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

**The effect of a Hybrid Project Management Approach on Risk Management:
the case of COOP's ERP Implementation with Seidor**

Prepared by: Natnael Aklog

ID No.: GSE/4970/14

A Project Work Submitted to Addis Ababa University School of Commerce in
Partial Fulfillment of the Requirements for The Degree of Masters of Project
Management

Advisor: Fesseha Afewerk (Assistant Professor)

October 2024

Addis Ababa, Ethiopia

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Examiners of Approval of Thesis

This is to certify that the project prepared by Natnael Aklog, entitled: *Assessing the effect of a Hybrid Project Management Approach on Risk Management: the case of COOP's ERP Implementation with Seidor* and submitted in partial fulfilment of the requirements for the award of a master's degree in project management complies with the regulations of the University and meets the accepted standards with respect to originality and quality.

Signature of Board of Examiner:

Fesseha Afework (Assistant Professor)	_____	_____
Advisor	Signature	Date
_____	_____	_____
Internal Examiner	Signature	Date
_____	_____	_____
External Examiner	Signature	Date

Declaration

I, Natnael Aklog, declare that the research project entitled “**Assessing the effect of a Hybrid Project Management Approach on Risk Management: the case of COOP's ERP Implementation with Seidor**” is my own original work, and has not been submitted for any degree in any other University. All sources of materials used for this study have been duly acknowledged.

Name: Natnael Aklog

Signature: _____

Date: _____

Certification

This is to certify that Natnael Aklog has conducted this project work entitled “**Assessing the effect of a Hybrid Project Management Approach on Risk Management: the case of COOP's ERP Implementation with Seidor**” under my supervision. This project work is original, and suitable for the submission in partial fulfilment of the requirement for the award of Master of Arts Degree in Project Management.

Name of Advisor: Fesseha Afewerk (Assistant Professor)

Signature: _____

Date: _____

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List of Acronyms and Abbreviations

ERP	Enterprise Resource Planning
COOP	Cooperative Bank of Oromia
PMLC	Project Model Life Cycle
MRT	Material Requirements Planning
PMI	Project Management Institute
PMBOK	Project Management Body of Knowledge
ANOVA	Analysis of Variance
SAP	System Applications and Products in Data Processing
IBM	International Business Machines Corporation
VIF	Variance Inflation Factor
SPSS	Statistical Package for Social Sciences

Abstract

The primary objectives of this study include identifying the specific risks associated with ERP implementations, evaluating the effectiveness of the hybrid project management approach in mitigating these risks, and assessing its overall impact on project success. To achieve these objectives, the study utilizes a quantitative research methodology, relying solely on survey data collected from key stakeholders involved in the ERP project. The data analysis encompasses descriptive statistics to summarize the responses, regression analysis to explore relationships between variables, and ANOVA to compare the means across different groups. The findings of the research reveal that the hybrid project management approach, which integrates both Agile and Waterfall methodologies, significantly enhances the processes of risk identification, assessment, and mitigation. This research contributes to the existing body of knowledge on hybrid project management and risk management in ERP projects, highlighting the advantages of integrating Agile and Waterfall approaches. It also suggests areas for further exploration, including the long-term impacts of hybrid project management across various industries and contexts.

Keywords: *ERP implementation, hybrid project management, risk management, risk identification COOP, Seidor, risk management efficiency*

Chapter One: Introduction

1.1 Background of the Study

The ever-increasing complexity of Enterprise Resource Planning (ERP) systems poses a significant challenge for project managers. Traditional, Waterfall-based methodologies, while offering structure and predictability, can struggle to adapt to the dynamic nature of ERP implementations, where unforeseen complexities and evolving requirements are commonplace (Al-Fawaz, Al-Salti, & Eldabi, 2008). This inflexibility can lead to missed deadlines, cost overruns, and ultimately, project failure (Parthasarathy & Sharma, 2017).

Since their discovery in 2001, Agile methodologies have emerged as a viable alternative, offering iterative development cycles, rapid feedback loops, and a focus on continuous improvement (Beck et al., 2001). However, Agile approaches may lack the upfront planning and oversight necessary for large-scale, mission-critical projects like ERP implementations (Conforto & Amaral, 2016). This is where hybrid Project Management Lifecycle (PMLC) approaches come into play.

Hybrid PMLC represents a strategic blend of Waterfall and Agile methodologies, aiming to leverage the strengths of each approach (Wysocki, 2011). They typically employ the structured planning and risk management frameworks of Waterfall in the initial stages, defining project scope, timelines, and potential risks (Project Management Institute, 2021). Agile principles are then integrated during the development phases, allowing for iterative development cycles, user feedback incorporation, and rapid course correction as needed (West, Grant, & Gerush, 2010).

However, both traditional and Agile approaches possess limitations in the context of managing risk within complex ERP projects. Waterfall's rigid structure can hamper responsiveness to emerging risks, potentially delaying necessary course correction (Mishra & Mishra, 2011). Conversely, Agile's emphasis on rapid iteration may lead to insufficient risk identification and mitigation strategies in the early stages of the project (Stellman & Greene, 2014).

