, the sample

size of male employees in CBE is larger than that of females, which allows for generalization of results related to gender.

Regarding age distribution, the majority of participants (63.4%) fall within the 20-30 age range. The age group of 31-40 comprises a significant portion (27.7%) of the sample, while participants aged 41-50 make up a smaller percentage (8.9%). In terms of education, the majority of participants (79.2%) hold a Bachelor's degree (BA/BSC), while a smaller proportion (20.8%) possess a Master's degree. These findings suggest that the respondents have the necessary qualifications and understanding of ERP systems.

In terms of work experience, the largest group of respondents (40.6%) reported working at CBE for a period of 4 to 6 years. Additionally, 27.7% reported working for 1 to 3 years, 15.8% for 7 to 10 years, 10.9% for less than a year, and the remaining 5% for more than 10 years. When considering departmental distribution, the information technology department has the highest representation (59.4%), followed by the human resource department (22.8%). The finance department represents a smaller proportion (4.0%) of the participants, while both the sourcing and facility and engineering departments each account for 6.9% of the sample.

In terms of ERP experience, the majority of respondents (79.2%) reported having 2 or more years of experience using ERP, while 20.8% reported having less than 1 year of experience. This suggests that the majority of respondents have had sufficient exposure to and familiarity with ERP systems.

Used modules of ERP Systems

According to Table 4.7, it can be concluded that the Human Resource modules of the ERP system are the most commonly used among the participants in your study, with a high percentage of 88.1%. The finance module is used by a smaller proportion of participants (5.0%), followed by the I procurement module (5.9%) and the sourcing module (1.0%).

Table 4.2 Used modules of ERP Systems

Used modules of ERP System				
		Frequency	Valid Percent	Cumulative Percent
Valid	Finance module (General ledger, payables, fixed asset, treasury)	5	5.0	5.0
	Human Resource Management modules (i recruitment, self-service, payroll, OLM, OTL)	89	88.1	93.1
	I procurement	6	5.9	99.0
	Sourcing	1	1.0	100.0
	Total	101	100.0	

4.3 Result of Survey Data

In this section, the data gathered using Likert scale is discussed for independent, mediating and dependent variables.

Table 4.3 Summary of Survey result for the independent variables

Measurements	Strongly Disagree	Disagree	Uncertain	Agree	Strongly Agree	Mean	S.D
Organizational Culture							
The organizational culture supports the successful implementation of ERP systems	3.0%	2.0%	9.9%	63.4%	21.8%	4.05	.779
The organization encourages collaboration and knowledge sharing related to ERP systems	3.0%	7.9%	22.8%	53.5%	12.9%	3.74	.820

I believe that ERP systems align with the organization's values and goals	3.0%	1.0%	13.9%	65.3%	16.8%	3.95	.726
Top Management support							
Top management support is important in the successful implementation of ERP systems in the CBE	2.0%	2.0%	24.8%	38.6%	32.7%	4.00	.894
Top management provides sufficient resources and budget for ERP implementation	2.0%	10.9%	32.7%	34.7%	19.8%	3.68	.948
Top management actively participates in promoting the importance of ERP systems	4.0%	7.9%	28.7%	36.6%	22.8%	3.79	.993
Top management communicates clear expectations regarding ERP system usage.	8.9%	10.9%	20.8%	43.6%	15.8%	3.59	1.051
User Training							
I received continuous training and support to enhance my ERP system skills	12.9%	21.8%	18.8%	42.6%	4.0%	3.11	1.095
The training materials and resources are easily accessible and comprehensive	11.9%	17.8%	24.8%	38.6%	6.9%	3.19	1.084
The training provided adequately prepares users for	5.0%	28.7%	17.8%	39.6%	8.9%	3.30	1.118

