



**ENTERPRISE RESOURCE PLANNING SYSTEM IN THE
ETHIOPIAN BANKING SECTOR: INSIGHTS AND
RECOMMENDATIONS**

NEBIAT MOHAMMED MUZEYEN

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BY

NEBIAT MOHAMMED MUZEYEN

ADVISOR: Dr. MAHIR J. (PHD)

ADDIS ABABA, ETHIOPIA

SEPTEMBER, 2024

Statement of Declaration

I Nebiat Mohammed, the undersigned, hereby declare that the work contained in this thesis entitled “Enterprise Resource Planning System in the Banking Sector: Insights and Recommendations” is my original work and that I have not previously in its entirety or part submitted at any university for a degree.

Signature: _____ Date: _____

Letter of Certification

This is to Certify that the thesis prepared by Nebiat Mohammed, entitled: *Enterprise Resource Planning System in the Ethiopian Banking Sector: insights and Recommendations* and submitted in partial fulfillment of the requirements for the Degree of Master of Arts in Project Management complies with the regulations of the University and meets the accepted standards with respect to originality and quality.

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Statement of Approvals

Enterprise Resource Planning System in the Ethiopian Banking Sector: insights and
Recommendations

By: Nebiat Mohammed

APPROVED BY BOARD OF EXAMINERS

Advisor	Signature	Date
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Internal Examiner	Signature	Date
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External Examiner	Signature	Date
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ABSTRACT

This study explores the role of Enterprise Resource Planning (ERP) system adoption in Ethiopia's banking sector, focusing on three major banks: Bank of Abyssinia, Commercial Bank of Ethiopia, and Hibret Bank. The research integrates qualitative interviews and quantitative analysis to assess ERP systems' effects on key organizational areas. Participants, predominantly "power users" with advanced ERP knowledge and experience, were selected using Proportional Stratified Sampling and departmental sampling to ensure comprehensive representation. Data collection was guided by the Balanced Scorecard (BSC) framework, examining ERP's impact on financial performance, customer satisfaction, internal business processes, and learning and growth. Both questionnaires and semi-structured interviews were utilized, with data analyzed through Descriptive Statistics, Correlation Analysis, Generalized Linear Models (GLM), and the Kruskal-Wallis Test. Mixed-method interviews provided further insights into the operational environments of ERP users. The findings indicate that ERP adoption has enhanced overall financial performance, management practices, customer satisfaction, process efficiency, and staff development, with notable improvements in cost reduction, operational streamlining, and employee skill enhancement. However, early-stage challenges, such as initial disruptions and data reliability issues, were also identified. Grounded in the Balanced Scorecard model, this study provides valuable recommendations for banking practitioners and policymakers in Ethiopia, highlighting strategies for leveraging ERP systems to improve banking performance.

Keywords: *Enterprise Resource Planning (ERP), Ethiopian Banking Sector*

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List of Acronym/Abbreviation

AI: Artificial Intelligence

BOA - Bank of Abyssinia S.C

BPR - Business Process Reengineering

CBE: Commercial Bank of Ethiopia

CRM: Customer Relationship Management

EBS: Oracle E-Business Suite

ERP - Enterprise Resource Planning system

EFQM - European Foundation for Quality Management

HRM: Human Resource Management

ITV – Information Technology (IT) vendor

OE - Operational Excellence

SME - Small and Medium-sized Enterprises

TLS - Theory of Constraints, Lean, and Six-Sigma

TOC - Theory of Constraints

VUCA - Volatile, Uncertain, Complex, and Ambiguous environments

CHAPTER ONE

1. INTRODUCTION

1.1. Background of the study

ERP systems are critical for organizations as they provide a unified platform that supports the execution of resource planning strategies by integrating multiple processes into a single system. These Systems cover almost all business processes of the organizations such as logistics, purchasing, order fulfillment, sales, marketing, accounting, and HRM, among others. ERP systems act as integrated frameworks designed to fully integrate all functions in a company by achieving integration between various computers to fulfill multiple requirements of operation (Nawaz & Channakeshavalu, 2013).

ERP systems have become indispensable tools in the modern enterprise, offering a holistic approach to managing various organizational functions. Their value lies primarily in the ability to integrate diverse business processes, functions, and departments into a single platform. By consolidating key data related to finance, human resources, supply chain management, production, sales, and marketing, ERP systems enhance information flow across the organization, eliminating the need for isolated systems. This integration ensures accurate and timely information exchange, which not only streamlines organizational operations but also fosters improved collaboration between employees across different departments (Harris, 2017).

Besides, the integration of ERP systems guarantees better productivity and efficiency in organizations. This way, ERP systems contribute to time-saving through task automation, reducing the burden of manual data inputs which can be best utilized for other tasks by employees improving their productivity. Several more factors help to enhance efficiency and productivity throughout the organization and are supported by better, standardized processes and the leadership enforcing best practices: The turnover time and lead time are shortened, and the organizational performance is boosted. One of the key advantages of ERP systems is their ability to provide real-time visibility into crucial business metrics and operational data. Through customizable dashboards, reports, and analytics tools, stakeholders gain access to up-to-date information, allowing for informed decision-

making. It also creates a platform to see the trends and actual market needs and act accordingly to such changes hence improving the organizational competitiveness in the market (Harris, 2017).

Furthermore, ERP systems are beneficial in ways such as increasing customer satisfaction and facilitating order operations, inventory control, and customer relationship management. Marketing and sales departments may benefit from customer data analytics, and with a single point of view on customers, organizations can better tailor their interactions, respond to customer inquiries, and even predict customers' needs. By improving such experiences that are offered to the customers, the ERP systems help the firms enhance their customers' satisfaction, as well as their loyalty and retention, which in turn helps the business firms' growth and profitability (Edirisnghe, 2018).

Additionally, ERP systems offer significant compliance and reporting advantages, playing a crucial role in helping organizations adhere to regulatory and industry standards while also enforcing internal policies. By implementing robust controls, tracking actions, and ensuring data accuracy and security, ERP systems minimize the risk of fraud, errors, or data loss. Integrated security measures, audit trails, access restrictions, and inventory controls help maintain the organization's credibility and financial stability (Sundoro & Wandebori, 2021).

Furthermore, ERP systems are designed to be modular and organized, allowing them to be customized or expanded as a business's needs evolve. Thanks to features like modularity, customization, and integration, ERP systems can adapt to changing organizational requirements, making them a sustainable and competitive investment over the long term. Overall, ERP systems are invaluable for organizations seeking to enhance operational performance, drive innovation, and maintain a competitive edge in today's global market (Harris, 2017).

The selected banks for this study—Bank of Abyssinia, Commercial Bank of Ethiopia, and Hibret Bank—were chosen due to their established implementation of Enterprise Resource Planning (ERP) systems. Other banks in Ethiopia have either not implemented ERP systems, are currently in the implementation phase, or have not utilized these systems long enough to thoroughly assess their impact on operational excellence. This selection allows for a focused analysis of the insights and recommendations derived from banks with substantial ERP experience.

Bank of Abyssinia (BoA), Commercial Bank of Ethiopia, and Hibret Bank recognize the importance of leveraging advanced technologies to accelerate operations, enhance customer experience, and maintain a sustainable competitive edge. The adoption of ERP systems has significant implications for their strategic initiatives and business management, as it facilitates business value-chain processes, improves process efficiencies, and strengthens organizational decision-making. By effectively managing ERP systems, these banks can enhance their operational flexibility, accountability, and effectiveness, thereby creating greater potential for growth and development within Ethiopia's banking industry.

1.1.1. Background of the Organizations

Ethiopia's banking sector is dynamic and diverse, with institutions catering to a wide range of financial needs. In this overview, we'll explore the backgrounds and innovations of three major banks: the Commercial Bank of Ethiopia (CBE), Hibret Bank, and the Bank of Abyssinia (BoA).

The Commercial Bank of Ethiopia (CBE) is a cornerstone of the nation's financial system, with roots tracing back to the establishment of the State Bank of Ethiopia in 1942. Today, CBE operates over 1,940 branches, serving a vast customer base with millions of active ATM cardholders and CBE Birr users. Known for its robust digital infrastructure, the bank strives to become a world-class financial institution and a key driver of Ethiopia's economic growth. CBE places a strong emphasis on customer service, ensuring high-quality interactions across all touchpoints (Commercial Bank of Ethiopia, 2024).

Hibret Bank, founded in 1998, is a pioneer among private banks in Ethiopia. The name "Hibret," meaning "collaboration" in Amharic, reflects the bank's commitment to collective progress and national development. With an ambitious growth strategy set for 2030, Hibret Bank has built a reputation for innovation and technological leadership, fostering partnerships with major institutions. It now operates over 488 branches and employs more than 8,000 people. The bank's headquarters, the "Hibir Tower," stands as an iconic symbol of its contribution to Addis Ababa's skyline and the broader Ethiopian economy (Hibret Bank, 2024).

The Bank of Abyssinia (BoA), established in 1996, is another key player in Ethiopia's banking landscape, providing a full range of commercial banking services. The name "Abyssinia" evokes

values such as bravery, hope, and renewal, symbolized by the bank's Adey Abeba logo. BoA serves over 10 million customers through more than 900 branches and is driven by a vision to become the leading commercial bank in East Africa by 2030. The bank is committed to core values like customer satisfaction, integrity, and community support. BoA also actively engages in social responsibility initiatives and embraces technological advancements to enhance customer experience, such as Virtual Banking through Interactive Teller Machines (ITM), mobile apps, and USSD services, making banking more accessible in remote areas (Bank of Abyssinia, 2024).

In terms of Enterprise Resource Planning (ERP) systems, each of these banks has adopted different approaches to enhance their operations. The Bank of Abyssinia implemented Oracle Fusion, a cloud-based ERP system, in 2021, providing modules for human resources, finance, accounting, and supply chain management. By leveraging artificial intelligence (AI), the system automates processes and offers real-time insights with integrated analytics and dashboards, streamlining operations and improving overall performance.

The Commercial Bank of Ethiopia has been utilizing the Oracle E-Business Suite since 2016, which integrates various applications to enhance efficiency, reduce costs, and improve decision-making across the organization. The suite's scalability and flexibility make it suitable for large institutions like CBE, helping the bank achieve higher levels of accuracy and customer satisfaction.

Hibret Bank, on the other hand, uses an in-house developed ERP system, initiated in 2017. Continuously evolving, the system includes modules for human resources, loan origination, project management, and customer relationship management (CRM), among others. This bespoke ERP reflects Hibret Bank's focus on creating solutions tailored to its specific operational needs and growth objectives. Together, these banks demonstrate the evolution of Ethiopia's banking sector, blending traditional values with cutting-edge technology to meet the demands of a modern, fast-growing economy.

1.2. Statement of the Problem

The modern banking industry operates in a highly dynamic environment characterized by rapid technological advancements, shifting customer preferences, stringent regulatory requirements, and intense market competition. In this context, achieving and sustaining operational excellence is

paramount for banks to thrive and maintain a competitive edge. Operational excellence encompasses the optimization of internal processes, the delivery of exceptional customer service, and the ability to adapt quickly to changing market conditions (Gellweiler, 2019).

Recognizing the importance of operational excellence, the Bank of Abyssinia, Commercial Bank of Ethiopia, and Hibret Bank, three prominent financial institutions in Ethiopia, have implemented Enterprise Resource Planning (ERP) systems. The decision to adopt ERP technology is driven by these banks' strategic imperative to enhance efficiency, improve decision-making capabilities, and ultimately deliver superior value to customers and stakeholders.

However, the successful adoption and utilization of ERP systems come with significant challenges. These challenges often arise from technical complexities, organizational dynamics, and cultural barriers, which can prevent banks from fully realizing the anticipated benefits of ERP implementation (Zouine & Fenies, 2014). This complexity highlights the need for a deeper understanding of how ERP systems affect various aspects of bank operations.

Despite the growing prevalence of ERP systems in the banking industry, there is a notable gap in empirical research concerning the precise impact of ERP implementation on operational excellence within Ethiopia's banking sector. While anecdotal evidence and industry reports suggest potential benefits such as enhanced process efficiency, improved customer service, and increased financial performance, a systematic and comprehensive examination of these aspects is lacking. Moreover, the complexities and challenges mentioned above suggest that these benefits may not be uniformly realized, further emphasizing the need for focused research in this area.

Therefore, this study seeks to address the following key issues:

1. Understanding Changes Pre- and Post-ERP Implementation: Identify and analyze the changes encountered before and after ERP adoption across various operational dimensions.
2. Assessing the Impact on Operational Efficiency: Investigate the extent to which ERP implementation influences the efficiency of internal business processes.
3. Evaluating Customer Service Enhancements: Examine the effects of ERP implementation on customer satisfaction levels, service quality, and overall customer experience.

4. Analyzing Financial Performance Implications: Assess the impact of ERP implementation on key financial metrics, including cost reduction, revenue growth, profitability, and return on investment (ROI).
5. Learning and Growth Perspective: Evaluate how ERP implementation contributes to the development of employee skills, knowledge, and organizational learning, and how these factors, in turn, affect customer service, innovation, and long-term growth potential.

1.3. Research Questions

The research questions guiding this study are designed to explore the key dimensions of ERP implementation and its influence on operational excellence in the Ethiopian banking sector:

1. Financial Perspective:
 - RQ1: Which financial metrics are influenced by the implementation of ERP systems in Ethiopian banks?
 - RQ2: How does ERP implementation contribute to cost reduction and overall financial performance in the Ethiopian banking sector?
2. Customer Perspective:
 - RQ3: In what ways does ERP implementation enhance customer (employee) satisfaction and service quality in Ethiopian banks?
 - RQ4: What effects does ERP implementation have on customer (employee) retention and acquisition within the Ethiopian banking context?
3. Internal Business Process Perspective:
 - RQ5: Which internal processes are optimized or disrupted by ERP implementation in Ethiopian banks?
 - RQ6: How does ERP implementation influence workflow efficiency and operational effectiveness in the Ethiopian banking sector?
4. Learning and Growth Perspective:
 - RQ7: What changes does ERP implementation bring about in employee skills, training, and motivation in the Ethiopian banking industry?
 - RQ8: How does the adoption of ERP systems facilitate organizational learning and innovation within Ethiopian banks?