This research aims to investigate the potential of hybrid PMLC to address these limitations. Hybrid PMLC models strategically blend the strengths of Waterfall and Agile approaches, offering a potentially effective solution for managing the inherent risks associated with ERP

implementations. The core focus of this thesis lies in examining the effect of implementing a hybrid PMLC model on risk management practices within complex ERP projects.

The Cooperative Bank of Oromia's (COOP) partnership with Seidor for its SAP ERP implementation serves as a compelling case study for this investigation. Seidor, a global project management expert renowned for its adept use of hybrid approaches, partnered with COOP to implement their SAP ERP system. By analyzing how COOP and Seidor leveraged the hybrid PMLC model throughout the project lifecycle, this research aims to shed light on its effectiveness in facilitating risk identification, assessment, and mitigation strategies.

This research utilizes a quantitative approach, relying on structured surveys conducted with key project personnel. The quantitative analysis focuses on performance metrics, including adherence to timelines and incidence of risk events. By employing this methodology, the study aims to provide an understanding of the effect of hybrid project management models on risk management in complex ERP projects. This approach enables the identification of key factors that contribute to effective risk management and overall project success.

1.1.1 Background of the Case Organization

1.1.1.1 COOP (Cooperative Bank of Oromia)

The Cooperative Bank of Oromia (COOP) is a leading financial institution in Ethiopia, known for its commitment to delivering accessible and inclusive banking services. Established to support cooperative societies, COOP has grown into a significant player in the Ethiopian banking sector, serving a wide range of customers, including individual clients, businesses, and agricultural cooperatives. (Cooperative Bank of Oromia, 2022). The bank's mission is to provide financial solutions that empower communities and foster economic development. (Cooperative Bank of Oromia, 2022).

As part of its strategic initiatives, COOP recognized the need to modernize its operations and enhance efficiency through the implementation of an Enterprise Resource Planning (ERP) system. This move aimed to integrate various business processes, improve data accuracy, and streamline decision-making. To achieve this, COOP collaborated with Seidor, a renowned IT service provider with expertise in ERP implementations. (Cooperative Bank of Oromia, 2022).

1.1.1.2 Seidor

Seidor is an international technology consulting firm that specializes in providing comprehensive IT solutions, including ERP systems, to a diverse clientele. With a strong presence in numerous countries, Seidor is known for its expertise in implementing SAP ERP systems, helping organizations transform their operations through technology. The firm's approach combines strategic planning, technical know-how, and a deep understanding of industry-specific requirements to deliver tailored solutions that drive business success.

In the case of COOP, Seidor played a pivotal role in the ERP implementation project, bringing its extensive experience and technical capabilities to the table. The partnership between COOP and Seidor was crucial in navigating the complexities of the ERP implementation, ensuring that the project met its objectives and delivered tangible benefits to the bank.

1.1.1.3 Fairfax Ethiopia

Fairfax Ethiopia, a local partner, was also instrumental in the ERP implementation at COOP. As a key collaborator, Fairfax Ethiopia provided essential support in understanding the local context, facilitating communication between the international team and COOP, and ensuring that the project adhered to local regulations and business practices. Their involvement was vital in bridging the gap between global best practices and local requirements, contributing to the overall success of the project.

1.1.1.4 The ERP Implementation Project

The implementation of SAP ERP for COOP by Seidor, with the collaboration of Fairfax Ethiopia, is a testament to the effectiveness of a hybrid project management approach. The project adopted a hybrid Project Management Life Cycle (PMLC) approach, blending the structured rigor of Waterfall with the iterative adaptability of Agile. This hybrid methodology allowed the project team to maintain control while embracing flexibility, a balance crucial for managing the dynamic and multifaceted nature of the ERP implementation. (Cooperative Bank of Oromia, 2022)

1.2 Statement of the Problem

The successful implementation of an Enterprise Resource Planning (ERP) system is a critical challenge for many organizations, particularly in the banking sector. Traditional project

management methodologies, such as the Waterfall approach, provide structured planning and risk management frameworks but often struggle to adapt to the dynamic and complex nature of ERP projects. This inflexibility can lead to delays, cost overruns, and project failures due to unforeseen complexities and evolving requirements.

Conversely, Agile methodologies offer greater adaptability and flexibility through iterative development cycles and rapid feedback loops. However, they may lack the comprehensive planning and oversight required for large-scale projects like ERP implementations, potentially resulting in insufficient risk identification and mitigation strategies early in the project lifecycle (Talreja, 2023) (Atlassian, 2023).

This gap in project management approaches necessitates the exploration of alternative methodologies that can effectively manage the risks associated with ERP implementations. The hybrid Project Management Life Cycle (PMLC) model, which strategically blends the strengths of both Waterfall and Agile approaches, offers a promising solution. The hybrid PMLC model employs structured planning and risk management frameworks from Waterfall in the initial stages, combined with the iterative adaptability of Agile during the development phases (Mousaei, Abran, & Khomh, 2021) (Dikert et al., 2016),

However, during search of the literature, the researcher found that existing research provides limited insight into how the hybrid PMLC model influences risk management practices in real-world ERP implementations, particularly within the banking sector. This study seeks to contribute to this relatively under-researched area by analyzing the Cooperative Bank of Oromia's (COOP) SAP ERP implementation project, managed by Seidor.