utilizing the ERP system							
System Complexity							
The ERP system has a user-friendly interface that simplifies complex processes.	6.9%	6.9%	30.7%	46.5%	8.9%	3.51	.890
The system offers customization options to align with specific business requirements.	4.0%	15.8%	31.7%	35.6%	12.9%	3.50	1.006
I find it easy to navigate and interact with different modules of the ERP system.	2.0%	9.9%	22.8%	53.5%	11.9%	3.68	.836
Data Quality							
The ERP system consistently provides accurate and reliable data.	3.0%	13.9%	15.8%	48.5%	18.8%	3.71	.983
The ERP system integrates seamlessly with other existing applications, enhancing overall efficiency and performance.	3.0%	5.0%	31.7%	49.5%	10.9%	3.69	.845
Data input and processing within the ERP system are error-free.	8.9%	10.9%	32.7%	36.6%	10.9%	3.33	1.096
Data integrity and security measures are effectively implemented within the ERP system.	8.9%	12.9%	22.8%	50.5%	5.0%	3.28	1.106
Vendor Support							
The ERP system vendor promptly	6.9%	3.0%	36.6%	42.6%	10.9%	3.60	.917

responds to support requests and inquiries.							
The vendor provides regular updates and enhancements to the ERP system.	6.9%	3.0%	33.7%	46.5%	9.9%	3.59	.874
The vendor offers adequate documentation and user guides for the ERP system.	3.0%	17.8%	29.7%	38.6%	10.9%	3.44	.984
User Acceptance							
I believe that the ERP system improves my overall work efficiency.	3.0%	3.0%	6.9%	72.3%	14.9%	3.97	.727
I perceive the ERP system as a valuable tool for decision-making.	2.0%	14.9%	13.9%	52.5%	16.8%	3.80	.938
I feel comfortable and confident using the ERP system in my daily tasks.	2.0%	5.0%	34.7%	41.6%	16.8%	3.70	.855
I am satisfied from the outcomes and benefits achieved from the ERP system implementation	2.0%	3.0%	15.8%	63.4%	15.8%	3.94	.746
ERP system saves me time	3.0%	13.9%	13.9%	52.5%	16.8%	3.71	.963
I reached my deadlines and deliver timely when I use the ERP system	4.0%	4.0%	8.9%	61.4%	21.8%	3.99	.877
I actively use the ERP system in my day-to-day operations	1.0%	12.9%	17.8%	61.4%	6.9%	3.63	.833

I consistently integrate the ERP system into my workflow.	1.0%	33.7%	15.8%	43.6%	5.9%	3.17	1.030
I recommend the ERP system to my colleagues based on my positive experience.	3.0%	5.0%	14.9%	60.4%	16.8%	3.90	.854
I consider the ERP system as a vital part of my job responsibilities.	0.0%	12.9%	13.9%	62.4%	10.9%	3.74	.820
ERP system is available and accessible to me at all times	3.0%	17.8%	13.9%	47.5%	17.8%	3.62	1.066

Source: SPSS output survey V27 (2023).

As shown in the above table, the survey results regarding organizational culture, a majority of respondents (63.4%) agreed that the organizational culture supports the successful implementation of ERP systems. Similarly, 53.5% of respondents agreed that the organization encourages collaboration and knowledge sharing related to ERP systems. Additionally, 65.3% of respondents believed that ERP systems align with the organization's values and goals. Overall, the survey results highlight positive perceptions regarding organizational culture, collaboration, and alignment with ERP systems within the surveyed organization. These findings suggest that the, promoting collaboration, and ensuring alignment with the organization's values and goals.

In terms of top management support, the majority of respondents (38.6%) agreed that top management support is important in the successful implementation of ERP systems in the CBE. Furthermore, 34.7% of respondents agreed that top management provides sufficient resources and budget for ERP implementation. Meanwhile, 36.6 % of the respondents

agreed to top management actively participating in promoting the importance of ERP system with 28.7% responding neutral.

Concerning user training, 42.6% of respondents felt they received continuous training and support to enhance their ERP system skills. Additionally, 38.6% agreed that the training materials and resources were easily accessible and comprehensive. Furthermore, 39.6% agreed that the training provided adequately prepared users for utilizing the ERP system.

Regarding system complexity, 46.5% of respondents agreed that the ERP system has a user-friendly interface that simplifies complex processes and 30.7% answered neutral. Moreover, 35.6% agreed that the system offers customization options to align with specific business requirements. Additionally, 53.5% of respondents found it easy to navigate and interact with different modules of the ERP system.