1.4. Objective of the study

1.4.1. General Objective

The general objective of this study is to examine the impact of Enterprise Resource Planning (ERP) implementation on operational excellence. This research aims to provide a comprehensive understanding of how the adoption and utilization of ERP systems influence various aspects of operational performance and strategic outcomes within the banking sector.

1.4.2. Specific Objectives

The specific objectives of this study are as follows:

1. To identify and analyze the changes that ERP Implementation brought through comparison of various components pre and post-ERP Implementation.
2. To assess the extent to which ERP implementation influences the efficiency of internal business processes.
3. To evaluate the effects of ERP implementation on customer (internal staff) satisfaction levels, service quality, and overall customer experience.
4. To analyze the impact of ERP implementation on key financial metrics, and to determine its overall effect on the financial performance.
5. To examine how ERP implementation contributes to employee skills development, training, and motivation within the banking sector.

By pursuing these specific objectives, this study aims to contribute valuable insights into the relationship between ERP implementation and operational excellence in the banking sector. These objectives will guide the research process, facilitating a structured and comprehensive analysis of the research problem and enabling the generation of meaningful findings and recommendations for academia, industry practitioners, policymakers, and other stakeholders involved in ERP adoption and strategic management processes.

1.5. Significance of the Study

This study provides valuable insights into the impact of Enterprise Resource Planning (ERP) implementation on operational excellence in the Ethiopian banking sector, benefiting a wide range of stakeholders.

For banking leaders and decision-makers, the findings offer guidance on how ERP systems align with strategic goals, enhance decision-making, and improve competitive positioning. These insights will help in shaping future investments and resource allocation for sustained growth. Operational managers will also benefit from the study's focus on improving efficiency, reducing costs, and optimizing processes, offering actionable strategies to boost performance.

Human resources and training departments will gain insights into how ERP affects employee satisfaction, training, and motivation. This can guide efforts to enhance service quality, increase retention, and improve internal relationships. Additionally, IT professionals will learn from the study's exploration of the technical challenges and opportunities in ERP implementation, helping them manage transitions more effectively and foster innovation.

Academics and researchers will find the study valuable as it fills a gap in the literature by providing empirical evidence on ERP adoption in the Ethiopian banking sector. Policymakers and regulators may also use the findings to inform guidelines that promote ERP adoption, aiding the modernization and competitiveness of the banking industry.

1.6. Scope and Limitations of the Study

This study investigates the implementation of Enterprise Resource Planning (ERP) systems at three prominent banks in Ethiopia: the Commercial Bank of Ethiopia (CBE), Hibret Bank, and the Bank of Abyssinia (BoA). These banks were specifically selected due to their successful implementation of ERP systems, distinguishing them from others that have either not adopted the system or are currently in the implementation process. The scope encompasses an in-depth analysis of the challenges, benefits, and overall effectiveness of ERP implementation in enhancing operational excellence within the Ethiopian banking sector.

One limitation of this study is the time constraint within which it is conducted, which may restrict the depth and breadth of data collection and analysis. To address this in future research, it would be beneficial to design studies that span a longer timeframe, allowing researchers to capture changes and trends over time for a more comprehensive understanding of how ERP systems influence operational excellence in the banking sector.

CHAPTER TWO

2. LITERATURE REVIEW

2.1. Introduction to Operational Excellence and Enterprise Resource Planning systems

Operational Excellence (OE), as articulated by Wiersema and Treacy (1993), embodies a strategic approach aimed at optimizing production and service delivery processes to minimize costs, eliminate redundancies, and enhance overall efficiency (Wiersema & Treacy, 1993). Rooted in the 'Value Disciplines' model, OE emphasizes the importance of operational processes in driving competitive advantage within organizations (Kovilage, Yapa, & Hewagamage, 2022). In today's dynamic business landscape, OE is crucial for organizations seeking long-term sustainability and market leadership.

Operational Excellence offers a multitude of benefits for organizations. Firstly, it fosters streamlined processes, reducing operational costs and improving profitability. This translates into a more agile organization capable of adapting to market demands. Secondly, OE ensures consistent delivery of high-quality products and services through optimized processes and robust quality control measures. This exceeds customer expectations and fosters loyalty.

Furthermore, OE cultivates an adaptable organization able to respond swiftly to market shifts, technological advancements, and competitive pressures, increasing agility. Additionally, OE promotes efficient resource allocation, maximizing productivity and performance across all levels. This effective resource utilization enables investment in strategic growth initiatives. Finally, a culture of continuous improvement fostered by OE allows organizations to adapt, evolve, and thrive in the long term, laying the foundation for sustainable growth (Sony, 2019).

Achieving Operational Excellence requires a combination of factors. Kovilage et al. (2022) highlight the importance of information sharing, a focus on competitive advantage, strong leadership, a well-defined organizational structure, efficient process management, and effective human resource practices. These elements all contribute to improved job performance and organizational success (Kovilage, Yapa, & Hewagamage, 2022).

At its core, OE is not just about cost reduction or process optimization; it's a strategic approach that aligns all organizational activities with overarching business goals. This fosters a culture of continuous improvement, customer-centricity, and responsiveness to market dynamics, enabling organizations to capitalize on emerging opportunities and mitigate risks. Sony (2019) emphasizes that Operational Excellence goes beyond just process; it's a strategic mindset (Sony, 2019). Jengwa, E., & Pellissier, R. (2022) emphasize the importance of OE strategy implementation in driving growth, particularly in VUCA environments where efficiency, agility, quality, innovation, employee engagement, and risk management are paramount (Jengwa & Pellissier, 2022).

Enterprise Resource Planning (ERP) systems are comprehensive software suites that integrate and automate business processes across various departments like finance, human resources, supply chain, customer relationship management, and so on. ERP systems play a vital role in achieving Operational Excellence by providing several key functionalities (Addo-Tenkorang & Helo, 2011).

Firstly, ERP creates a unified platform for data, enabling streamlined and standardized processes across the organization. This data integration and process standardization are crucial for operational excellence. Secondly, ERP automates routine tasks, freeing up human resources for higher-value activities. Thirdly, ERP provides real-time insights into organizational performance, facilitating informed decision-making (Addo-Tenkorang & Helo, 2011).

ERP systems are also scalable, allowing organizations to grow and expand their operations as needed. Additionally, ERP eliminates data silos, fostering seamless information flow and enabling optimal resource allocation. Notably, ERP systems often incorporate industry best practices, allowing organizations to streamline processes and adapt to changing market conditions (Madanhire & Mbohwa, 2016).

Implementing ERP systems is a strategic initiative aimed at modernizing operations, enhancing efficiency, agility, decision-making, and ultimately, achieving a competitive edge. Madanhire and Mbohwa (2016) highlight that ERP implementation is a strategic effort to improve operational efficiency (Madanhire & Mbohwa, 2016).

This section provides a foundation for understanding the significance of Operational Excellence and ERP implementation in organizational management. By exploring the theoretical

underpinnings, practical applications, and their interconnectedness, this review highlights the potential synergies between OE and ERP systems in driving organizational performance and competitiveness.

2.2. Theoretical Foundations of Operational Excellence

Treacy and Wiersema (1993) identify three key business strategies: operational excellence, customer intimacy, and product leadership. Operational excellence focuses on streamlining processes and achieving low-cost operations, while customer intimacy prioritizes tailoring products and services to specific customer needs. Product leadership emphasizes innovation and the development of novel solutions. Their work highlights the challenges companies face when deviating from their chosen value discipline, emphasizing the importance of maintaining consistency to avoid diluting resources and energy. Companies that strategically align themselves with their chosen value discipline are more likely to achieve long-term success. This suggests that organizations should leverage their core strengths and strategies to thrive in a competitive market. By effectively implementing operational excellence, customer intimacy, or product leadership, organizations can position themselves for sustainable growth and success (Treacy & Wiersema, 1993).

Operational Excellence (OE) has become a fundamental principle of modern organizational management, emphasizing a relentless pursuit of customer satisfaction alongside continuous improvement and efficiency. It advocates for a holistic approach to optimizing an organization's processes, resources, and personnel to achieve superior performance and a sustainable competitive edge. Successful implementation of OE strategies leads to increased operational efficiency, reduced costs, and enhanced customer satisfaction. Integrating OE principles into production processes and organizational structures is fundamental for driving continuous improvement and achieving long-term business success (Bruns, 2012).

Service firms, in particular, face challenges due to rapid technological advancements and evolving customer demographics. Maqableh & Akhorshaideh (2016) identify factors such as operations strategy, involvement culture, and effective commitment as key elements influencing operational excellence in service firms. This underscores the need for service firms to prioritize operational excellence to remain competitive in a dynamic market (Maqableh & Akhorshaideh, 2016).

At its core, OE revolves around the relentless pursuit of continuous improvement across all operational aspects, encompassing processes, systems, and people. The following section will delve into the key theoretical frameworks underpinning the concept of Operational Excellence.

2.2.1. Total Quality Management (TQM)

Total Quality Management (TQM), pioneered by W. Edwards Deming and Joseph M. Juran, is a comprehensive management philosophy that emphasizes continuous improvement and achieving excellence across all organizational processes. It fosters a culture of employee involvement, continuous learning, and innovation, with a core principle of ensuring quality in every aspect of the organization (Suarez, 1992).

Operational Excellence shares a strong alignment with TQM. Both emphasize the importance of quality throughout operations, striving for excellence in every process and activity. Their shared goal is to achieve organizational success through quality and efficiency. TQM provides the framework for embedding quality throughout operations, while Operational Excellence focuses on continuous improvement and efficiency gains. Together, they offer a powerful approach to achieving enhanced customer satisfaction, increased competitiveness, and sustainable performance (Oakland, 2014).

Several key aspects of TQM contribute significantly to achieving Operational Excellence. TQM emphasizes employee participation in quality improvement initiatives, fostering a culture of ownership and problem-solving (Suarez, 1992). Practices like benchmarking, employee training, and quality control activities directly influence operational efficiency and overall performance (Ngambi & Nkemkiafu, 2015).

Additionally, a core principle of TQM is understanding and exceeding customer expectations. This focus on customer intimacy aligns with the pursuit of operational excellence (Ngambi & Nkemkiafu, 2015; Qader, Khatibi, Azam, & Tham, 2023).

Specific TQM principles and practices play a crucial role in achieving operational excellence. Active leadership involvement in quality initiatives is essential for successful TQM implementation and achieving operational excellence. Building strong relationships with suppliers ensures consistent quality of inputs, contributing to overall operational efficiency. A core TQM

principle, continuous improvement fosters a culture of innovation and drives ongoing process optimization, leading to operational excellence (Suarez, 1992; Qader, Khatibi, Azam, & Tham, 2023).

For sustained success, organizations must effectively align TQM practices with their specific business objectives. This can be achieved through strategic market segmentation, where targeting specific market segments and tailoring services accordingly can enhance operational efficiency and achieve excellence in processes and outcomes. TQM's core philosophies, such as cost reduction, meeting customer needs, and optimizing internal and external performance, all directly contribute to achieving operational excellence (Qader, Khatibi, Azam, & Tham, 2023).

In conclusion, TQM offers a robust framework and guiding principles for organizations to achieve operational excellence. By focusing on quality at every stage, involving employees, and continuously improving processes, organizations can enhance customer satisfaction, achieve efficiency gains, and gain a sustainable competitive advantage (Pambreni, Khatibi, Azam, & Tham, 2019).

2.2.2. Lean Management

Lean management, with its roots in the Toyota Production System (TPS), emphasizes eliminating waste and maximizing customer value. Core Lean principles include Just-In-Time (JIT) production, which minimizes inventory waste, and Kaizen, a concept focused on continuous improvement. Additionally, Lean fosters a culture of respect for people, empowering employees to identify and address inefficiencies (Awwal, 2014).

Through streamlined processes and the reduction of non-value-added activities, Lean organizations achieve several benefits. These include increased productivity, shorter lead times, and a greater ability to respond quickly to customer demands. The implementation of Lean methodologies allows businesses to eliminate these non-value-added activities and focus on operational efficiency, ultimately enhancing customer satisfaction.

The link between Lean principles and operational excellence is rooted in their shared emphasis on streamlining processes, improving quality, and driving continuous improvement. By integrating

Lean concepts into service operations, organizations can achieve higher performance levels, reduce costs, and ultimately deliver greater customer satisfaction (Awwal, 2014).

2.2.3. Six Sigma

Six Sigma, a data-driven methodology developed by Motorola, utilizes statistical tools and techniques to minimize variation and enhance process performance. Popularized by companies like General Electric, Six Sigma focuses on eliminating defects and improving quality and operational efficiency. This methodology follows the DMAIC (Define, Measure, Analyze, Improve, Control) cycle, providing a structured approach for continuous improvement (Tabari, Gholipour-Kanani, & Tavakkoli-Moghaddam, 2012).

Studies have shown that Six Sigma initiatives have a positive impact on various aspects of an organization, including leadership, strategy, knowledge management, partner relations, and process optimization. Furthermore, research suggests that Six Sigma not only supports the integration of the Business Excellence Model (EFQM) but also motivates organizations to pursue excellence (Tabari, Gholipour-Kanani, & Tavakkoli-Moghaddam, 2012).

2.2.4. Theory of Constraints (TOC)

Eliyahu M. Goldratt's Theory of Constraints (TOC) proposes that every organization has at least one limiting factor or constraint, that hinders its ability to achieve its goals. TOC emphasizes identifying and exploiting these constraints to optimize overall system performance. By focusing on alleviating bottlenecks and synchronizing operations, organizations can achieve significant improvements in throughput, lead times, and efficiency (Watson, Blackstone, & Gardiner, 2007).

While TOC offers a powerful framework, recent research highlights the importance of tailoring its implementation to specific contexts. Panizzolo (2016) emphasizes the need for country-specific TOC strategies to account for variations in cultural factors such as communication styles, attitudes towards authority, and perceptions of time and economic factors such as market dynamics, regulatory environments, and infrastructure availability that can influence operational performance (Panizzolo, 2016).