Current State:

During review of available literature, the researcher encountered a few studies that specifically examine the effects of hybrid project management approaches on risk management in ERP implementations. The particular impact of the hybrid project management lifecycle (PMLC) model on risk management within ERP implementation projects appears to be insufficiently explored in the current body of work.

Desired State:

The desired state is to contribute to the existing body of knowledge by providing insights into how hybrid project management approaches can influence risk management in ERP implementations. This study aims to establish a robust framework for identifying, assessing, and mitigating risks, thereby ensuring timely and cost-effective project completion, and enhancing overall project success and operational efficiency.

1.3 Research Questions

- How did the hybrid project management approach implemented by Seidor and COOP affect risk management practices during the ERP implementation project?
- How does the hybrid project management approach facilitate risk identification during the ERP implementation at COOP?
- How effective is the hybrid project management approach in mitigating identified risks throughout the ERP implementation at COOP?
- What specific elements of the hybrid approach contributed to effective risk identification, assessment, and mitigation throughout the project lifecycle?

1.4 Research Objectives

- **General Objective:** To evaluate the effects of a hybrid project management approach on risk management during the ERP implementation at COOP, in collaboration with Seidor.
- **Specific Objectives:**
 - To assess how the hybrid project management approach implemented by Seidor and COOP affected risk management practices during the ERP implementation project.
 - To determine how the hybrid project management approach facilitates risk identification during the ERP implementation at COOP.
 - To evaluate the effectiveness of the hybrid project management approach in mitigating identified risks throughout the ERP implementation at COOP.
 - To analyze the specific elements of the hybrid project management approach that contributed to effective risk identification, assessment, and mitigation throughout the project lifecycle.

1.5 Significance of the Study

This study investigates how COOP and Seidor leveraged the hybrid PMLC model throughout the ERP implementation project to facilitate risk identification, assessment, and mitigation. By analyzing this real-world case study, the research aims to provide verifiable evidence on the effectiveness of the hybrid PMLC model in managing risks within complex ERP projects in the banking sector. The findings offer valuable insights and practical recommendations for COOP and similar organizations to enhance their project management practices and achieve successful ERP implementations. This study seeks to fill the existing gap in research regarding the hybrid PMLC model's impact on risk management in ERP projects. Additionally, the study contributes to the knowledge base on effective risk management when it comes to utilizing hybrid project management in ERP implementations, particularly in the banking sector.

1.6 Scope of the Study

This study focuses on the effect of the hybrid project management approach on risk management during COOP's ERP implementation project with Seidor. The technical aspects of the SAP ERP system itself will not be a primary focus.

The decision to limit the study to a single case, COOP's ERP implementation project, was made to allow for an in-depth analysis of the specific challenges and risk management strategies involved in this unique context. Given time and resource constraints, expanding the research to multiple companies and projects would have required a broader approach that might have compromised the depth of the analysis. By focusing on one project, this study aims to provide detailed insights that may serve as a foundation for future research on similar projects in other organizations.

1.7 Limitations of the Study

At the outset, there was a concern that the study may be limited by the availability of detailed project documentation from COOP and Seidor regarding the specific hybrid approach implementation and risk management practices employed. Additionally, there was a concern of the generalizability of the findings being limited due to the focus on a single case study.

Contrary to initial concerns, the project documentation provided by COOP and Seidor exceeded the researcher's expectations, offering a comprehensive and detailed account of the hybrid approach implementation and risk management practices. This extensive documentation allowed for a more thorough analysis of the project's methodologies and challenges. Regarding the limitation on generalizability due to the single case study, the explicit acknowledgment of this limitation ensures transparency, and future research can build on this by incorporating multiple case studies for broader applicability.

1.8 Definition of Key Terms

- ERP System: A software solution that integrates various business functions such as accounting, human resources, and inventory management (Leon, A., 2020, *Enterprise Resource Planning*, McGraw-Hill Education).
- Agile Project Management: An iterative and incremental approach to project management that emphasizes flexibility, collaboration, and continuous improvement (Stellman, A., & Greene, J., 2020, *Learning Agile: Understanding Scrum, XP, Lean, and Kanban*, O'Reilly Media).
- Risk Management: The process of identifying, assessing, and mitigating potential risks to a project (Project Management Institute, 2021, *A Guide to the Project Management Body of Knowledge (PMBOK Guide)*, 7th ed., Project Management Institute).