Concerning data quality, 48.5% of respondents agreed that the ERP system consistently provides accurate and reliable data. Moreover, 49.5% agreed that the ERP system integrates seamlessly with other existing applications, enhancing overall efficiency and performance.

Regarding vendor support, 42.6% of respondents agreed that the ERP system vendor promptly responds to support requests and inquiries. Additionally, 46.5% agreed that the vendor provides regular updates and enhancements to the ERP system.

In terms of user acceptance, a majority of respondents (72.3%) agreed that the ERP system improves their overall work efficiency. Additionally, 52.5% agreed that they perceive the ERP system as a valuable tool for decision-making. Moreover, 63.4% agreed that they are satisfied with the outcomes and benefits achieved from the ERP system implementation.

61.4% of respondents agreed that the ERP system helps them reach their deadlines and deliver timely, while 61.4% also reported actively using the ERP system in their day-to-day operations. Finally, 60.4% recommend the ERP system to their colleagues based on

their positive experience and 47.5% of the respondents agree to the availability and accessibility of ERP system at all times. Overall, these results indicate a positive perception and agreement among respondents regarding the performance and utilization of the ERP system in the CBE.

Table 4.4 Mean value of Independent Variables

S.N	Variables	Mean	Std. Deviation	Level
1	Organizational Culture	3.8548	0.67563	High
2	User Acceptance	3.7904	0.70736	High
3	Top Management support	3.6757	0.85187	High
4	System Complexity	3.4818	0.82795	Medium
5	Data Quality	3.4653	0.72975	Medium
6	Vendor Support	3.4455	0.87468	Medium
7	User Training	3.1089	1.01337	Medium

Source: SPSS output survey V27 (2023).

The mean value of each independent variables is shown in the below table 4.9 with the consideration that means ranging from (1 to 2.31) were considered as low, and means ranging from (2.34 to 3.65) were considered medium and means higher than 3.66 were considered high, which shows that Organizational Culture has the highest mean which is 3.84548 and User Training has the lowest mean.

Source: SPSS output survey V27 (2023).

Table 4.5 Summery of survey result for the Dependent variable

Measurements	Strongly Disagree	Disagree	Uncertain	Agree	Strongly Agree	Mean	S.D
Performance of ERP system							
The implementation of the ERP system has improved the overall efficiency of bank operations.	1.0%	8.9%	7.9%	61.4%	20.8%	3.91	.814

ERP system has enhanced the accuracy and timeliness of financial and operational reporting	1.0%	9.9%	17.8%	54.5%	16.8%	3.72	.918
ERP system has streamlined and automated key business processes within the bank.	1.0%	9.9%	15.8%	61.4%	11.9%	3.78	.808
ERP system has improved data visibility and accessibility across different departments.	1.0%	5.0%	17.8%	58.4%	17.8%	3.96	.786
ERP system has facilitated better decision-making by providing real-time and accurate information.	1.0%	15.8%	14.9%	54.5%	13.9%	3.60	.970
ERP system has reduced manual errors and improved data integrity within the bank.	1.0%	4.0%	19.8%	60.4%	14.9%	3.87	.744
ERP system has increased employee productivity by simplifying and automating routine tasks.	1.0%	10.9%	6.9%	64.4%	16.8%	3.88	.852

Source: SPSS output survey V27 (2023).

The data indicates that the implementation of the ERP system has had a positive impact on the efficiency of bank operations, as 61.4% of respondents agreed. The ERP system has also been perceived to enhance the accuracy and timeliness of financial and operational reporting, with 54.5% of respondents expressing agreement. Furthermore, the system has streamlined and automated key business processes within the bank, as indicated by 61.4% of respondents agreeing. Additionally, the ERP system has improved

data visibility and accessibility across different departments, with 58.8% of respondents agreeing and 17.8% answering neutral. The system has also been seen to facilitate better decision-making, with 54.5% of respondents expressing agreement. 60.4% of respondents agreed that ERP has further reduced manual errors and improved data integrity within the bank. Lastly, 64.4% agreed that ERP system has increased employee productivity by simplifying and automating routine tasks indicating positive outcomes and potential benefits for the organization. Overall, the data suggests that the ERP system has had a positive impact on various aspects of the bank's performance.