2.2.5. Agile Management

Agile methodologies, born from the software development world, have gained widespread adoption across diverse industries due to their adaptability and iterative approach to project management (Rasnacis & Berzisa, 2017). The Agile Manifesto outlines core principles that prioritize individuals and their interactions, the delivery of working solutions, continuous customer collaboration, and the ability to embrace change (Fowler & Highsmith, 2001). By fostering flexibility, rapid feedback loops, and cross-functional teamwork, Agile organizations empower innovation, reduce time-to-market for products and services, and ultimately enhance customer value (Rasnacis & Berzisa, 2017).

This emphasis on agility is not limited to software development. Shakhour et al. (2021) highlight the critical role of agility in driving operational excellence within the healthcare sector. Their study emphasizes how agility enables healthcare organizations to swiftly respond to changing conditions and capitalize on emerging opportunities. Agility is particularly valuable in optimizing decision-making, resource allocation, and process flows, ultimately leading to enhanced performance and a higher level of excellence in healthcare service delivery (Shakhour, Obeidat, Jaradat, & Alshurideh, 2021).

This research underscores the broader applicability of Agile principles beyond software development and showcases how organizations across industries can leverage agility to streamline operations, improve efficiency, and achieve excellence.

2.2.6. Business Process Reengineering (BPR)

Business Process Reengineering involves the radical redesign of business processes to achieve dramatic improvements in performance, such as cost reduction, quality enhancement, and speed. BPR often involves questioning existing assumptions, challenging traditional practices, and rethinking entire workflows from a clean slate perspective. The key principles of BPR include focusing on business processes rather than functional departments, leveraging technology to automate and streamline processes, and aligning processes with strategic objectives. By reengineering processes, organizations can eliminate inefficiencies, reduce cycle times, improve customer satisfaction, and adapt more effectively to changing market conditions (Kovilage, Yapa, & Hewagamage, 2022).

2.2.7. Integration of Theoretical Foundations

While each of the above theoretical frameworks offers unique perspectives on achieving operational excellence, organizations often integrate elements from multiple approaches to tailor their strategies to specific contexts. By leveraging synergies between TQM, Lean Management, Six Sigma, Theory of Constraints, Agile methodologies, and Business Process Reengineering organizations can create robust systems for continuous improvement, innovation, and sustainable competitive advantage.

2.2.7.1. Lean Six Sigma

This powerful approach integrates Lean's focus on waste reduction and process efficiency with Six Sigma's emphasis on quality control and defect prevention (Lameijer, Pereira, & Antony, 2021). The core idea is to streamline operations, reduce waste, improve quality, and simplify processes to achieve optimal results. The study explores how Lean Philosophy, advocating for doing more with less, can be integrated with Six Sigma to drive efficiency and effectiveness in business operations. Operational excellence plays a pivotal role in the success of organizations by optimizing processes, reducing lead times, and maintaining high-quality standards. The synergy between Lean Manufacturing and Six Sigma is highlighted as a powerful approach to achieving operational excellence. By combining these methodologies, businesses can enhance their performance, minimize waste, and deliver products and services that meet customer expectations (Matei, 2015).

2.2.7.2. Theory of Constraints (TOC), Lean, and Six-Sigma

Dias, Silva, & Tenera (2019) discuss the integration of three major methodologies Theory of Constraints (TOC), Lean, and Six Sigma in the context of continuous improvement in organizations. It highlights the importance of these methodologies in enhancing productivity and reducing costs in industrial settings. The focus is on the TLS model, which combines TOC's constraint theory, Lean's waste reduction principles, and Six Sigma's quality improvement techniques. By merging these methodologies, organizations can achieve significant improvements in performance and quality.

The TLS model implementation involves identifying constraints within a system, exploiting these constraints efficiently, and ensuring continuous improvement through a structured approach. The model emphasizes the importance of addressing inefficiencies such as excessive transportation, waiting times, and unnecessary motion in production processes. The integration of Lean and Six Sigma with TOC enhances the effectiveness of continuous improvement initiatives, leading to better outcomes in terms of cost reduction, quality enhancement, and overall organizational performance (Dias, Silva, & Tenera, 2019).

2.2.7.3. Total Quality Management (TQM), Lean Six Sigma, and Business Process Management (BPM).

By integrating TQM, Lean Six Sigma, and BPM, organizations can achieve synergistic benefits and drive sustainable improvements in quality, efficiency, and effectiveness across all aspects of their operations. This integrated approach not only enhances organizational performance but also fosters innovation, agility, and competitiveness in today's dynamic business environment (Komkowski, Antony, Garza-Reyes, Tortorella, & Pongboonchai-Empl, 2023).

2.2.7.4. Integration of lean management, Six Sigma, and sustainability

Aguilera & Treviño (2019) delve into the integration of lean management, Six Sigma, and sustainability to achieve operational excellence. By integrating lean manufacturing which focuses on minimizing waste and maximizing efficiency in processes, Six Sigma which is aimed at reducing defects and variation in processes, and sustainability which focuses on minimizing environmental impact, conserving resources, and promoting social responsibility, organizations can achieve operational excellence while minimizing waste, maximizing value, and promoting environmental and social responsibility. This integrated approach not only drives efficiency and profitability but also contributes to long-term sustainability and resilience (Aguilera & Treviño, 2019).

2.3. Balanced Scorecard (BSC): Concept and Application

Pioneered by Robert S. Kaplan and David P. Norton in the early 1990s, the Balanced Scorecard (BSC) revolutionized strategic management and performance measurement. Unlike traditional financial-centric methods, the BSC offers a holistic view by incorporating financial and non-

financial measures across four key perspectives: financial, customer, internal business processes, and learning and growth (Quesado, Aibar Guzmán, & Lima Rodrigues, 2018).

The BSC offers significant advantages. It provides a comprehensive overview of company performance by considering multiple, interconnected measures across different perspectives. This holistic approach fosters a more balanced view of the organization's objectives and strategy (Hasan & Chyi, 2017). Additionally, BSC promotes internal process improvement by aligning goals and actions, ultimately driving strategic success (Quesado, Aibar Guzmán, & Lima Rodrigues, 2018). However, implementing BSC can be challenging. A lack of a unified body of knowledge can lead to varying interpretations and applications (Hasan & Chyi, 2017).

Some argue that BSC may not be suitable for all organizations or offer a truly holistic view of performance. They cite complexities in implementation, a potential overemphasis on financial metrics, and a lack of customization as key concerns. Additionally, the BSC's focus on short-term results and limited stakeholder engagement could hinder its effectiveness, especially in dynamic environments. Organizations should carefully assess their needs and strategic goals before adopting the BSC or exploring alternative performance measurement frameworks (Awadallah & Allam, 2015). Adapting BSC to evolving business environments requires continuous refinement to remain effective (Hasan & Chyi, 2017).

The BSC framework is comprised of four interconnected perspectives, each with its focus and metrics:

- **Financial Perspective:** This perspective focuses on traditional financial metrics such as revenue, profitability, and return on investment. However, it extends beyond mere financial outcomes to encompass measures that reflect the organization's financial health and sustainability (Faruque, 2012).
- **Customer Perspective:** Central to the BSC is understanding and meeting customer needs. The customer perspective evaluates factors such as customer satisfaction, retention, market share, and brand perception. By prioritizing customer-centric metrics, organizations can enhance customer loyalty, drive revenue growth, and gain a competitive edge (Faruque, 2012).

- **Internal Business Processes Perspective:** This perspective focuses on the efficiency, effectiveness, and quality of internal operations. It encompasses measures related to process performance, cycle times, cost reduction, and innovation. By optimizing internal processes, organizations can streamline operations, improve productivity, and deliver value to customers more effectively (Faruque, 2012).
- **Learning and Growth Perspective:** The learning and growth perspective acknowledges the critical role of human capital and organizational capacity for innovation and adaptation. It includes metrics such as employee skills, training initiatives, employee satisfaction, and organizational culture. By investing in employee development and fostering a culture of continuous learning, organizations can enhance their agility, resilience, and long-term competitiveness (Faruque, 2012).

The BSC framework offers significant relevance to organizational performance management, particularly when used in conjunction with ERP systems (Awadallah & Allam, 2015). ERP systems provide valuable data and insights that can be integrated into the BSC framework to track progress, identify trends, and make informed decisions. This combined approach enhances visibility, accountability, and control over operations, ultimately driving improved performance and business outcomes (Rotchanakitumnuai, Speece, & Swierczek, 2019).

BSC can also be used to evaluate the success of ERP implementation itself. By measuring internal customer satisfaction, particularly among ERP users within the organization, organizations can gain valuable insights into user adoption and identify areas for improvement (Rotchanakitumnuai, 2017). The Balanced Scorecard framework provides a comprehensive and balanced approach to organizational performance management. By integrating financial and non-financial measures across multiple perspectives, the BSC offers a holistic view of organizational health. When implemented effectively, and potentially in conjunction with ERP systems, the BSC can be a powerful tool for strategic alignment, performance monitoring, and decision-making, ultimately enabling organizations to achieve operational excellence and sustainable growth.

2.4. ERP Implementation: Challenges and Success Factors

Enterprise Resource Planning (ERP) systems have become a cornerstone of modern business operations. By integrating core functionalities like accounting, human resources, and

manufacturing onto a single platform, ERP systems provide organizations with real-time insights across various departments (Jacob & Ramachandran, 2020). This integrated approach fosters collaboration, knowledge sharing, and ultimately, more informed decision-making (Adiasih, Hatane, & Christyanto, 2020). However, successfully implementing an ERP system requires careful consideration of both the potential benefits and the challenges that can arise.

One of the primary challenges associated with ERP implementation is cost overruns. The initial budget estimates for ERP projects are frequently exceeded due to unforeseen needs for customization, complexities in data migration from legacy systems, and challenges in integrating the ERP software with existing systems within the organization (Tambovcevs & Tambovceva, 2022). Additionally, migrating data from legacy systems to the new ERP platform can be a daunting task. Data inconsistencies, incomplete records, and quality issues can all lead to errors and inefficiencies in business operations after migration (Wibowo, 2018).

Another hurdle to successful ERP implementation is time delays. Inadequate planning at the outset of the project, scope creep as requirements evolve, and technical complexities encountered during configuration and testing phases can all significantly extend the implementation timeline (Tambovcevs & Tambovceva, 2022). Furthermore, employees may resist the change, fearing job displacement or disruptions to their established workflows. A lack of necessary training on the new system can further exacerbate this resistance and hinder a smooth transition (Rajan & Baral, 2015).

Even with careful planning, challenges can arise during and after implementation. ERP software that is heavily customized can become unstable and difficult to maintain over time. Extensive customizations can also make it more challenging to implement future upgrades (Sheik & Sulphey, 2020). To mitigate these risks, organizations need to carefully evaluate their customization needs and strike a balance between achieving a perfect fit and maintaining long-term system viability.

Beyond the technical hurdles, securing strong leadership support from senior management is crucial for successful ERP implementation. Without a clear vision from the top and the allocation of necessary resources, projects may lack direction and encounter resistance at various levels within the organization (Shkurti & Manoku, 2021).

Fortunately, there are well-established practices that organizations can leverage to overcome these challenges and ensure a successful ERP implementation. Clearly defining objectives and establishing a well-defined project scope from the outset are fundamental steps. A clear understanding of the desired outcomes keeps the project aligned with organizational goals and helps to mitigate scope creep (AlSudairi, 2013). Effective change management strategies are essential for addressing employee resistance. Proactive communication plans that keep stakeholders informed throughout the process, engagement initiatives that address employee concerns, and comprehensive training programs that equip employees with the necessary skills to navigate the new system are all crucial components for successful change management (AlSudairi, 2013).

Robust project management practices are also paramount to keeping ERP implementation projects on track, within budget, and on schedule. This includes meticulous planning that factors in potential risks, ongoing assessment of project progress, and close monitoring of performance metrics throughout all stages of the implementation process (AlSudairi, 2013). Data management and governance are also critical considerations. The accuracy and reliability of data within the ERP system are paramount for its success. Organizations need to prioritize data quality, and data integrity, and establish data governance practices to mitigate risks associated with data migration and ensure the long-term viability of the ERP solution (Zouine & Fenies, 2014).

Business Process Reengineering (BPR) is a valuable strategy for optimizing workflows and enhancing the effectiveness of the ERP system. BPR involves critically evaluating existing business processes and aligning them with the capabilities of the new ERP platform. This may involve streamlining processes, eliminating redundancies, and adopting new approaches to optimize efficiency (Tsai et al., 2010). Choosing the right vendor is another critical factor that significantly influences the success of an ERP implementation. Selecting a qualified vendor with a proven track record of successful ERP deployments, industry expertise, and a collaborative approach is essential. A strong partnership with the vendor fosters effective communication, facilitates problem-solving, and ensures successful knowledge transfer, all of which contribute to a smoother implementation process (Tarhini, Ammar, Tarhini, & Masa'deh, 2015).

The benefits of a successful ERP implementation extend far beyond the initial project. Effective capacity planning, automation, and technology upgrades are recommended to enhance operational efficiency and productivity; while addressing human resource challenges and production delays. Integration of technology, like ERP systems, can streamline quality control processes and improve overall operational efficiency. Monitoring key performance indicators and analyzing data are essential for identifying areas of improvement and optimizing operations for enhanced efficiency.

Organizations that embrace a culture of continuous improvement can leverage their ERP systems as strategic assets that drive operational excellence and sustainable growth. This involves staying current with evolving technologies, adapting the system to meet changing business needs, and being receptive to user feedback to optimize the system's functionality over time (Madanhire & Mbohwa, 2016). Ultimately, successful ERP implementation requires a strategic approach that emphasizes clear goals, effective communication, and alignment with the organization's overall objectives. By carefully considering the challenges and adhering to established critical success factors, organizations can leverage ERP systems to streamline operations, improve collaboration, and achieve long-term success.