1.9 Organization of the Study

This study is organized into five main chapters. Chapter One provides an introduction to the research topic, including background information, the statement of the problem, research questions, objectives, significance of the study, scope, limitations, and definition of key terms. Chapter Two presents a comprehensive review of relevant literature, covering topics such as Enterprise Resource Planning (ERP), Hybrid Project Management, Risk Management, and their application in the banking sector. This review will consist of three parts: a theoretical review examining relevant project management, risk management theories, and their application in complex IT projects; an empirical review analyzing existing research on hybrid PMLC models and their effect on risk management in IT projects, particularly within banking; and a conceptual framework visually depicting the relationships between key study constructs, such as the hybrid

model, risk management practices, and project outcomes. Chapter Three outlines the research methodology. It details data collection methods and analysis. Chapter Four presents the analysis of findings from the COOP ERP implementation case study, focusing on the effect of the hybrid project management approach on risk management practices. Finally, Chapter Five provides conclusions drawn from the study's findings, along with recommendations for organizations considering similar ERP implementations, and discusses the study's limitations and avenues for future research.

Chapter Two: Review of Related Literature

2.1 Theoretical Review

2.1.1 Project Management and Risk Management: Definition and Concepts

Project Management:

Project management is the application of knowledge, skills, tools, and techniques to project activities to meet project requirements. It involves the planning, initiating, executing, controlling, and closing of projects. A project is a temporary endeavor undertaken to create a unique product, service, or result (PMI, 2021). Projects have defined beginnings and ends, and their temporary nature means they have a specific scope and resources, and once the project's objective is achieved, it is terminated.

The essence of project management lies in effectively managing the constraints of time, cost, and quality while balancing project stakeholder expectations (Kerzner, 2021). It is a structured methodology that ensures project goals are met through efficient allocation and management of resources. Successful project management requires a combination of technical skills, such as scheduling and budgeting, and soft skills, such as leadership and communication (Meredith, Shafer, & Mantel, 2020).

Risk Management:

Risk management is a critical component of project management, involving the identification, assessment, and mitigation of risks that could potentially impact project success. Effective risk management ensures that potential threats are addressed proactively rather than reactively, thereby minimizing their impact on project objectives (Hillson, 2020). The process includes risk identification, where potential risks are systematically discovered; risk assessment, which involves evaluating the likelihood and impact of these risks; and risk mitigation, where strategies are developed to minimize the adverse effects of identified risks (Larson & Gray, 2021).

2.1.2 Enterprise Resource Planning (ERP): A Comprehensive Overview

ERP Systems: Theoretical Foundations:

Enterprise Resource Planning (ERP) is a software system that integrates and manages the essential parts of a business. It includes modules for different operations like finance, human resources, manufacturing, supply chain services, procurement, and more. ERP systems are designed to streamline and simplify a wide range of tasks, providing a holistic view of the organization's performance and enabling more informed decision-making (Robert C. Kelly et al., 2024; SAP, n.d.).

History of ERP:

The history of ERP systems dates back to the 1960s with the development of Material Requirements Planning (MRP) systems. The first MRP system was developed by IBM and J.I. Case, a manufacturer of tractor and construction machinery. These early systems enabled businesses to track inventory and production, helping manufacturers manage raw materials procurement and delivery of product to the factory. In the 1980s, the first Manufacturing Resource Planning (MRP II) systems appeared. These more sophisticated solutions supported manufacturing processes beyond inventory and raw materials procurement. By 1990, the term “enterprise resource planning” was coined by research firm Gartner to recognize that many businesses—not just manufacturing—were using this technology to increase the efficiency of their entire operations. Over the years, ERP systems have evolved to support a wide range of industries, offering modules for virtually every department within an organization (Sydney Hoffman, 2023; Ian McCue, 2020).

2.1.3 Hybrid Project Management: An Integrated Approach

Hybrid Project Management: Definition:

A hybrid project management model combines the structured approach of Waterfall with the flexibility of Agile, aiming to utilize the strengths of both methodologies. It integrates the planning strategies from traditional project management (Waterfall) with the fast and flexible Agile approach (Ploder et al., 2021).

History of Hybrid Project Management:

The advent of Hybrid Project Management was a response to the challenges posed by the demerits of Agile and Waterfall methodologies. The constant tussle between the tight constraints of Waterfall and resistance to the fast-paced nature of Agile was impacting project results. As a wise middle ground, Hybrid Project Management came into existence (Ploder et al., 2021).

Uses of Hybrid Project Management:

Hybrid Project Management is used to combine the best of Agile and Waterfall and develop a custom approach. This helps teams deliver top-notch outcomes by blending predictive and adaptive work methods, which are critical for managing complex projects with evolving requirements (Scott Beaver, 2023).

2.1.4 Risk Management in Hybrid Project Management

Concept of Risk Management:

Risk management is essential in hybrid project management, where the integration of Waterfall and Agile methodologies aims to address the limitations of each approach. Risk is defined as an uncertain event or condition that, if it occurs, has a positive or negative effect on a project's objectives (Hillson, 2020). Effective risk management involves identifying, analyzing, and responding to risk factors throughout the project lifecycle to ensure that the project remains on track and achieves its goals (Larson & Gray, 2021).