CHAPTER FIVE

1. SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary of Findings

This research conducted to investigate the examine Assessing the factors impacting the performance of enterprise resource planning (ERP) systems in reference to CBE.

Regarding to participant's profile, the general sex composition of commercial bank ERP project's human resource is highly dominated by male employee who are 66% in gender & near to 95% of them at large are belonging in the productive age group. They had enough education qualification with ample experience to execute the roles assigned to them effectively and efficiently in regard to the effect of the implementation of enterprise resource planning. Among the participants, the Human Resource Management modules were the most commonly used (88.1%) from ERP System.

The survey also assessed the respondents' perceptions regarding independent variables related to organizational culture, top management support, user training, system complexity, data quality, vendor support, and user acceptance. The mean values of these variables ranged from 3.1089 to 3.8548, with organizational culture receiving the highest ranking.

The survey results show that a majority of respondents agreed that the organizational culture supports the successful implementation of ERP systems (63.4%), the organization encourages collaboration and knowledge sharing related to ERP systems (53.5%), and ERP systems align with the organization's values and goals (65.3%). Respondents also agreed that top management support is important in the successful implementation of ERP systems (38.6%), they received continuous training and support to enhance their ERP system skills (42.6%), and the ERP system has a user-friendly interface that simplifies complex processes (46.5%). Additionally, respondents agreed that the ERP system consistently provides accurate and reliable data (48.5%), the vendor promptly responds to support requests and inquiries (42.6%), and the ERP system improves their overall work efficiency (72.3%). The implementation of the ERP system has had a positive impact on the efficiency of bank operations, accuracy and timeliness of financial and operational reporting, automation of key business processes, data visibility and accessibility across different departments, better decision-making, reduction of manual errors and improved data integrity, and increased

employee productivity by simplifying and automating routine tasks. Overall, the survey results indicate a positive perception and agreement among respondents regarding the performance and utilization of the ERP system in the surveyed organization.

5.2 Conclusion

The main objective of this study is to examine the factors impacting performance of enterprise resource planning (ERP) systems in reference to CBE.

In conclusion, the findings from the survey highlight positive perceptions and outcomes regarding the implementation of the ERP system in the Commercial Bank of Ethiopia (CBE). The majority of respondents agreed that the organizational culture supports the successful implementation of ERP systems, emphasizing the importance of collaboration and alignment with organizational values and goals. Top management support was recognized as essential, along with the provision of resources and active participation in promoting the ERP system. User training, system usability, data quality, vendor support, and user acceptance were also identified as crucial factors contributing to the system's success. Overall, the findings suggest that the ERP system has had a positive impact on various aspects of the bank's performance, showcasing its potential to enhance operational efficiency, decision-making, data integrity, and employee productivity within the CBE.

5.3 Recommendation

Based on the above findings and conclusions, the following recommendations are recommended.

- Enhancing user training programs is crucial to ensure employees have the skills and knowledge to effectively use the ERP system. This can be achieved through comprehensive training programs, workshops, and ongoing support.
- Additionally, the CBE should aim to simplify system complexity without compromising functionality. Evaluating the need for certain features, improving user interface design, and optimizing system workflows can help streamline the ERP system. Furthermore, prioritizing data quality by implementing robust data management practices, such as data validation and cleansing, is essential to ensure accurate and reliable data within the ERP system. The CBE should also assess the level of vendor support received and foster user acceptance and engagement by involving users in the design process and addressing their concerns.

By implementing these recommendations, CBE can increase the likelihood of a successful ERP system implementation, improve system performance, and enhance user adoption and usage. This will ultimately lead to improved operational efficiency, better decision-making, and overall organizational effectiveness for the Commercial Bank of Ethiopia

5.4 Future Direction of Research

This study has focused on factors influencing Performance of ERP System within CBE. However, based on the limitation encountered and the reported findings of this research it is necessary to provide directions for further research. An interesting potential future research initiative would be to use a mixed approach with a larger number of respondents and other project success factors in order to generalize the results obtained in this study.