2.5. Integration of BSC and ERP for Operational Excellence

In today's competitive landscape, organizations prioritize operational excellence for success. This concept emphasizes continuous process improvement and efficient resource allocation to achieve superior performance. Enterprise Resource Planning (ERP) systems significantly contribute by integrating various business functions and providing real-time data for informed decision-making (Jinno, Abe, & Iizuka, 2017). Fok, Hartman, Fok, & Li, (2010) suggest that effective ERP implementation is crucial for organizational success, but it requires a nuanced understanding of contextual factors and strategic alignment. The findings contribute to the broader discourse on ERP systems' effectiveness, shedding light on the complexities and considerations involved in leveraging ERP for operational and strategic benefits in the US business landscape (Fok, Hartman, Fok, & Li, 2010).

The Balanced Scorecard (BSC) framework complements this by offering a comprehensive performance measurement approach, aligning strategic objectives with key performance indicators (KPIs) across financial, customer, internal processes, and learning and growth perspectives

(Lakshmanan, Christopher, & Kinslin, 2018). Integrating BSC and ERP creates a powerful synergy by leveraging the strengths of both approaches. By aligning ERP functionalities with strategic objectives outlined in the Balanced Scorecard, organizations can effectively monitor and evaluate performance in real-time, fostering a culture of continuous improvement and agility. This integration provides a framework for translating strategic goals into actionable tasks, ensuring that organizational objectives are effectively translated into concrete activities (Batada & Rahman, 2012).

Patalas-Maliszewska (2012) emphasizes the importance of evaluating ERP system implementation using the BSC to measure value-added contributions accurately. The BSC offers a holistic framework for measuring performance across four perspectives which translates strategic goals into actionable metrics, ensuring that ERP implementation initiatives are aligned with organizational objectives. By mapping ERP functionalities to specific BSC perspectives, organizations can prioritize resources and efforts towards areas that contribute most significantly to strategic goals. For example, financial objectives like cost reduction can be mapped to ERP's financial management modules (Patalas-Maliszewska, 2012).

A key challenge in ERP implementation is measuring its impact on operational performance. The BSC provides a comprehensive set of performance metrics that can be used to evaluate the success of ERP initiatives. Aligning ERP implementation with BSC metrics allows organizations to track the system's effectiveness in driving improvements across various operational areas. For instance, ERP's supply chain management modules can be evaluated based on inventory turnover metrics, aligning with the BSC's internal processes perspective. The BSC encourages a holistic view of performance, emphasizing the interdependencies between different business functions. By integrating ERP data with BSC perspectives, organizations can identify bottlenecks, inefficiencies, and opportunities for improvement across various processes. This integration facilitates data-driven decision-making, enabling organizations to streamline operations and enhance overall efficiency (Rotchanakitumnuai, 2017).

The combination of BSC and ERP also fosters a culture of continuous improvement by providing a structured framework for setting targets, monitoring progress, and implementing corrective actions. By aligning ERP-driven initiatives with BSC objectives, organizations can systematically

track performance, identify areas for enhancement, and drive incremental improvements over time. Integrating BSC with ERP systems enables organizations to leverage the wealth of data generated by ERP platforms for informed decision-making. By capturing operational data within the context of BSC metrics, organizations can gain insights into the effectiveness of their strategic initiatives and identify areas for improvement. This data-driven approach empowers organizations to make proactive decisions to optimize operational performance and drive continuous improvement (Cebeci, 2018). While the BSC-ERP integration offers significant benefits, challenges like data quality, system compatibility, and resistance to change need to be addressed. Successful implementation requires strong leadership commitment, cross-functional collaboration, and ongoing support from stakeholders (Rosemann & Wiese, 1999).

In conclusion, the integration of BSC and ERP holds immense potential for driving operational excellence by leveraging their complementary strengths. This approach can enhance performance, optimize processes, and achieve sustainable competitive advantage.

2.6. Review of Empirical Studies

As organizations strive to adapt to rapidly evolving market dynamics and technological advancements, the adoption and implementation of ERP systems have become increasingly prevalent as a means to achieve operational excellence and sustainable competitive advantage. This subsection provides a concise review of empirical studies investigating the impact of Enterprise Resource Planning (ERP) implementation on operational excellence.

Couto et al. (2016) conducted a multiple case study across diverse industries, including power, beverage, steel, healthcare, and pharmaceuticals, to explore the integration of BSC and ERP systems. Their research aimed to understand how these systems contribute to operational excellence and strategy implementation. The study highlighted the importance of aligning BSC and ERP systems to effectively execute organizational strategies across hierarchical levels (Couto et al., 2016).

Demyanova et al. (2018) examined the effectiveness of ERP systems in organizations, focusing on challenges, benefits, and outcomes. Their research revealed that ERP implementation led to enhanced organizational effectiveness through workload reduction, improved control, and better

decision-making. Despite challenges such as data security concerns and integration issues, ERP systems were found to positively impact operational performance and strategic alignment (Demyanova et al., 2018).

Studies by Weshah (2020) and Motwani (2016) provided insights into best practices for ERP implementation and BSC integration. Weshah's research in Jordanian banks highlighted the role of ERP systems in enhancing internal audit functions and operational performance. Motwani's study emphasized the importance of user-centric approaches and technology evaluation in ensuring successful ERP implementation. These studies identified stakeholder engagement, user training, and technology evaluation as critical factors for ERP success and BSC alignment (Weshah, 2020; Motwani, 2016).

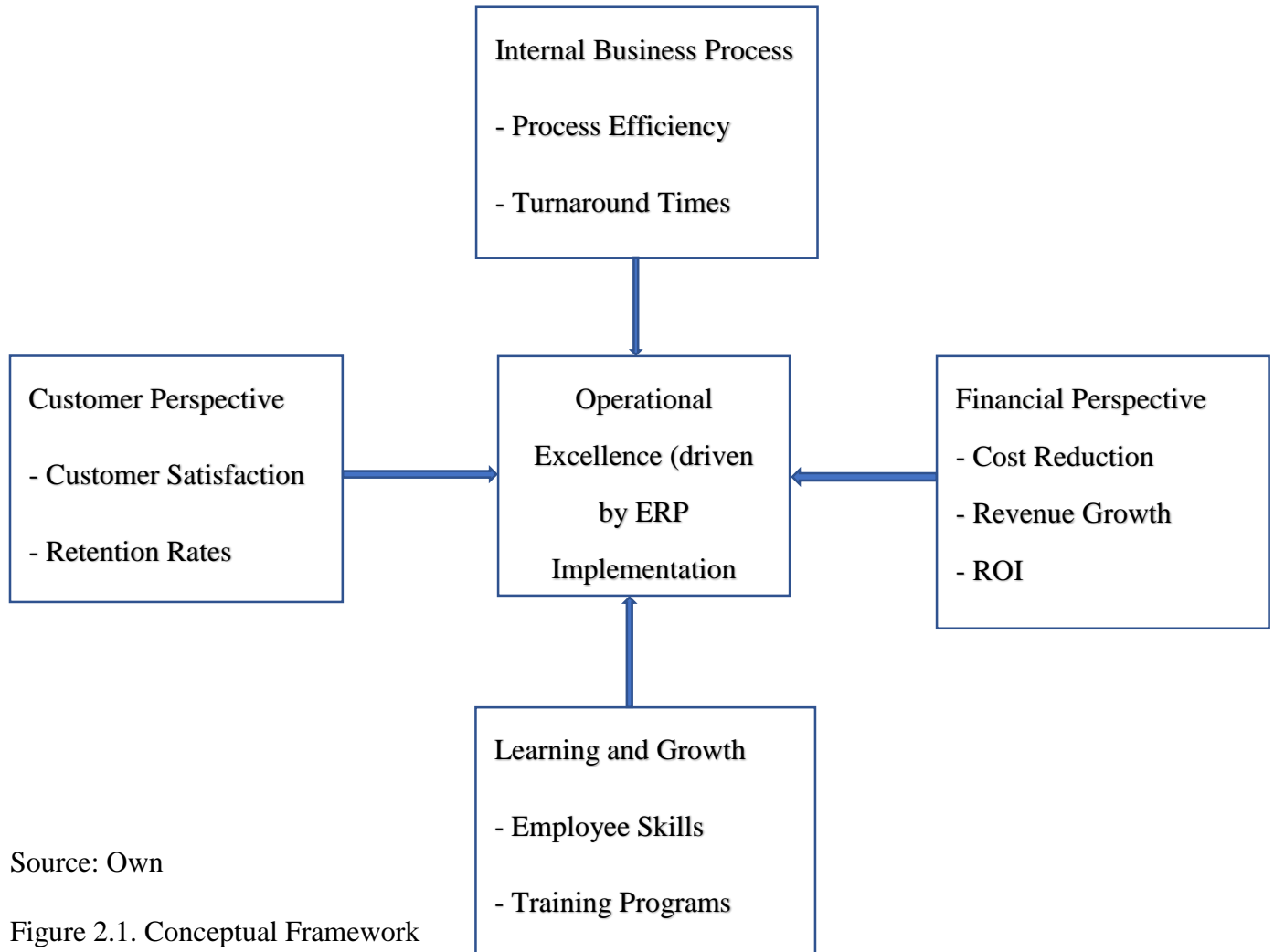
Pattanayak and Roy (2015) proposed strategic initiatives for operational excellence in the Indian Capital Goods industry, emphasizing the integration of BPR, ERP, and BSC. Their research highlighted the importance of realigning business processes, product lines, and marketing strategies to enhance competitiveness. By leveraging ERP systems and BSC frameworks, organizations could drive operational efficiency, improve market positioning, and achieve sustainable growth (Pattanayak & Roy, 2015).

Gellweiler (2019) explored operational excellence as the main customer value in the IT sector through a content analysis of IT vendors' annual reports. The study revealed a strong association between operational efficiency and competitiveness among ITVs. These findings underscored the strategic importance of operational excellence in driving customer value and business success in the IT industry (Gellweiler, 2019).

Kefe (2019) investigated the implementation of BSC in small and medium-sized enterprises (SMEs), particularly in the textile manufacturing sector. Their research identified performance measures and strategic alignment as key factors for BSC success in SMEs. By utilizing the BSC framework, SMEs could enhance performance management, strategy formulation, and organizational effectiveness (Kefe, 2019).

2.7. Conceptual Framework of the Study

The conceptual framework for this study is grounded in the Balanced Scorecard approach, which evaluates organizational performance across four key perspectives: Financial, Customer, Internal Business Processes, and Learning and Growth. This framework is designed to illustrate the hypothesized relationships between the implementation of Enterprise Resource Planning (ERP) systems and improvements in these areas, ultimately leading to enhanced operational excellence within the Ethiopian banking sector.



Source: Own

Figure 2.1. Conceptual Framework

CHAPTER THREE

3. RESEARCH METHODOLOGY

3.1. Introduction

This chapter outlines the research methodology for investigating the impact of ERP implementation on operational excellence in three major Ethiopian banks, using the Balanced Scorecard (BSC) framework. It details the research design, study variables, study context, and sampling strategy, focusing on key metrics such as financial performance, customer satisfaction, internal business processes, and learning and growth. Data collection methods, involving questionnaires, and data analysis techniques are also discussed, along with the reliability and validity analysis to ensure robust findings. Ethical considerations pertinent to the study are addressed, establishing a foundation for the empirical analysis and discussions in the following chapters.

3.2. Research Design

This study employs a mixed-methods approach to address research questions related to the implementation of Enterprise Resource Planning (ERP) systems and their influence on operational excellence in three major Ethiopian banks. This design facilitates a thorough exploration of how ERP systems affect financial performance, customer satisfaction, internal processes, and organizational learning.

To examine the financial perspective, the research focuses on identifying which financial metrics are influenced by ERP implementation and its role in cost reduction. Quantitative data will be collected through questionnaires distributed to power users who interact directly with the ERP system, providing valuable insights into financial implications. From the customer perspective, in-depth interviews with departmental managers will capture their pre- and post-ERP experiences regarding customer satisfaction and service quality. This qualitative data aims to reveal how ERP implementation impacts customer retention and acquisition.

The internal business process perspective is explored by assessing how ERP implementation optimizes or disrupts internal processes, with a focus on workflow efficiency and operational

effectiveness. Lastly, the learning and growth perspective is addressed by investigating how ERP implementation affects employee skills development and organizational learning.

By integrating quantitative and qualitative approaches, including in-depth interviews centered on pre- and post-ERP experiences, this research design strengthens the credibility and robustness of the findings, providing a detailed understanding of how ERP implementation influences operational excellence within the Ethiopian banking sector.

3.3. Description of study variables

This study investigates the impact of ERP implementation on operational effectiveness in three major Ethiopian banks. The variables are categorized into dependent and independent variables, aligned with the Balanced Scorecard framework.

Dependent Variable:

1. Operational Effectiveness: This is the main outcome variable, capturing the overall efficiency and performance improvements resulting from ERP implementation.

Independent Variables:

1. Financial Performance: Metrics related to cost reduction, revenue enhancement, and return on investment.
2. Customer Satisfaction: Measures of service quality, responsiveness, and customer relationship management improvements.
3. Internal Business Processes: Efficiency gains in internal operations, cycle time reduction, and process optimization.
4. Learning and Growth: Enhancements in employee skills, innovation capabilities, and organizational knowledge management.

By examining these variables, the study aims to comprehensively analyze how ERP implementation influences operational effectiveness through improvements in financial performance, customer satisfaction, internal business processes, and learning and growth within the Ethiopian banking sector.

3.4. Study Context and Sampling Strategy

This study focuses on three prominent banks in Ethiopia: Hibret Bank, Commercial Bank of Ethiopia, and Bank of Abyssinia. Each of these banks implements ERP systems to enhance their operational effectiveness. The research aims to understand the impact of ERP implementation on the banks' operational effectiveness by gathering data from power users at the departmental level and conducting interviews with department managers. Power users are those who use the ERP system to complete the majority of their tasks.

To ensure a representative sample, Proportional Stratified Sampling is employed. This method is appropriate as it considers the different sizes of the power user populations in each bank, allowing for proportional representation in the sample. The total number of power users at each bank is as follows:

- Hibret Bank: 250 power users
- Commercial Bank of Ethiopia: 1000 power users
- Bank of Abyssinia: 80 power users

The sampling strategy involves the following steps:

1. Stratification: Each bank represents a stratum. Within each stratum, power users are identified as the primary respondents.
2. Proportional Allocation: The sample size from each bank is proportional to the number of power users in that bank. This ensures that each bank's representation in the sample mirrors its actual proportion in the total population.
3. Random Sampling Within Strata: Power users within each bank are randomly selected to participate in the questionnaire. Additionally, department managers are interviewed to gain insights into the pre-ERP and post-ERP implementation phases.