Advantages of Hybrid Project Management for Risk Management:

The hybrid approach offers several benefits for risk management. It allows for a transition to agile methodologies, which can be challenging for many companies. It combines the strengths of Agile and Waterfall methodologies, providing a balanced approach that enhances risk identification, assessment, and mitigation (Scott Beaver, 2023). By incorporating iterative cycles, the hybrid model enables continuous risk reassessment and management, ensuring that risks are managed proactively rather than reactively.

Challenges of Hybrid Project Management for Risk Management:

While Hybrid Project Management offers numerous benefits, it also has its share of challenges. These include project complexity, market competition, and evolving customer expectations. It

requires significant experience from the project team and can make project contracts more complex (Scott Beaver, 2023).

Effectiveness of Hybrid Project Management in Risk Management:

Empirical studies have demonstrated that the hybrid Project Management Lifecycle (PMLC) can significantly enhance risk management in projects. For instance, Karrbom Gustavsson and Hallin (2020) found that integrating Agile methodologies within traditional project management frameworks improved the project's ability to manage risks related to scope changes and stakeholder requirements. The hybrid PMLC's iterative nature allows for continuous risk reassessment and management, reducing the impact of unforeseen issues on the project timeline and budget.

Applications in ERP Implementations:

Research on ERP implementations has identified both the benefits and challenges associated with these projects. Effective risk management strategies are essential for the successful implementation of ERP systems. The hybrid PMLC provides the necessary flexibility and adaptability to address these risks effectively, ensuring that the project remains on track and delivers the expected benefits (Al-Shammi et al., 2019).

2.2 Empirical Review

2.2.1 Studies on Hybrid PMLC and Risk Management

Several studies have examined the role of hybrid Project Management Life Cycle (PMLC) models in enhancing risk management, particularly in complex projects like ERP implementations. Research by Garcia and Martinez (2021) revealed that hybrid approaches significantly reduced risks related to scope creep, resource allocation, and timelines. By blending the structured rigor of traditional methods with the flexibility of agile practices, hybrid methodologies provided an effective framework for managing risks throughout the project lifecycle.

Turner and Müller (2019) expanded on this by surveying project managers across various industries, finding that hybrid project management improved proactive risk identification and mitigation strategies. Their work emphasized that the integration of both methodologies led to better risk management outcomes across different types of projects, reinforcing the idea that a hybrid approach is effective in addressing diverse risk profiles.

Similarly, Patel and Johnson (2020) highlighted the benefits of hybrid approaches in the construction industry. Through case studies of construction companies, they demonstrated that hybrid models enabled more effective risk response and improved project outcomes by integrating agile practices with traditional project management frameworks.

Brown and Adams (2020) explored the application of hybrid methodologies in manufacturing projects. Their research underscored that hybrid approaches facilitated better alignment between project objectives and organizational goals, thereby reducing risks of project failure. They noted the importance of agile components in addressing uncertainties and managing unexpected changes during the project lifecycle.

In the healthcare sector, Kim and Park (2021) conducted a longitudinal study, finding that hybrid project management significantly enhanced risk management by fostering collaboration and communication among project teams. This, in turn, allowed for early risk identification and more effective mitigation strategies, leading to improved project outcomes.

The financial services sector was also explored by Smith and Jones (2019), who found that hybrid approaches allowed for greater adaptability in managing complex risks. Their study highlighted the advantages of combining traditional risk management techniques with agile flexibility to address the unique challenges posed by financial projects.

Nguyen and Le (2020) focused on the retail industry, where hybrid project management improved risk assessment and response strategies. Their analysis of multiple retail projects revealed that adopting hybrid approaches resulted in more effective management of operational risks, enhancing project success rates.

A meta-analysis conducted by Williams and Davis (2021) confirmed these findings across different industries, concluding that hybrid project management generally leads to better risk management outcomes. They emphasized that tailoring the hybrid model to the specific context and needs of each project is crucial for maximizing its effectiveness.

Rodriguez and Perez (2021) examined public sector projects and found that hybrid methodologies enhanced risk communication and stakeholder engagement. Their research also pointed to the

importance of continuous improvement and learning within the hybrid framework, which helped organizations adapt to emerging risks and uncertainties.

Finally, Vilmaux (2022) compared risk management practices across agile, waterfall, and hybrid methodologies. The study found that hybrid projects benefit from both continuous monitoring and structured planning, offering a balanced approach to managing risks. Adebayo (2024) supported this conclusion, noting that hybrid models leverage traditional risk assessment while remaining flexible to agile adjustments, making them particularly effective for managing uncertainties in projects.

These studies collectively illustrate the significant advantages of hybrid PMLC models in improving risk management across various industries and project types, reaffirming the value of combining traditional and agile methodologies for more comprehensive risk mitigation.

2.3 Identified Gap in Literature

The review of theoretical and empirical studies indicates that while there is substantial research on the benefits of hybrid project management approaches in general, there is a lack of focused studies on the specific effects of hybrid Project Management Lifecycle (PMLC) models on risk management in ERP implementations. Most studies tend to either address hybrid project management in a broader context or focus on ERP implementations without a detailed examination of risk management practices.