References

- [CBE], C. B. O. E., 2023. <https://combanketh.et/>. [Online].
- Abiot, S. and Gomez, 2012. A case study of ERP Implementation in Mesfin Industrial Engineering Pvt.
- Aiman-Smith, L. & Green, S., 2002.. Implementing new manufacturing technology: The related effects of technology characteristics and user learning activities.. *Academy of management journal*,, Volume 45(2), pp. , pp.421-430..
- Al-Mashari, M, M., Ghani, S. & Rashid, W., 2006. A Study of the Critical Success Factors of. *International Journal of Internet and*, Volume 4(1), pp. : 68-95..
- Al-Mashari, M., Al-Mudimigh, M. & Zairi, M., 2003. Enterprise resource planning: A taxonomy of. *European Journal of Operational Research*, pp. 352-364.
- Almgren, k. & Bach, C., 2014. ERP systems and their effects on organizations: a proposed scheme for ERP success.. *ASEE 2014 Zone*, pp. 1-5.
- Chung , B., Skibniewski , M., Lucas , H. & Kwa, 2008. Analyzing enterprise resource.
- Chung, S. & Synder, C., 1999. ERP initiation-a historical perspective..
- Denzin, N. & Lincoln, Y., 2011. The Sage handbook of qualitative research. sage..
- Derese, A , 2013. “Ensuring Successful Implementation of Enterprise Resource Planning (ERP):.
- Elsa,T, 2015. ERP Post-Implementation Management Framework at Ethiopian Airlines..
- Fu, Q. & Easton, J., 2017. Understanding data quality: Ensuring data quality by design in the rail industry.. *IEEE International Conference on Big Data (Big Data)* (., pp. pp. 3792-3799).
- George, D., & Mallery, P. , 2003. SPSS for Windows step by step: A simple guide and reference. Allyn & Bacon..
- Gunasekaran, M. &., 2007.
- Holland, C. & Light, B., 1999. A critical success factors model for ERP implementation.. *IEEE software*,, Volume 16(3),, pp. pp.30-36.
- Karia, N. & Soliman, M., 2017. Factors affecting enterprise resource planning (ERP) systems adoption among higher education institutions in Egypt.. *International Journal of Advanced and Applied Sciences*, Volume 4(5), pp. 144-151.
- Khanna, K. & Arneja, G., 2011. ERP Implementation-Do it Right the First Time.. *International Journal of Research in Mechanical Engineering and Technology*,, Volume 1(1),, pp. pp.9-5.
- Kibework A. , 2015. The Challenges and Current Status of ERP Implementation: The case of Mughher and Derba Cement Industries. Thesis, AAU..
- Klaus, H., Roseman, M. & Gable, g., 2000. What is ERP?. *Information systems frontiers*. Volume 2, pp. pp.141-162..
- Kumar, K. & van Hillegersberg, J., 2000. Enterprise resource planning: Introduction..

- Melville, N., Kraemer, K. and Gurbaxani, V., 2004. Information technology and organizational performance: An integrative model of IT business value.. *MIS quarterly*, pp. 283-322.
- Migdadi, M., 2009. Knowledge management enablers and outcomes in the small-and-medium sized.
- Muscatello, J., Small, M. & Chen, I., 2003. Implementing enterprise resource planning (ERP) systems in small and midsize manufacturing firms.. *International Journal of Operations & Production Management*..
- Nicolaou, A. & Bhattacharya, S., 2005. 'Organizational Performance Effects of ERP Systems Usage'. *International Journal of Accounting Information*, Volume 7, pp. 18-35..
- O'Leary, D., 2000.. *Enterprise resource planning systems: systems, life cycle, electronic commerce, and risk*.. s.l.:Cambridge university press..
- Peter Jew, Liza Rakadze November, 2011. Administration Guide for oracle Application Framework.
- Pinsonneault and Kraemer, 1993.
- Rao, S., 2000. Enterprise resource planning: business needs and technologies". *Industrial Managemen and data system*.
- Schober, P., Boer, C. and Schwarte, L.A., 2018. Correlation coefficients: appropriate use and interpretation. *Anesthesia & analgesia*.. Volume 126(5), pp. .1763-1768..
- Shehu, A. & Masunda, T., 2020. The review of critical success factors of enterprise resource planning system implementation.. Volume 54(276), pp. 484-495.
- Sintayehu, D. , 2014. Success Factors for Implementation of Enterprise Resource Planning.
- Sokol, M., 1994. Adaptation to difficult designs: Facilitating use of new technology.. *Journal of Business and Psychology*., Volume 8, pp. pp.277-296..
- Solomon, N., 2018. The Practices And Challenges Of Enterprise Resource Planning Project Implementation Of Commercial Bank Of Ethiopia..
- Somers, T. & Nelson, K., 2001. The impact of critical success factors across the stages of enterprise resource planning implementations.. *34th annual Hawaii international conference on system sciences*). *IEEE*., pp. (pp. 10-pp.
- Tadesse, A., 2018. Assessment of Enterprise Resource Planning Post- Implementation:The Case of Ethio telecom.
- Tatari, O., Castro-Lacouture , D. & Skibniewski , M., 2007. Current state of construction enterprise. *Survey research*..
- Tech Mahindra guideline and proposal document for CBE ERP implementation (2016) , 2016.
- Vipola, I., 2008. A method for improving ERP implementation success by the principles and process of user-centred design. *Enterprise Information Systems*., Volume 2(1),, pp. 47-76..
- Wang , E. & Chen , J., 2006. The influence of governance equilibrium on ERP.