By using Proportional Stratified Sampling, the study achieves a balanced representation of power users from each bank, enhancing the reliability and validity of the findings.

3.5. Data Collection

The data collection process for this study utilizes a mixed-method approach, combining structured questionnaires and in-depth interviews. The target population consists of internal ERP system users at the departmental level and department managers within three selected banks in Ethiopia: Hibret Bank, Commercial Bank of Ethiopia (CBE), and Bank of Abyssinia (BoA).

The process begins by determining the total population of ERP system users at the department level across the three banks. The number of power users at each bank is as follows: 250 for CBE, 80 for BoA, and 1000 for Hibret Bank, resulting in a total population of 1330 employees.

To establish a representative sample, a 95% confidence level and a 5% margin of error are applied. The initial sample size for the total population of 1330 employees is calculated using the formula for large populations:

$$n = Z^2 \cdot p \cdot (1-p) / e^2 \quad \text{where}$$

- n = sample size
- Z = Z-value (e.g., 1.96 for 95% confidence)
- p = estimated proportion (use 0.5 if unknown)
- e = margin of error (e.g., 0.05 for 5%)

$$n = (1.96^2 \times 0.5 \times 0.5) / (0.05)^2 = 384$$

Applying the finite population correction, the sample size was adjusted for the total population of 1330 employees:

$$n_{\text{adj}} = n / (1 + ((n-1) / N)) \quad \text{where } N = \text{total population}$$

$$n_{\text{adj}} = 384 / (1 + ((1330-1)/384)) = 297$$

The final step involves distributing the 297 questionnaires proportionally among the three banks based on their employee population sizes: 65 questionnaires are distributed to Hibret Bank, 250 to CBE, and 25 to BoA.

After data collection, the response rate is calculated collectively for all banks using the formula:

$$\text{Response Rate (\%)} = ((\text{Total Number of Responses} / \text{Total Number of Questionnaires Distributed}) \times 100\%)$$

With a total of 298 responses collected out of 340 questionnaires distributed, the response rate is approximately 87.65%. This is well above the 60% threshold typically expected for survey research, ensuring sufficient data for analysis and interpretation. The questionnaire employs a five-point Likert scale, ranging from "Extremely" to "Not at all."

In addition to the structured questionnaires, in-depth interviews are conducted with 9 department managers across the three banks to assess pre- and post-ERP implementation scenarios. These interviews provide qualitative insights into the ERP adoption process and its impact, exploring changes in departmental processes and workflows, challenges encountered during implementation, and overall effects on performance and strategic goals.

The data collection process spans a month, facilitating the distribution of questionnaires, receipt of responses, and conduct of interviews. Regular follow-ups and reminders are sent to maximize response rates and ensure thorough data collection. Through this mixed-method approach, the study aims to gather comprehensive and diverse data, enabling a detailed analysis of ERP implementation's impact on operational effectiveness across the selected Ethiopian banks.

3.6. Data Preparation

During the data preparation phase, missing values were addressed according to predefined protocols. In instances where demographic data was missing, particularly concerning years of experience, a common approach was adopted. Five missing entries in the years of experience variable were supplemented by imputing the most frequently occurring response, which in this case was 5 - 10 years. This method ensured the preservation of the dataset's integrity while mitigating the impact of missing information.

For Likert scale questions, responses were coded to facilitate subsequent analysis in statistical software. The Likert scale ranged from 1 to 5, with responses interpreted as follows: 'Extremely' was coded as 5, 'Considerably' as 4, 'Moderately' as 3, 'Slightly' as 2, and 'Not at all' as 1. This standardization of responses simplified the analytical process and ensured consistency across variables, enabling efficient data analysis using SPSS software.

3.7. Data Analysis

Quantitative data from structured questionnaires are statistically analyzed to examine relationships between independent variables (financial performance, customer satisfaction, internal business processes, and learning and growth) and the dependent variable (operational effectiveness). Descriptive statistics summarize the data, while regression analysis assesses the strength of relationships.

Qualitative data from interviews with department managers undergo thematic analysis to identify patterns and insights regarding ERP implementation's impact on operational effectiveness. Through coding and categorization, key themes and contextual factors are explored.

By integrating quantitative and qualitative findings, this study aims to provide comprehensive insights into the relationship between ERP implementation and organizational performance in Ethiopian banks.

3.8. Reliability and validity analysis

The reliability and validity of the research instruments are assessed to ensure the accuracy and consistency of the data collected. Reliability is evaluated through internal consistency measures such as Cronbach's alpha for questionnaire items. A high Cronbach's alpha value (>0.7) indicates good reliability, ensuring that the questionnaire items measure the intended constructs consistently.

Validity is achieved through face validity using the Balanced Scorecard framework. A standardized questionnaire, adopted for quantitative analysis, is employed to ensure the validity of the research. Content validity is ensured by aligning questionnaire items with the constructs identified in the Balanced Scorecard framework.

For quantitative analysis, the researcher conducts the Cronbach alpha model and presents it as follows:

		Reliability Statistics	
		Code	Cronbach's Alpha Based on Standardized Items
Internal Business Process	IBP	.968	.965

Financial Performance	FP	.965	.970
Customer (Internal Staff) satisfaction	CS	.866	.871
Learning and Growth	LG	.857	.865
All Variables		.878	.878

Table 3.1. Reliability Statistics of each Variable

3.9. Ethical consideration

Ethical considerations are paramount in conducting research involving human participants. This study adheres to ethical principles, including voluntary participation, informed consent, confidentiality, and protection of participants' rights. Participants are provided with clear information about the study's purpose, procedures, and their rights, and their consent is obtained before participation. Transparency and integrity are maintained in all aspects of the research process, including data collection, analysis, and reporting. Any conflicts of interest or biases that could potentially influence the research outcomes are disclosed. The findings of the study are reported accurately and objectively, with due consideration given to the limitations and potential implications of the research. Additionally, steps are taken to ensure the anonymity and confidentiality of participants' responses, and data are securely stored and used only for research purposes. By adhering to these ethical principles and practices, the study aims to uphold the rights and well-being of participants while ensuring the integrity and credibility of the research findings.

CHAPTER FOUR

4. RESULTS AND DISCUSSION

4.1. Introduction

This chapter presents the findings of the study on the impact of ERP implementation on operational effectiveness in Ethiopian banks. The results are organized into three sections: quantitative results, qualitative results, and a discussion of key findings.

Section 4.2 focuses on quantitative results, providing statistical analyses from structured questionnaires. This includes demographic characteristics of respondents and insights into relationships among variables such as financial performance, customer satisfaction, and operational effectiveness. In Section 4.3, qualitative results are presented, derived from in-depth interviews with department managers. This section explores their experiences and perceptions regarding ERP implementation, including changes in processes and challenges faced.

Finally, Section 4.4 integrates the findings from both quantitative and qualitative analyses, discussing their implications for practice and aligning them with existing literature. This comprehensive approach aims to enhance understanding of ERP's impact on operational effectiveness in the banking sector.

4.2. Descriptive Statistics

4.2.1. Descriptive Statistics for Demographic Response

Below are the Gender and Age group, educational level, work experience, and Name of Organization of the respondents of the survey.

		Count	Column N%(in %)
Gender	Female	127	42.6
	Male	171	57.4
Age Group	21-30	108	36.2
	31-40	170	57.0
	41-50	20	6.7
	Above 50	0	0
Educational level	High School	0	0

	Bachelor's Degree	108	36.2
	Master's Degree	190	63.8
	Doctoral	0	0
Years of Experience	Below 5 Years	89	29.9
	5-10 Years	146	49
	11-15 Years	47	15.8
	Above 15 Years	16	5.4
Name of Organization	Bank of Abyssinia	13	4.4
	Commercial Bank of Ethiopia	227	76.2
	Hibret Bank	58	19.5

Table 4.1. Summary of Demographic Data

4.2.2. Age Group and Gender of respondents

The age distribution among respondents indicates that 36.2% fall within the age group of 21-30, suggesting a relatively younger workforce contributing to the survey. A significant proportion (57.0%) are aged between 31-40, implying a substantial representation of mid-career professionals. The lower percentage (6.7%) in the age group of 41-50 suggests fewer respondents from the senior age bracket, potentially influencing perspectives on technology adoption and change management. The gender distribution shows a slight male majority (57.4%) compared to females (42.6%).

4.2.3. Current Educational Level

The majority of respondents holding a Master's Degree (63.8%) may indicate a higher proportion of employees in managerial or specialized positions, likely influencing their perspectives on ERP implementation and organizational performance. Conversely, the proportion of respondents with a Bachelor's Degree (36.2%) suggests a considerable presence of staff at the professional level. This also shows that all of the respondents have the adequate educational background to answer the questionnaire provided.

4.2.4. Years of Experience

The Respondents' years of experience vary, with 15.8% having 11-15 years, 49.0% with 5-10 years, 5.4% above 15 years, and 29.9% below 5 years of experience.

4.2.5. Descriptive Statistics for Independent Variables

The descriptive statistics for independent variables provide valuable insights into various dimensions of organizational performance and employee perceptions within the context of ERP implementation in the banking sector. These variables, including Customer (Internal Staff) Satisfaction, Learning and Growth, Financial Performance, and Internal Business Process, play pivotal roles in assessing the effectiveness of ERP systems and their impact on organizational excellence. By examining the distribution and characteristics of these variables, we can gain a deeper understanding of employees' attitudes, organizational processes, and performance outcomes influenced by ERP adoption.

The high mean score for internal business processes (4.6930) indicates positive perceptions of operational efficiency and effectiveness within the organization. Analyzing specific aspects of internal processes, such as workflow optimization, resource allocation, and decision-making procedures, can reveal opportunities for streamlining operations and enhancing overall organizational performance through ERP-driven process improvements.

The favorable mean score for financial performance (4.1115) reflects positive perceptions of the organization's financial stability and profitability among employees. Exploring the underlying factors influencing financial performance perceptions can uncover drivers of organizational success and areas for strategic investment to sustain growth and competitive advantage in the market.

The mean score for customer satisfaction among internal staff (3.7139) suggests a moderate level of satisfaction, indicating areas for potential improvement to enhance employee experiences and engagement with ERP systems. A comprehensive analysis of satisfaction levels across different departments and job roles can provide insights into specific areas requiring attention and intervention to optimize ERP utilization and user satisfaction.

The moderate mean score for learning and growth (3.7077) indicates a balanced perception of development opportunities and career advancement prospects among employees. Understanding the factors contributing to employees' learning experiences and identifying barriers to growth can

facilitate targeted training and skill development initiatives, fostering a culture of continuous improvement and innovation within the organization.

	Code	Min	Max	Mean	Std. Deviation
Internal Bussiness Process	IBP	3	5	4.6930	.34356
Financial Performance	FP	1	5	4.1115	.74318
Customer (Internal Staff) satisfaction	CS	1	5	3.7139	.58342
Learning and Growth	LG	1	5	3.7077	.67353
				4.05653	0.585923

Table 4.2. Descriptive Statistics for Independent Variables

4.2.5.1. Customer (Internal Staff) satisfaction

The data regarding internal staff satisfaction with the ERP system's customer-related functionalities reveals several insights. The scores indicate a generally positive perception of ERP's impact on customer satisfaction and service delivery. Notably, the system is perceived to effectively enhance the speed and quality of responses to inquiries, as well as facilitate timely and accurate communication with customers. Moreover, ERP implementation appears to have significantly improved customer service and support, leading to higher levels of satisfaction among internal staff.

However, there are areas for potential improvement, such as tailoring services based on customer feedback and enhancing the personalization of services to meet individual needs. These findings suggest opportunities for further optimization of ERP functionalities to better align with customer expectations and preferences.

	Customer Perspective	Min	Max	Mean	Std. Deviation
1	How well does ERP allow for the personalization of services to meet customer needs?	3.00	5.00	3.8289	0.67238
2	To what extent has ERP improved customer satisfaction through personalized services?	2.00	5.00	3.9161	0.90062
3	How effectively does ERP support tailoring services based on customer feedback?	2.00	5.00	3.4832	0.96821
4	How has ERP improved the speed and quality of responses to customer inquiries?	2.00	5.00	4.1309	0.87597
5	To what degree has ERP enhanced customer service and support?	2.00	5.00	4.1510	0.83727

6	How effectively does ERP facilitate timely and accurate communication with customers?	3.00	5.00	3.9362	0.82018
7	How has the ERP implementation affected the retention of existing customers (employees)?	1.00	5.00	3.3121	1.00164
8	To what extent has the ERP system contributed to the acquisition of new customers (employees)?	1.00	5.00	3.5000	1.10782
9	How effective is the ERP system in maintaining long-term relationships with customers (employees)?	2.00	5.00	3.9732	0.76053
10	How has ERP implementation improved customer (employee) loyalty?	1.00	5.00	3.3993	1.13926
11	How has ERP helped in identifying and targeting potential new customers (employees)?	1.00	5.00	3.4530	0.97760
12	How has ERP implementation affected the ease of onboarding new customers (employees)?	2.00	5.00	3.4832	0.82962
		1	5	3.7139	0.90759

Table 4.3. Descriptive Statistics for Customer (Internal Staff) Satisfaction

4.2.5.2. Internal Business Process

The descriptive statistics for the internal business processes perspective demonstrate a high level of effectiveness and efficiency brought by the ERP implementation across the three banks. The ERP system has been highly effective in streamlining internal workflows and improving the efficiency of business processes, with both aspects receiving a mean score of 4.8054 and a standard deviation of 0.39658. This indicates a strong and consistent positive impact. The influence of ERP on reducing process cycle times is near perfect, with a mean of 4.9799 and a very low standard deviation of 0.1407. Additionally, the system has successfully automated repetitive tasks and reduced the need for manual input, both scoring close to 5 (mean of 4.8054 and 4.9899, respectively).