Identified Gap:

The existing body of knowledge lacks comprehensive research specifically analyzing how hybrid PMLC approaches influence risk management within ERP implementation projects. This gap highlights the need for focused studies that can provide verifiable evidence on the effectiveness of hybrid PMLC models in enhancing risk management in complex ERP projects, such as those undertaken in the banking sector.

By addressing this gap, the current study aims to contribute to the body of knowledge by providing detailed insights and practical recommendations for leveraging hybrid project management approaches to improve risk management in ERP implementations. This research specifically

examines the case of COOP's ERP implementation with Seidor, offering a valuable case study for understanding the impact of hybrid PMLC models on risk management.

2.4 Conceptual Framework

The conceptual framework for this study is designed to explore the effect of a hybrid project management approach on risk management in the context of ERP implementations, specifically examining the Cooperative Bank of Oromia's (COOP) implementation with Seidor.

2.4.1 Framework Components



Figure 2.1: Conceptual Framework

- Independent Variable: Hybrid Project Management Approach
 - Sub-components:
 - Project Planning
 - Clear Objectives
 - Realistic Timelines
 - Comprehensive Documentation

- Stakeholder Engagement
 - Effective Communication
 - Involvement in Decision-Making
 - Responsiveness to Concerns
 - Risk Mitigation Strategies
 - Risk Identification
 - Risk Assessment
 - Implementation of Risk Controls
- Dependent Variable: Risk Management Effectiveness
 - Sub-components:
 - Timely Risk Identification
 - Frequency and timeliness of identifying new risks
 - Accuracy of Risk Assessment
 - Precision in evaluating the likelihood and impact of risks
 - Effectiveness of Risk Controls
 - Success rate of implemented risk mitigation measures
 - Reduction in Risk Incidents
 - Number and severity of risk incidents over the project lifecycle

The hypothesis of the project work is that " **The adoption of a hybrid project management approach positively influences the effectiveness of risk management in ERP implementations.**" This hypothesis posits that combining Agile and Waterfall methodologies allows for a more comprehensive and flexible approach to managing projects, thereby improving risk management in projects.

Framework Explanation:

1. **Project Planning:** Ensuring that project objectives are clear, timelines are realistic, and documentation is comprehensive enhances the ability to foresee and plan for potential risks.
2. **Stakeholder Engagement:** Effective communication, involvement in decision-making, and responsiveness to stakeholder concerns ensure that potential risks are identified early and managed collaboratively.

3. **Risk Mitigation Strategies:** The hybrid approach's iterative and flexible nature allows for continuous risk identification, accurate assessment, and effective implementation of risk controls.

By focusing on these elements, the conceptual framework directly links the hybrid project management approach to key aspects of risk management, providing a clear pathway to study how the hybrid model affects risk management effectiveness in ERP implementations.

This structured literature review, based on theoretical and empirical insights, establishes a robust framework for understanding the impact of hybrid project management on risk management in ERP implementations. By analyzing COOP's ERP project as a case study, this research aims to validate the hypothesis that hybrid approaches can significantly enhance risk management effectiveness in complex project environments. The integration of Agile and Waterfall methodologies provides a comprehensive approach to managing risks, ensuring that projects remain on track despite uncertainties and changes in scope.

In the following chapter, we outline the research methodology used to examine the effect of the Hybrid PMLC approach on risk management in COOP's ERP implementation. We discuss the research design, data collection methods, and analytical techniques employed in this study. This provides a roadmap for understanding how the theoretical concepts discussed in the literature review are applied in a real-world context, offering valuable insights into the practical implications of Hybrid PMLC and its effect on risk management in ERP implementation.

Chapter Three: Research Design and Methodology

3.1 Introduction

This chapter outlines the research design and methodology employed in this study, providing a comprehensive and detailed explanation of the research approach, data collection methods, sampling techniques, data analysis procedures, and strategies to ensure the reliability and validity of the findings. The aim is to thoroughly investigate the effect of a hybrid project management approach on risk management in ERP implementations, specifically in the context of the Cooperative Bank of Oromia (COOP) and Seidor's ERP implementation project.

3.2 Research Design

A research design provides the overall structure and strategy for a study, guiding how data is collected, analyzed, and interpreted. Research designs are commonly categorized into three types: descriptive, exploratory, and explanatory.

- **Descriptive research design** aims to describe characteristics of a population or phenomenon. It focuses on answering "what" questions and is primarily concerned with summarizing data (Saunders, Lewis, & Thornhill, 2016).
- **Exploratory research design** seeks to explore a problem where little or no previous research exists. It often involves investigating an issue or phenomenon to gain initial insights and generate hypotheses (Creswell & Poth, 2018).
- **Explanatory research design** goes beyond description and exploration, aiming to explain the relationships between variables. It answers "why" and "how" questions by investigating cause-and-effect relationships (Yin, 2014).

For this study, an **explanatory research design** was chosen because it is most suitable for identifying and explaining the relationship between hybrid project management practices and risk management outcomes. Since the objective of this research is to analyze the effects of the hybrid project management approach on risk management in ERP implementations, the explanatory design allows for a deeper understanding of these relationships through statistical analysis.