Xue, Y., Liang, H., Boulton, W. & Snyder, C., 2005.. ERP implementation failures in China: Case studies with implications for ERP vendors.. *International journal of production economics*., Volume 97(3),, pp. pp.279-295..

Xu, H., Horn Nord, J., Brown, N. & Daryl Nord, G., 2002.. Data quality issues in implementing an ERP. *Industrial management & data systems*., Volume 102(1),, pp. pp.47-58..

Yi, M. & Davis, F., 2003.. Developing and validating an observational learning model of computer software training and skill acquisition. . *Information systems research*, Volume 14(2), pp. pp.146-169..

Yin, R. K., 2003. *Case study research - design and methods*. third ed. s.l.:Thousand Oak.

Requirement for proposal of ERP from CBE (2016, haimanot moges, ERP project manager of CBE)

.

APPENDIX

Appendix 1: Questionnaire

Dear Respondent

My name Netsanet Atomsa and I am a post graduate student at Addis Ababa University, School of Commerce. I am conducting research on” Assessing the Factors Impacting the Implementation and Performance of Enterprise Resource Planning (ERP) Systems: Commercial Bank” in a partial fulfilment of the requirements of MA in Project management.

The questionnaire has four sections and will only take a few minutes to complete. The first section collects demographic information about commercial bank ERP system users and the second section asks questions about the factors related to the implementation and performance of ERP systems. While the third and fourth sections ask questions about user acceptance and performance of ERP system after implementation. Responses is kept confidential and used only for academic purposes.

I want to thank you in advance for your time, willingness and participation.

Part 1: Demographical information

1. Gender ☐ Male ☐ female

2. Age

☐ 20 – 30 ☐ 31 – 40 ☐ 41 – 50 ☐ 51 – 60 > ☐

3. Level of Education

☐ Diploma ☐ BA/BSC ☐ Master's degree ☐ Above Masters

4. How long have you been working at the Commercial Bank of Ethiopia?

☐ Less than 1 year

☐ 1 - 3 years

- ☐ 4 - 6 years
- ☐ 7 – 10 years
- ☐ More than 10 years

5. What is your role in the Commercial Bank of Ethiopia? (Choose one)

- ☐ Human Resource
- ☐ IT Department
- ☐ Sourcing and facility
- ☐ Finance
- ☐ Other: -----

6. How long have you been using the Oracle ERP system?

- ☐ I have never used ERP System at all
- ☐ 1 year
- ☐ 2 years and above

7. Which service module(s) of the Oracle ERP system do you use?

- ☐ Human Resource Management modules (i recruitment, self-service, payroll, OLM, OTL)
- ☐ Finance module (General ledger, payables, fixed asset, and treasury)
- ☐ I procurement
- ☐ Sourcing and facility
- ☐ Purchasing
- ☐ Inventory

8. What describes your level usage of ERP system at commercial bank of Ethiopia?

- ☐ My work is not associated with any of the ERP modules
- ☐ User level (Anyone who uses one or more module of the ERP systems)
- ☐ Intermediate level (Anyone who gives support on any one of the ERP system module)
- ☐ High level (Anyone who manages and administers ERP modules, anyone who works with oracle)
- ☐ Other: -----



Section 2: Factors impacting the implementation of ERP systems.