The ERP system's effectiveness in promptly resolving operational issues and optimizing the use of resources (time, manpower, materials) is also rated very highly, with means around 4.7617 to 4.7752 and standard deviations around 0.42673 to 0.41817. However, there is a slightly lower score in reducing the frequency of unresolved issues (mean of 4.3792, std. dev. of 0.486). The system's impact on improving resource allocation and minimizing resource wastage is similarly high, with a mean score of 4.7617 and 4.9899, respectively, indicating substantial benefits in resource management.

The ERP system enhances visibility, transparency, and collaboration among departments, with consistent mean scores of 4.7617 across multiple aspects and standard deviations of 0.42673. The ERP has contributed significantly to the standardization of processes and aligning them with industry best practices, although there is slight variability (mean of 4.3356, std. dev. of 0.5579). While the ERP system effectively supports compliance with regulatory requirements (mean of 4.3792, std. dev. of 0.486), its impact on process adaptability to changing market conditions or customer demands is slightly lower, with a mean of 4.1409 and a higher standard deviation of 0.77434.

The ERP system supports continuous improvement initiatives within internal processes, with a mean score of 4.3356 and a standard deviation of 0.5579, indicating positive feedback but with some room for enhancement. Overall, the data suggest that ERP implementation has significantly optimized internal business processes, enhanced workflow efficiency, automated repetitive tasks, and improved resource utilization. The slight variability in areas such as process adaptability and issue resolution highlights opportunities for further system refinement to ensure even greater alignment with dynamic business environments and customer demands.

	Internal Business Processes Perspective	Min	Max	Mean	Std. Deviation
1	How effective has ERP implementation been in streamlining internal workflows?	4	5	4.8054	0.39658
2	To what extent has ERP improved the efficiency of business processes?	4	5	4.8054	0.39658
3	How has ERP influenced the reduction of process cycle times?	4	5	4.9799	0.1407
4	How successful has ERP been in automating repetitive tasks?	4	5	4.8054	0.39658
5	To what degree has ERP reduced the need for manual input in routine processes?	4	5	4.9899	0.1
6	How has ERP improved the efficiency and accuracy of automated tasks?	4	5	4.7953	0.40416
7	How effective is the ERP system in promptly resolving operational issues?	4	5	4.7617	0.42673
8	To what extent has ERP reduced the frequency of unresolved issues?	4	5	4.3792	0.486
9	How has ERP improved the overall issue-resolution process?	4	5	4.7617	0.42673
10	How effectively does ERP help in optimizing the use of resources (e.g., time, manpower, materials)?	4	5	4.7752	0.41817
11	To what extent has ERP improved resource allocation and utilization?	4	5	4.7617	0.42673
12	How has ERP contributed to minimizing resource wastage?	4.00	5.00	4.9899	0.10000

13	How has ERP impacted the flexibility and agility of internal processes?	4	5	4.7617	0.42673
14	To what extent has ERP enhanced the visibility and transparency of internal workflows?	4	5	4.7617	0.42673
15	How effectively does ERP facilitate collaboration and communication among different departments or teams?	4	5	4.7617	0.42673
16	To what degree has ERP contributed to standardizing processes across various business units or locations?	4	5	4.7617	0.42673
17	How has ERP influenced the alignment of internal processes with industry best practices or standards?	3	5	4.3356	0.5579
18	How has ERP affected the adaptability of internal processes to changing market conditions or customer demands?	3	5	4.1409	0.77434
19	To what extent has ERP facilitated compliance with regulatory requirements or industry standards in internal processes?	4	5	4.3792	0.486
20	How effectively does ERP support continuous improvement initiatives within internal processes?	3	5	4.3356	0.5579
		3	5	4.692442	0.410101

Table 4.4. Descriptive Statistics for Internal Business Process

4.2.5.3. Financial Performance

The financial perspective aims to assess the impact of ERP implementation on various financial metrics within the organizations. The data reveals that ERP implementation has generally had a positive effect on financial performance, with significant reductions in operational costs (mean of 4.9128, std. dev. of 0.40920) and overhead costs (mean of 4.3356, std. dev. of 0.55790). This suggests that ERP systems have effectively streamlined cost-related processes, leading to tangible savings for the banks.

	Financial Perspective	Min	Max	Mean	Std. Deviation
1	To what extent has ERP implementation led to a reduction in operational costs?	3.00	5.00	4.9128	0.40920
2	How effective has ERP been in decreasing overhead costs?	3.00	5.00	4.3356	0.55790
3	How has ERP influenced cost savings across various departments?	1.00	5.00	4.2483	0.84412
4	To what extent has ERP impacted revenue growth since its implementation?	1.00	5.00	4.2483	0.84412
5	How has ERP contributed to an increase in sales or service revenue?	1.00	5.00	3.8658	1.06779
6	How effectively has ERP supported new revenue-generating initiatives?	1.00	4.00	3.4866	0.71644
7	How has ERP implementation improved overall profitability?	1.00	5.00	3.8658	1.06779
8	To what extent has ERP contributed to better profit margins?	1.00	5.00	3.8859	1.03169
9	How effectively does ERP help in identifying and eliminating unprofitable activities?	3.00	5.00	4.1544	0.76299

		1.00	5.00	4.1115	0.81134
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Table 4.5. Descriptive Statistics for Financial Performance

Cost savings across various departments also show favorable results, with a mean score of 4.2483 and a standard deviation of 0.84412, indicating a broad impact across different areas. The influence of ERP on revenue growth since its implementation mirrors this trend, with the same mean and standard deviation, highlighting a positive correlation between ERP usage and financial gains.

The contribution of ERP to an increase in sales or service revenue is slightly lower, with a mean of 3.8658 and a higher variability (std. dev. of 1.06779), suggesting that while there is an overall positive impact, the extent can vary significantly. Similarly, the effectiveness of ERP in supporting new revenue-generating initiatives has a lower mean of 3.4866 and a standard deviation of 0.71644, indicating room for improvement in leveraging ERP for new business opportunities.

Improvements in overall profitability and profit margins have mean scores of 3.8658 and 3.8859, respectively, both with standard deviations around 1.0, which points to moderate but varied enhancements in profitability metrics. The ability of ERP systems to identify and eliminate unprofitable activities shows stronger results, with a mean of 4.1544 and a standard deviation of 0.76299, suggesting effective cost management practices facilitated by ERP.

Overall, the financial perspective indicates that ERP implementation has led to substantial cost reductions and contributed positively to revenue growth and profitability. However, the varied responses in some areas highlight the need for continued optimization and strategic use of ERP systems to fully realize their financial potential.

4.2.5.4. Learning and Growth

The Learning & Growth Perspective focuses on how ERP implementation impacts staff satisfaction, productivity, knowledge management, and innovation within the organization. The data suggests varied but generally positive outcomes in these areas.

Staff satisfaction with the ERP system, in terms of usability and support, scores relatively high with a mean of 4.0302 and a standard deviation of 0.74474. This indicates that most staff find the ERP system user-friendly and well-supported. Similarly, the extent to which ERP implementation

has met the expectations of internal staff has a mean score of 3.8792 and a standard deviation of 0.79910, reflecting overall satisfaction but with some room for improvement.

ERP's impact on staff productivity and morale shows a more mixed response, with a mean of 3.5268 and a higher standard deviation of 1.12858, suggesting that while many staff have experienced productivity gains and morale boosts, others may not have had as positive an experience. In terms of knowledge acquisition within the organization, ERP has facilitated this to a reasonable extent, with a mean score of 3.8221 and a standard deviation of 1.00097. However, the improvement in knowledge sharing among departments appears less pronounced, as indicated by a lower mean of 3.3725 and a standard deviation of 1.23318, highlighting a potential area for further development.

The effectiveness of ERP in supporting collaborative knowledge management has a mean of 3.7383 and a standard deviation of 0.97024, suggesting moderate success. ERP's contribution to the adoption of innovative practices within the organization is reflected by a mean of 3.6141 and a standard deviation of 0.97203, showing a positive influence but with considerable variability in responses. In driving process improvements and new methodologies, ERP scores a mean of 3.5839 and a standard deviation of 0.93995. Continuous improvement and innovation encouragement by ERP also receive a favorable mean score of 3.8020 with a standard deviation of 0.99378.

Overall, the Learning & Growth Perspective indicates that ERP implementation has positively impacted staff satisfaction, productivity, and knowledge management to varying degrees. While there is a generally positive trend, the variability in responses suggests opportunities for enhancing these outcomes further.

	Learning & Growth Perspective	Min	Max	Mean	Std. Deviation
1	How satisfied are staff with the ERP system in terms of usability and support?	3.00	5.00	4.0302	0.74474
2	To what extent has ERP implementation met the expectations of internal staff?	2.00	5.00	3.8792	0.79910
3	How has ERP affected staff productivity and morale?	1.00	5.00	3.5268	1.12858
4	How has ERP facilitated the acquisition of new knowledge within the organization?	1.00	5.00	3.8221	1.00097
5	To what degree has ERP improved knowledge sharing among departments?	1.00	5.00	3.3725	1.23318

6	How effectively does ERP support collaborative knowledge management?	2.00	5.00	3.7383	0.97024
7	How has ERP contributed to the adoption of innovative practices within the organization?	1.00	5.00	3.6141	0.97203
8	To what extent has ERP driven process improvements and new methodologies?	2.00	5.00	3.5839	0.93995
9	How effectively does ERP encourage continuous improvement and innovation?	2.00	5.00	3.8020	0.99378
		1.00	5.00	3.7077	0.97584

Table 4.6. Descriptive Statistics for Learning and Growth

4.3. Inferential Analysis

4.3.1. Correlation Analysis

Correlation analysis, a statistical technique, was employed to evaluate the relationships among various perspectives: Customer (Internal Staff) Satisfaction, Learning and Growth, Internal Business Processes, Financial Performance, and Operational Excellence. In this analysis, Spearman's rank correlation coefficient (ρ) was utilized to assess the strength and direction of these relationships. Spearman's rank correlation evaluates the monotonic relationship between two variables, making it suitable for ordinal or ranked data.

Interpreting Spearman's rank correlation involves assessing the magnitude and direction of the coefficient (ρ). A coefficient close to +1 or -1 indicates a strong positive or negative monotonic relationship, respectively. Conversely, coefficients closer to 0 suggest a weaker monotonic relationship. The significance of each correlation was determined using two-tailed p-values, with values less than 0.05 considered statistically significant. These results offer valuable insights into the interconnectedness of different facets of operational excellence concerning ERP implementation.

		CS	LG	IBP	FP	OP
CS	Correlation Coefficient	1.000	.693**	-.231**	-0.092	.572**
	Sig. (2-tailed)		0.000	0.000	0.112	0.000
LG	Correlation Coefficient	.693**	1.000	-.282**	-0.075	.520**
	Sig. (2-tailed)	0.000		0.000	0.194	0.000

IBP	Correlation Coefficient	-.231**	-.282**	1.000	.663**	.551**
	Sig. (2-tailed)	0.000	0.000		0.000	0.000
FP	Correlation Coefficient	-0.092	-0.075	.663**	1.000	.539**
	Sig. (2-tailed)	0.112	0.194	0.000		0.000
OP	Correlation Coefficient	.572**	.520**	.551**	.539**	1.000
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	

Table 4.7. Correlation Analysis

Overall, the correlation analysis reveals significant correlations between these variables. The Customer Perspective Composite exhibited a strong positive correlation ($r = 0.572$, $p < 0.01$) with the Operational Excellence Composite, suggesting that higher levels of customer satisfaction are associated with improved operational excellence. Similarly, the Learning and Growth Perspective Composite showed a strong positive correlation ($r = 0.520$, $p < 0.01$) with Operational Excellence Composite, indicating that investments in staff training and knowledge sharing positively influence operational excellence. The Internal Business Processes Perspective Composite demonstrated a moderate positive correlation ($r = 0.551$, $p < 0.01$) with the Operational Excellence Composite, highlighting the importance of streamlined workflows and resource allocation in enhancing operational excellence. Additionally, the Financial Perspective Composite exhibited a moderate positive correlation ($r = 0.539$, $p < 0.01$) with the Operational Excellence Composite, suggesting that cost-saving measures and revenue growth contribute to operational excellence. These findings underscore the interconnectedness of organizational perspectives and their impact on achieving operational excellence.

4.3.2. Normality Test

A normal distribution, often referred to as a Gaussian distribution, is a probability distribution that is symmetric about the mean. It is characterized by its symmetry around the mean, a bell-shaped curve, and the fact that the mean, median, and mode are all equal and located at the center of the distribution. Approximately 68% of the data falls within one standard deviation of the mean, 95% within two standard deviations, and 99.7% within three standard deviations.

Following a normal distribution is significant because many statistical tests and methods assume normality, such as t-tests and ANOVA, which simplifies the computation of probabilities and other statistical measures. Additionally, the behavior of the data can be predicted accurately using standard deviations and the empirical rule. According to the Central Limit Theorem, for sufficiently large sample sizes, the sampling distribution of the sample mean will be approximately normally distributed, regardless of the shape of the population. To assess the normality of the "OperationalExcellence" data, both the Kolmogorov-Smirnov and Shapiro-Wilk tests were conducted.