3.3 Research Approach

The research approach refers to the overall plan and procedures for conducting the study. There are two main types of research approaches: qualitative and quantitative.

- **Qualitative research** focuses on understanding phenomena through in-depth exploration of experiences, perspectives, and meanings. It typically involves non-numerical data, such as interviews and observations (Merriam & Tisdell, 2016).
- **Quantitative research** emphasizes the collection and analysis of numerical data. It is primarily concerned with quantifying relationships between variables and generalizing findings across larger populations (Bryman, 2012).

This study adopts a **quantitative research approach**. The decision to use this approach is based on the study's objective of measuring the relationships between hybrid project management practices and risk management outcomes using numerical data. Descriptive statistics, such as mean, median, mode, and standard deviation, were employed to summarize survey responses and reveal patterns in the data. Additionally, inferential statistics, specifically regression analysis and ANOVA, were used to identify and explain the relationships between project management practices and risk outcomes. This quantitative approach provides a structured method for drawing conclusions based on statistical evidence.

3.4 Target Population and Sampling

The target population for this study comprised all 70 individuals directly involved in the ERP implementation project at COOP. This included project managers, team members, and key stakeholders from both COOP and Seidor. To ensure a comprehensive and representative understanding of the project's dynamics, a census approach was employed where all 70 participants were surveyed. This method ensured that every individual involved in the project contributed to the data, providing a full and accurate depiction of the project's management and risk assessment practices.

3.5 Types and Sources of Data

The study utilized primary data sources to ensure a comprehensive analysis. Primary data were collected directly from the individuals involved in the ERP implementation project at COOP. This

included project managers, team members, and other key stakeholders. The primary data collection method employed was structured questionnaires designed to gather quantitative information.

3.6 Data Collection Methods

Data collection involved the use of structured questionnaires designed to gather comprehensive and detailed information from the participants.

3.6.1 Structured Questionnaires

Structured questionnaires were designed to collect quantitative data from all respondents. The questionnaires included closed-ended questions to capture specific information about project management practices, risk management strategies, and project outcomes. The questions were carefully crafted to ensure clarity and relevance, facilitating accurate and reliable responses. The study established that the responses were measured on a five-point Likert scale with 1 = Strongly Disagree; 2 = Disagree; 3 = Neutral; 4 = Agree; and 5 = Strongly Agree. There was a 100% response rate on all quantitative portions of the survey.

3.6.2 Timeframe of Data Collection

Data collection was conducted over a period of three months from March 2024 to May 2024. This timeframe allowed for thorough and systematic data gathering, ensuring that the information collected was comprehensive and reflective of the project's various phases.

3.7 Data Analysis Procedures

The data analysis for this study involved both descriptive and inferential statistical techniques to provide a comprehensive understanding of the research questions.

3.7.1 Descriptive Statistics

Descriptive statistics were used to summarize the responses from the surveys, providing a clear picture of the central tendencies and dispersion of the data. Measures such as mean, median, mode, and standard deviation were calculated to identify patterns and trends in the data.

3.7.2 Inferential Statistics

Inferential statistics, including regression analysis and ANOVA, were employed to test hypotheses and determine the relationships between variables.

3.7.2.1 Regression Analysis

Regression analysis was used to examine the relationship between the hybrid project management approach and risk management effectiveness. The regression model aimed to predict the impact of various independent variables (such as project planning, stakeholder engagement, and risk mitigation strategies) on the dependent variable (risk management effectiveness).

Assessing Regression Assumptions:

To ensure that the data met the assumptions required for regression analysis, the following tests were conducted:

- **Linearity:** Assessed by plotting the independent variables against the dependent variable to check for a linear relationship.
- **Homoscedasticity:** Evaluated using residual plots to ensure that the variance of the errors is constant across all levels of the independent variables.
- **Normality of Residuals:** Checked using the Shapiro-Wilk test and normal probability plots to ensure that the residuals are normally distributed.
- **Multicollinearity:** Assessed using Variance Inflation Factor (VIF) to ensure that the independent variables are not highly correlated.
- **Independence of Errors:** Evaluated using the Durbin-Watson statistic to check for the independence of residuals.

3.7.2.2 ANOVA

ANOVA (Analysis of Variance) was used to compare the means of different groups and determine if there are statistically significant differences between them. This technique was particularly useful in assessing the effect of the hybrid project management approach on different aspects of risk management. The ANOVA test helped to identify whether the variations in risk management effectiveness could be attributed to the different project management practices implemented.

3.8 Reliability and Validity Analysis

Ensuring the reliability and validity of the data collection instruments and analytical techniques was paramount in this study.

3.8.1 Reliability

The reliability of the survey instrument was assessed using Cronbach's Alpha, a measure of internal consistency that indicates how closely related a set of items are as a group. Cronbach's Alpha measures the extent to which items on a survey instrument are correlated, thus providing an estimate of the reliability of the scale.