These survey questions aim to gather insights into the perceived impact of key factors, such as organizational support, system complexity, user training and support, data quality and integration, and user acceptance on the implementation of ERP systems.

Please read each statements in the first column carefully and show the extent of your agreement on the statements by putting (✓) the in the next column using the following rating scale (Likert Scale). The rate are - 1 = Strongly Disagree, 2 = Disagree; 3 = Uncertain, 4 = Agree, 5 = Strongly Agree

	Strongly Disagree	Disagree	Uncertain	Agree	Strongly Agree
The organizational culture supports the successful implementation of ERP systems					
The organization encourages collaboration and knowledge sharing related to ERP systems.					
I believe that ERP systems align with the organization's values and goals.					
Top management support is important in the successful implementation of ERP systems in the CBE					
Top management provides sufficient resources and budget for ERP implementation.					
Top management actively participates in promoting the importance of ERP systems.					

Top management communicates clear expectations regarding ERP system usage.					
I received continuous training and support to enhance my ERP system skills.					
The training materials and resources are easily accessible and comprehensive.					
The training provided adequately prepares users for utilizing the ERP system					
The ERP system has a user-friendly interface that simplifies complex processes.					
The system offers customization options to align with specific business requirements.					
I find it easy to navigate and interact with different modules of the ERP system.					
The ERP system consistently provides accurate and reliable data.					
The ERP system integrates seamlessly with other existing applications, enhancing overall efficiency and performance.					
Data input and processing within the ERP system are error-free.					

Data integrity and security measures are effectively implemented within the ERP system.					
The ERP system vendor promptly responds to support requests and inquiries.					
The vendor provides regular updates and enhancements to the ERP system.					
The vendor offers adequate documentation and user guides for the ERP system.					

Section 2.1: User Acceptance

Please read each statements in the first column carefully and show the extent of your agreement on the statements by putting (✓) the in the next column using the following rating scale (Likert Scale). The rate are - 1 = Strongly Disagree, 2 = Disagree; 3 = Uncertain, 4 = Agree, 5 = Strongly Agree

	Strongly Disagree	Disagree	Uncertain	Agree	Strongly Agree
I believe that the ERP system improves my overall work efficiency					
I perceive the ERP system as a valuable tool for decision-making.					
I feel comfortable and confident using the ERP system in my daily tasks.					

I am satisfied from the outcomes and benefits achieved from the ERP system implementation					
ERP system saves me time					
I reached my deadlines and deliver timely when I use the ERP system					

	Strongly Disagree	Disagree	Uncertain	Agree	Strongly Agree
I actively use the ERP system in my day-to-day operations					
I consistently integrate the ERP system into my workflow.					
I recommend the ERP system to my colleagues based on my positive experience.					
I consider the ERP system as a vital part of my job responsibilities.					
ERP system is available and accessible to me at all times					

Section 3: Performance of ERP system after its Implementation

Please read each statements in the first column carefully and show the extent of your agreement on the statements by putting (✓) the in the next column using the following rating scale (Likert Scale). The rate are - 1 = Strongly Disagree, 2 = Disagree; 3 = Uncertain, 4 = Agree, 5 = Strongly Agree

	Strongly Disagree	Disagree	Uncertain	Agree	Strongly Agree
The implementation of the ERP system has improved the overall efficiency of bank operations.					
ERP system has enhanced the accuracy and timeliness of financial and operational reporting					
ERP system has streamlined and automated key business processes within the bank.					
ERP system has improved data visibility and accessibility across different departments.					
ERP system has facilitated better decision-making by providing real-time and accurate information.					
ERP system has reduced manual errors and improved data integrity within the bank.					
ERP system has increased employee productivity by simplifying and automating routine tasks.					