	Kolmogorov-Smirnova			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Operational Excellence	0.076	298	0.000	0.989	298	0.023

Table 4.8. Tests of Normality

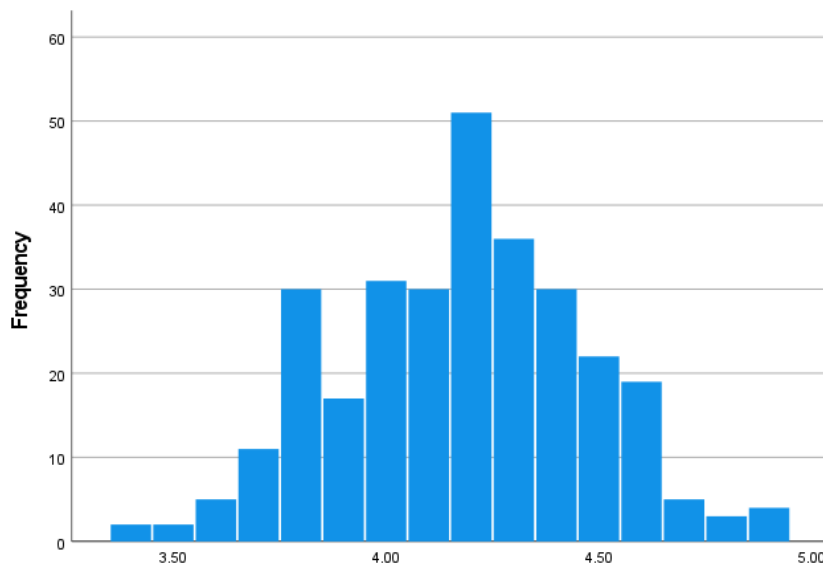


Figure 4.1. Histogram for Normality Test of Operational Excellence

The results of the normality tests for the "OperationalExcellence" data are as follows. For the Kolmogorov-Smirnov test, the statistic was 0.098 with 298 degrees of freedom (df) and a significance (p-value) of 0.000. For the Shapiro-Wilk test, the statistic was 0.985 with 298 degrees

of freedom and a significance (p-value) of 0.004. Both tests indicate that the data significantly deviates from a normal distribution, as evidenced by p-values less than 0.05. Therefore, we reject the null hypothesis that the "OperationalExcellence" data follows a normal distribution.

Given these results, it is appropriate to consider non-parametric methods for further analysis, as they do not assume normality and are more robust in handling data that deviates from the normal distribution. The non-normality of the "OperationalExcellence" data suggests that parametric tests that assume normality may not be appropriate. Instead, non-parametric tests, which do not rely on the assumption of normality, should be employed. This approach ensures the validity of the statistical conclusions and helps to accurately interpret the data, which may exhibit specific trends or patterns, such as clusters of high or low performance.

4.3.3. Kruskal-Wallis Test

The Kruskal-Wallis test is a non-parametric test used to determine whether there are statistically significant differences between two or more independent groups on a continuous or ordinal dependent variable. It is an extension of the Mann-Whitney U test for more than two groups.

Sample 1-Sample 2	Test Statistic	Std. Error	Std. Test Statistic	Sig.	Adj. Sig.a
Bank of Abyssinia-Hibret Bank	-70.592	26.417	-2.672	.008	.023
Bank of Abyssinia-Commercial Bank of Ethiopia	-126.116	24.550	-5.137	.000	.000
Hibret Bank-Commercial Bank of Ethiopia	55.524	12.666	4.384	.000	.000

Table 4.9. Kruskal-Wallis Test (Pairwise Comparisons based on the Name of the Organization)

These results indicate significant differences between the organizations in terms of their operational excellence composite scores. After applying the Bonferroni correction for multiple tests, the significance levels remain below the threshold of 0.05, suggesting that the differences observed are unlikely due to random chance.

4.3.4. ANOVA

Despite the data's non-normal distribution, ANOVA provides a comparative analysis of mean differences among groups, highlighting any significant differences in operational excellence

levels. The ANOVA results show a highly significant F-value, indicating that there are significant differences in the mean operational excellence scores among the three banks.

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	24.808	4	6.202	1713076.104	.000b
	Residual	.001	293	.000		
	Total	24.809	297			

Table 4.10. ANOVA (Comparative Analysis to Showcase Operational Excellence Level Difference Among the Three Banks)

4.3.5. Generalized Linear Models (GLM)

Generalized Linear Models (GLM) offer a flexible framework for analyzing data where the distribution of the dependent variable may not adhere to the assumptions of traditional regression models. GLMs extend the scope of regression analysis by accommodating various types of dependent variables, including non-normal distributions and binary outcomes. GLM encompasses a broad class of statistical models that allow for the analysis of relationships between one or more independent variables and a dependent variable. Unlike linear regression, GLMs are not restricted to normally distributed dependent variables or linear relationships between variables.

Interpreting Generalized Linear Models (GLMs) involves assessing the coefficients, significance levels, and model fit statistics to understand the relationships between predictor variables and the dependent variable. Coefficients indicate the strength and direction of these relationships, with significance levels determining their statistical significance. Lower deviance and chi-square values, along with favorable information criteria, indicate better model fit. Additionally, interaction effects between predictor variables should be considered, and it's crucial to assess whether the assumptions of the GLM are met through residual analysis and diagnostic plots. Interpreting GLM results enables researchers to draw meaningful inferences about the underlying processes or phenomena being studied.

In this study, GLM serves as an alternative to multiple regression analysis for examining the relationships between the independent variables (Customer Perspective, Learning & Growth

Perspective, Internal Business Processes Perspective, and Financial Perspective) and the dependent variable (Operational Excellence). By employing GLM, we can explore potential nonlinear relationships and better capture the complexities inherent in the data.

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test		
			Lower	Upper	Wald Chi-Square	df	Sig.
(Intercept)	-0.002	0.0020	-0.006	0.002	0.687	1	0.407
CS	0.240	0.0003	0.239	0.240	835362.033	1	0.000
LG	0.180	0.0002	0.180	0.181	598736.630	1	0.000
IBP	0.400	0.0004	0.399	0.400	956856.339	1	0.000
FP	0.181	0.0002	0.181	0.181	993219.809	1	0.000
(Scale)	3.560E-6a	2.9161E-07	3.032E-06	4.180E-06			

Table 4.11. Parameter Estimates from Generalized Linear Models (GLM)

The parameter estimates indicate the effect of each predictor variable on the dependent variable, Operational Excellence, in the GLM model. The intercept term (-0.002) represents the expected value of the dependent variable when all predictor variables are zero. For the predictor variables, Customer Satisfaction, Learning & Growth, Internal Business Processes, and Financial Performance, the coefficients (0.240, 0.180, 0.400, and 0.181 respectively) indicate the change in the expected value of the dependent variable for a one-unit increase in each predictor, holding other predictors constant. These coefficients are statistically significant with p-values < 0.001, suggesting that each predictor has a significant impact on Operational Excellence. The standard errors of the coefficients reflect the precision of the estimates, and the confidence intervals provide a range within which the true population parameter is likely to fall. The scale parameter (3.560E-6) estimates the dispersion of the dependent variable, with lower values indicating less dispersion.

4.3.6. Mediation Analysis

The mediation analysis using the PROCESS macro for SPSS (Version 4.2) examined the relationship between **Operational Excellence (OE)** as the independent variable, **Number of**

Years (NY) using the ERP system as the mediating variable, and **Internal Business Process (IBP)** as the dependent variable

Model Summary	R	R ²	MSE	F	df1	df2	p
Mediating Variable (NY)	0.4126	0.1702	0.4021	60.7170	1	296	< 0.001
Dependent Variable (IBP)	0.7944	0.6311	0.0438	252.2878	2	295	< 0.001

Table 4.12. Model Summary of Mediation Analysis

Direct and Indirect Effects	Effect	Boot SE	Boot LLCI	Boot ULCI
Direct Effect (OE on IBP)	0.2385	0.0461	0.1477	0.3294
Indirect Effect (OE → NY → IBP)	0.3385	0.0384	0.2616	0.4141

Table 4.13. Direct and Indirect Effects of Mediation Analysis

The results indicate a significant direct effect of OE on IBP ($B = 0.2385$, $p < 0.001$), showing that improvements in operational efficiency enhance internal business processes. Additionally, NY significantly mediated this relationship, with an indirect effect of OE on IBP via NY ($B = 0.3385$, $p < 0.001$).

The model accounted for 63.11% of the variance in IBP, demonstrating a strong fit. These findings suggest that the longer the banks have utilized the ERP system, the greater the improvement in internal business processes, driven by operational efficiency.

4.4. Qualitative Analysis

This section delves into the qualitative aspects of ERP implementation, focusing on its impact on various operational metrics as observed through interviews and subjective assessments. The analysis covers key areas such as process efficiency, data reliability, decision-making, report generation, customer satisfaction, cost efficiency, compliance, employee productivity, engagement, training effectiveness, and process automation.

4.4.1. Time to Complete Key Processes

ERP implementation significantly reduced the time required to complete key processes. Before ERP, processes were manual and fragmented, leading to inefficiencies and delays. Post-

implementation, streamlined workflows, and automated tasks facilitated quicker completion of tasks. This improvement in process efficiency was frequently highlighted by respondents, noting the substantial reduction in cycle times and the resulting enhancement in overall operational efficiency.

4.4.2. Error Rate in Data Entries

The error rate in data entries saw a notable decrease following ERP implementation. Previously, manual data entry was common, leading to frequent human errors and data inconsistencies. Post-ERP, automation, and integrated systems have minimized these errors, enhancing data reliability and integrity. This reduction in errors has been crucial in improving the accuracy of reporting and decision-making, as emphasized by several interviewees.

4.4.3. Ease of Accessing and Retrieving Data

Accessing and retrieving important data became significantly easier with ERP implementation. Before ERP, data was often siloed and challenging to access quickly, causing delays in decision-making. The ERP system centralized data and provided user-friendly interfaces, enabling faster and more efficient data access. Respondents noted that this improvement has positively impacted decision-making processes, leading to quicker and more informed decisions.

4.4.4. Time Required to Generate Key Reports

The time required to generate key reports was drastically reduced post-ERP implementation. Previously, generating reports involved manual data collection and analysis, which was time-consuming. The ERP system's automated reporting tools now provide instant access to comprehensive reports, allowing for timely insights and better strategic planning. This efficiency in reporting has been a significant benefit, as highlighted by interviewees.

4.4.5. Customer/Client Satisfaction Scores

Customer/client satisfaction scores improved markedly after ERP implementation. The system enabled faster response times, personalized services, and accurate information delivery, enhancing overall service quality. This increase in satisfaction scores reflects the positive impact of ERP on service quality, as consistently mentioned by respondents.

4.4.6. Operational Costs

Operational costs decreased following ERP implementation. The automation of tasks and streamlined processes reduced the need for manual labor and minimized errors, leading to significant cost savings. Respondents frequently mentioned the enhanced cost efficiency achieved through ERP, attributing it to reduced operational costs and improved efficiency.

4.4.7. Frequency of Compliance Issues

The frequency of compliance issues decreased after ERP implementation. The system's built-in compliance features and automated checks ensured adherence to regulatory standards, reducing compliance violations. This improvement in compliance suggests enhanced risk management effectiveness, as noted by several interviewees.

4.4.8. Average Employee Output

Average employee output increased post-ERP implementation. Automation of repetitive tasks and streamlined workflows enabled employees to focus on higher-value activities, boosting productivity. This increase in employee output was a common theme in the interviews, indicating a positive impact on productivity.

4.4.9. Employee Satisfaction and Adaptation

Employee satisfaction scores and adaptation to the ERP system improved significantly. The enhanced usability and support provided by ERP systems contributed to higher satisfaction levels among employees. This improvement in satisfaction scores reveals that ERP implementation has fostered greater employee engagement and a more supportive work environment, as emphasized by respondents.

4.4.10. Effectiveness of Training and Development Programs

Training and development programs became more effective after ERP implementation. The system provided comprehensive training modules and continuous learning opportunities, enhancing employee skills and performance. This improvement in training effectiveness was frequently mentioned by interviewees, indicating better-trained and more competent employees.

4.4.11. Level of Process Automation

The level of process automation increased significantly after ERP implementation. Manual processes, which were prone to errors and inefficiencies, were largely automated, resulting in higher operational efficiency and fewer errors. Respondents highlighted this increase in automation as a key benefit of ERP, noting its positive impact on operational excellence.

4.5. Presentation and Discussion of Key Findings

The implementation of an Enterprise Resource Planning (ERP) system has a profound influence on operational excellence across various dimensions in the context of three banks: Bank of Abyssinia, Hibret Bank, and the Commercial Bank of Ethiopia. This section presents key findings from the study, addressing the general research question and specific research questions related to the financial, customer, internal business process, and learning and growth perspectives.

General Research Question: How does the implementation of an Enterprise Resource Planning (ERP) system influence operational excellence in the context of the three banks?

The integration of ERP systems at these banks significantly enhances operational excellence by improving efficiency, accuracy, decision-making, and overall organizational performance. The findings indicate substantial benefits across financial performance, customer satisfaction, internal processes, and employee growth and innovation.

Financial Perspective: RQ1: What financial metrics are affected by the ERP implementation at the three banks? RQ2: How does the ERP implementation impact cost reduction and financial performance at these banks?

Quantitative analysis reveals a strong positive correlation between ERP implementation and financial performance metrics. The Generalized Linear Models (GLM) indicate that the financial perspective significantly predicts operational excellence. ERP implementation leads to cost reduction, enhanced profitability, and improved revenue management. Respondents highlighted substantial cost savings across various departments, supporting the hypothesis that ERP implementation positively impacts financial performance metrics (H1, H2).

Customer Perspective: RQ3: How does the ERP implementation influence customer (employee) satisfaction and service quality at the three banks? RQ4: What are the effects of the ERP system on customer (employee) retention and acquisition for these banks?

ERP implementation significantly improves customer satisfaction and service quality, as evidenced by increased customer satisfaction scores post-implementation. Qualitative data support these findings, with respondents noting enhanced service delivery and better customer relationship management. This aligns with the hypothesis that ERP enhances customer satisfaction (H3). Additionally, improved service quality and streamlined processes contribute to higher employee retention rates, affirming H4.

Internal Business Process Perspective: RQ5: What internal processes are optimized or disrupted by the ERP implementation? RQ6: How does the ERP implementation affect workflow efficiency and operational effectiveness at the three banks?

The study finds that ERP implementation optimizes several internal processes, leading to increased efficiency and effectiveness. The correlation analysis and GLM results show a significant positive relationship between internal business processes and operational excellence. Respondents reported reduced process completion times, fewer errors, and better data management. These findings support the hypotheses that ERP streamlines internal processes and enhances data accuracy and reliability (H5, H6).

Learning and Growth Perspective: RQ7: What are the impacts of ERP implementation on employee skills, training, and motivation? RQ8: How does the ERP system influence organizational learning and innovation within the three banks?

ERP implementation positively impacts employee skills, training, and motivation. The study's qualitative data indicate that training programs and system usage significantly enhance employee competencies. Additionally, the ERP system fosters a culture of continuous improvement and innovation, as employees adapt to new technologies and processes. These findings support the hypotheses that ERP implementation enhances employee skills and promotes a culture of innovation (H7, H8).

Research Hypothesis:

1. Financial Perspective:

- **H1:** Implementation of ERP at the three banks will lead to a significant reduction in operational costs.
- **H2:** ERP implementation will positively impact financial performance metrics.

2. Customer Perspective:

- **H3:** The implementation of ERP will enhance customer satisfaction levels at the three banks.
- **H4:** ERP implementation will lead to increased employee retention rates.

3. Internal Business Process Perspective:

- **H5:** ERP implementation will streamline internal processes, leading to improved efficiency and reduced turnaround times.
- **H6:** The adoption of ERP will enhance the accuracy and reliability of data management processes within the three banks.

4. Learning and Growth Perspective:

- **H7:** ERP implementation will result in enhanced employee skills through training programs and system usage.
- **H8:** The introduction of ERP will foster a culture of innovation and continuous improvement within the three banks.

In conclusion, the integration of ERP systems at the Bank of Abyssinia, Hibret Bank, and the Commercial Bank of Ethiopia has led to substantial improvements in operational excellence across various dimensions, validating the proposed hypotheses. The findings underscore the critical role of ERP in enhancing financial performance, customer satisfaction, internal processes, and organizational learning and growth.

CHAPTER FIVE

5. SUMMARY, CONCLUSION, AND RECOMMENDATIONS

5.1. Summary of Findings

The study explores how Enterprise Resource Planning (ERP) systems influence operational excellence across three major banks: Bank of Abyssinia, Hibret Bank, and Commercial Bank of Ethiopia. Through both quantitative and qualitative analyses, key findings emerged. The primary inquiry focused on the impact of ERP implementation on operational excellence. Results reveal significant enhancements in operational efficiency, streamlined processes, and improved data reliability across the banks.

ERP implementation substantially affects financial metrics, leading to reduced operational costs and improved financial performance. Post-implementation, there were notable improvements in cost reduction and financial indicators. ERP systems positively influence customer (employee) satisfaction and service quality, leading to increased retention and acquisition rates. The findings support the hypothesis of ERP's role in enhancing service quality and customer relationships. ERP implementation optimizes internal processes, improving workflow efficiency and data accuracy. These changes align with the hypothesis of streamlining processes and reducing turnaround times, ultimately enhancing operational effectiveness. ERP implementation positively impacts employee skills, training, and motivation, fostering a culture of innovation and continuous improvement. The study confirms the hypothesis that ERP systems enhance employee capabilities through training and system usage.

All tested hypotheses, spanning financial, customer, internal processes, and learning and growth perspectives, were supported by the data. ERP implementation leads to operational excellence by improving various facets, including cost reduction, financial performance, customer satisfaction, and employee development.

Qualitative insights from interviews corroborate the quantitative results. ERP implementation reduces process completion times, lowers error rates, improves data accessibility, and enhances

decision-making. Additionally, it decreases report generation times, boosts customer satisfaction, reduces operational costs, mitigates compliance issues, and enhances employee productivity and satisfaction.

In summary, ERP adoption in the banking sector yields significant benefits across operational dimensions. Strategic implementation is crucial for realizing optimal outcomes, emphasizing the importance of ERP systems in fostering operational excellence.

5.2. Conclusions and Interpretations

The findings underscore the transformative impact of Enterprise Resource Planning (ERP) systems on operational excellence within the banking sector. Across the Bank of Abyssinia, Hibret Bank, and Commercial Bank of Ethiopia, ERP implementation led to significant improvements in various operational facets. ERP systems streamlined internal processes, optimizing workflow efficiency and reducing turnaround times. This enhancement translated into improved operational effectiveness and contributed to overall efficiency gains.

The implementation of ERP systems positively influenced data management processes, enhancing the accuracy and reliability of information across the banks. This improvement is crucial for informed decision-making and organizational performance. ERP implementation yielded tangible benefits in financial performance, including notable reductions in operational costs and enhanced financial metrics. The adoption of ERP systems contributed to cost efficiency and improved financial outcomes.

ERP implementation positively impacted customer (employee) satisfaction and service quality, resulting in increased retention and acquisition rates. These findings underscore the importance of ERP systems in fostering positive customer relationships. ERP implementation facilitated employee skills development, training, and motivation, fostering a culture of innovation and continuous improvement. This emphasis on employee growth is essential for organizational adaptability and long-term success.

The conclusions drawn from this study highlight the strategic importance of ERP systems in driving operational excellence within the banking sector. Organizations must prioritize effective

ERP implementation to realize the full potential of these systems and sustain competitive advantage. While this study provides valuable insights, further research is warranted to explore the long-term effects of ERP implementation and identify best practices for maximizing its benefits. Additionally, comparative studies across industries and regions can offer broader perspectives on ERP's role in operational excellence. ERP systems represent a pivotal tool for enhancing operational excellence in the banking sector. Strategic adoption and effective utilization of these systems are essential for driving organizational success and meeting evolving customer demands in today's dynamic business landscape.

5.3. Recommendations for Practice and Policy

Based on the findings of the study, several recommendations emerge for both practitioners and policymakers in the banking sector. Firstly, banks should prioritize robust ERP implementation strategies tailored to their unique organizational needs and objectives. This includes comprehensive planning, stakeholder engagement, and rigorous change management to ensure smooth adoption and maximize the system's benefits. Adequate training and support programs should also be implemented to enhance employees' proficiency in utilizing ERP systems effectively. Continuous learning opportunities and ongoing support mechanisms can facilitate smoother transitions and improve user satisfaction.

Moreover, banks should leverage ERP systems to enhance customer satisfaction by offering personalized services, streamlined processes, and efficient query resolution mechanisms. Emphasizing a customer-centric approach can drive loyalty and competitive advantage in the market. Continuous monitoring and evaluation of financial performance metrics are essential to gauge the impact of ERP implementation on cost reduction, revenue growth, and overall profitability. Regular financial audits and performance reviews can help identify areas for improvement and optimization.

Furthermore, banks must prioritize data integrity and security by implementing robust data management protocols within ERP systems. This includes regular data audits, encryption measures, and compliance with regulatory requirements to safeguard sensitive information. Encouraging a culture of innovation and continuous improvement is crucial for leveraging ERP systems to their full potential. Banks should foster an environment that encourages

experimentation, creativity, and knowledge sharing to drive ongoing enhancements and adaptability.

Additionally, collaborative initiatives with industry partners and technology providers can facilitate knowledge exchange, benchmarking, and access to best practices in ERP implementation. Sharing insights and experiences can accelerate learning and drive collective advancements in operational excellence. Policymakers should also consider regulatory frameworks that support the effective implementation and utilization of ERP systems within the banking sector. This includes incentivizing investment in technology infrastructure, promoting data privacy and security standards, and fostering a conducive regulatory environment for digital transformation initiatives.

Overall, proactive measures to optimize ERP implementation, prioritize customer-centric solutions, monitor financial performance, enhance data management practices, foster innovation, collaborate with industry partners, and advocate for supportive policies can collectively contribute to advancing operational excellence in the banking sector.

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ANNEX

Assessing the Impact of ERP Implementation on Operational Excellence in the Ethiopian Banking Sector: Insights and Recommendations: Research Questionnaire

Thank you for dedicating your time to participate in this research study. Your insights are invaluable in advancing our understanding of Enterprise Resource Planning (ERP) implementation within the banking sector in Ethiopia. By sharing your experiences and perceptions, you contribute to uncovering the challenges, opportunities, and outcomes associated with ERP adoption, which can ultimately lead to improved operational efficiency, customer service, stakeholder satisfaction, and financial performance in banks.

Rest assured that your responses will remain confidential and will only be used for research purposes. Your anonymity is paramount, and your input will be instrumental in shaping future strategies and practices in project management and banking operations.

Once again, we appreciate your contribution to this study and look forward to analyzing the data to gain valuable insights. Thank you for your participation and support.

Part I: Demographic Questions

1. Age Group
 21-30 31-40 41-50 Above 50
2. Gender
 Male Female
3. Current Educational Level
 High school Bachelor's Degree Master's Degree Doctoral
4. Years of Experience
 Below 5 Years 5-10 Years 11-15 Years Above 15 Years
5. Name of Organization _____
6. Name of Department _____

Part II: User's Perspective

For each statement below, please select the option that best reflects the extent to which you **agree** with the statement regarding the impact of ERP implementation in your organization.

5- Extremely , 4-Considerably, 3-Moderately, 2-Slightly, and 1-Not at all

	5	4	3	2	1
1. How well does ERP allow for the personalization of services to meet user's needs?					

2. To what extent has ERP improved user satisfaction through personalized services?					
3. How effectively does ERP support tailoring services based on user feedback?					
4. How has ERP improved the speed and quality of responses to user inquiries?					
5. To what degree has ERP enhanced service and support?					
6. How effectively does ERP facilitate timely and accurate communication with other ERP Users?					
7. How has the ERP implementation affected the retention of existing users (employees)?					
8. To what extent has the ERP system contributed to the acquisition of new employees?					
9. How effective is the ERP system in maintaining long-term relationships with employees?					
10. How has ERP implementation improved employee loyalty?					
11. How has ERP helped in identifying and targeting potential new employees?					
12. How has ERP implementation affected the ease of onboarding new employees?					

Part III: Learning & Growth Perspective

For each statement below, please select the option that best reflects the extent to which you **agree** with the statement regarding the impact of ERP implementation in your organization.

5- Extremely , 4-Considerably, 3-Moderately, 2-Slightly, and 1-Not at all

	5	4	3	2	1
1. How satisfied are staff with the ERP system in terms of usability and support?					
2. To what extent has ERP implementation met the expectations of internal staff?					
3. How has ERP affected staff productivity and morale?					
4. How has ERP facilitated the acquisition of new knowledge within the organization?					
5. To what degree has ERP improved knowledge sharing among departments?					
6. How effectively does ERP support collaborative knowledge management?					
7. How has ERP contributed to the adoption of innovative practices within the organization?					
8. To what extent has ERP driven process improvements and new methodologies?					
9. How effectively does ERP encourage continuous improvement and innovation?					

Part IV: Internal Business Processes Perspective

For each statement below, please select the option that best reflects the extent to which you **agree** with the statement regarding the impact of ERP implementation in your organization.

5- Extremely , 4-Considerably, 3-Moderately, 2-Slightly, and 1-Not at all

	5	4	3	2	1
1. How effective has ERP implementation been in streamlining internal workflows?					
2. To what extent has ERP improved the efficiency of business processes?					
3. How has ERP influenced the reduction of process cycle times?					
4. How successful has ERP been in automating repetitive tasks?					
5. To what degree has ERP reduced the need for manual input in routine processes?					
6. How has ERP improved the efficiency and accuracy of automated tasks?					
7. How effective is the ERP system in promptly resolving operational issues?					
8. To what extent has ERP reduced the frequency of unresolved issues?					
9. How has ERP improved the overall issue-resolution process?					
10. How effectively does ERP help in optimizing the use of resources (e.g., time, manpower, materials)?					
11. To what extent has ERP improved resource allocation and utilization?					
12. How has ERP contributed to minimizing resource wastage?					
13. How has ERP impacted the flexibility and agility of internal processes?					
14. To what extent has ERP enhanced the visibility and transparency of internal workflows?					
15. How effectively does ERP facilitate collaboration and communication among different departments or teams?					
16. To what degree has ERP contributed to standardizing processes across various business units or locations?					
17. How has ERP influenced the alignment of internal processes with industry best practices or standards?					
18. How has ERP affected the adaptability of internal processes to changing market conditions or customer demands?					
19. To what extent has ERP facilitated compliance with regulatory requirements or industry standards in internal processes?					
20. How effectively does ERP support continuous improvement initiatives within internal processes?					

Part V: Financial Perspective

For each statement below, please select the option that best reflects the extent to which you **agree** with the statement regarding the impact of ERP implementation in your organization.

5- Extremely , 4-Considerably, 3-Moderately, 2-Slightly, and 1-Not at all

	5	4	3	2	1
1. To what extent has ERP implementation led to a reduction in operational costs?					
2. How effective has ERP been in decreasing overhead (ongoing expenses associated with running a business that is not directly tied to the production of goods or services) costs?					

3. How has ERP influenced cost savings across various departments?					
4. To what extent has ERP impacted revenue growth since its implementation?					
5. How has ERP contributed to an increase in sales or service revenue?					
6. How effectively has ERP supported new revenue-generating initiatives?					
7. How has ERP implementation improved overall profitability?					
8. To what extent has ERP contributed to better profit margins?					
9. How effectively does ERP help in identifying and eliminating unprofitable activities?					
10. To what extent has ERP implementation led to a reduction in operational costs?					
11. How effective has ERP been in decreasing overhead (ongoing expenses associated with running a business that is not directly tied to the production of goods or services) costs?					

Thank you for your participation!

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1. How did the time to complete key processes compare before and after ERP implementation, and what impact has this had on overall efficiency?
2. How did the error rate in data entries differ before and after ERP implementation, and what has been the effect on data reliability?
3. How did the ease of accessing and retrieving important data change with ERP implementation, and how has this impacted decision-making processes?
4. How did the time required to generate key reports differ before and after ERP implementation, and what benefits have resulted from this change?
5. How did customer/client satisfaction scores compare before and after ERP, and what does this indicate about service quality?

6. How did operational costs compare before and after ERP implementation, and what conclusions can be drawn about cost efficiency?

7. How did the frequency of compliance issues differ before and after ERP implementation, and what does this suggest about risk management effectiveness?

8. How did average employee output compare before and after ERP implementation, and what conclusions can be drawn about productivity?

9. How did employee satisfaction scores and adaptation to the system differ before and after ERP implementation, and what does this reveal about employee engagement?

10. How effective were training and development programs before ERP implementation compared to after, and what impact has this had on employee performance?

11. How did the level of process automation compare before and after ERP implementation, and what impact has this had on operational efficiency and error reduction?

Thank you for your participation!