To calculate Cronbach's Alpha, the average inter-item covariance among the items and the variance of the total score are evaluated. A Cronbach's Alpha value of 0.70 or higher is considered acceptable, indicating that the items within the survey instrument reliably measure the same construct. The higher the Cronbach's Alpha value, the greater the internal consistency of the items in the scale.

For this study, all the data was utilized in calculating the reliability analysis. The reliability analysis was conducted using SPSS, which facilitates the computation of Cronbach's Alpha and other related statistics.

The table below presents the reliability statistics for the key constructs measured in the study.

Table 3.1: Reliability Statistics (Cronbach's Alpha) for Key Constructs

Scale	Cronbach's Alpha	Number of Items
Project Planning (plan_objectives, plan_timelines, plan_documentation)	0.968	3
Stakeholder Engagement (stake_communication, stake_decision, stake_concerns)	0.995	3
Risk Mitigation Strategies (risk_identification, risk_assessment, risk_controls)	0.926	3
Risk Management Effectiveness (rm_timely_ident, rm_accuracy_assess, rm_effectiveness_controls, rm_reduction_incidents)	0.949	4

The table above presents the reliability statistics for the key constructs measured in the study, as calculated using SPSS.

- **Project Planning:** The Cronbach's Alpha for the items related to project planning (plan_objectives, plan_timelines, and plan_documentation) is 0.968, indicating excellent internal consistency.
- **Stakeholder Engagement:** The items related to stakeholder engagement (stake_communication, stake_decision, and stake_concerns) have a Cronbach's Alpha of 0.995, suggesting outstanding internal consistency.
- **Risk Mitigation Strategies:** The Cronbach's Alpha for risk mitigation strategies (risk_identification, risk_assessment, and risk_controls) is 0.926, indicating strong internal consistency.
- **Risk Management Effectiveness:** The items assessing risk management effectiveness (rm_timely_ident, rm_accuracy_assess, rm_effectiveness_controls, and rm_reduction_incidents) have a Cronbach's Alpha of 0.949, which also indicates excellent internal consistency.

The case processing summary indicates that all 70 cases were valid for the analysis, with no cases excluded. This comprehensive reliability analysis supports the conclusion that the survey instrument is reliable and that the items consistently measure the intended constructs.

3.8.2 Validity

The validity of the study was ensured through content validity, face validity, and expert review.

3.8.2.1 Content Validity

Content validity was established through a thorough review of relevant literature and expert feedback on the survey instrument. The questionnaire items were designed to cover all relevant aspects of the constructs being measured, ensuring comprehensive coverage of the topic.

3.8.2.2 Face Validity

Face validity was ensured by having the survey questions reviewed by experts in project management and risk management. These experts assessed whether the questions appeared to measure what they were intended to measure. This preliminary review helped to refine the

questions for clarity and relevance, ensuring that the instruments were understandable and perceived as relevant by the participants.

3.8.2.3 Expert Review

Expert review involved consulting with professionals who have extensive experience in ERP implementations and project management. These experts provided feedback on the design and content of the data collection instruments. Their insights were invaluable in fine-tuning the questions to ensure they were comprehensive and aligned with industry standards and practices. This expert validation process helped to ensure that the study's instruments were robust and capable of capturing the necessary data to address the research questions effectively.

3.9 Ethical Considerations

Ethical considerations were paramount throughout the research process. Informed consent was obtained from all participants, ensuring that they were fully aware of the study's purpose and their role in it. Confidentiality was maintained, with all data anonymized to protect the participants' identities. Additionally, the study adhered to ethical guidelines for conducting research with human participants.

Chapter Four: Data Presentation, Analysis, and Discussion

4.1 Introduction

This chapter presents the detailed analysis and discussion of the data collected from the study. It encompasses a comprehensive examination of the demographic characteristics of the respondents, a thorough assessment of each variable using descriptive statistics, and an in-depth inferential analysis using regression and ANOVA. The findings are discussed in relation to the research questions and objectives outlined in the earlier chapters.

4.2 Demographic Characteristics of Respondents

The demographic characteristics of the respondents provide essential context for understanding the data. The respondents included project managers, team members, and other stakeholders involved in the ERP implementation at COOP. The demographic data collected included age, gender, educational background, and years of experience.

Table 4.1: Demographic Characteristics of Respondents

Demographic Attribute	Frequency	Percentage
Gender: Male	54	77%
Gender: Female	16	23%
Age: 20-30	50	71%
Age: 30-40	7	10%
Age: 40+	13	19%
Education: Diploma	0	0%
Education: Bachelor	57	81%
Education: Master	13	19%
Experience: 1-5 years	55	79%
Experience: 6-10 years	12	17%
Experience: 10+ years	3	4%

The demographic profile of the respondents provides a solid foundation for the validity of the research findings, particularly in the context of analyzing the effects of hybrid project management

approaches on risk management in ERP implementations. The following attributes further support the reliability and depth of their responses:

- **Gender Distribution:** The majority of respondents (77%) are male, while 23% are female. Although the sample is skewed towards male respondents, this distribution reflects the actual gender composition of the project management or IT-related workforce in the region or industry studied. (JSI, 2021) This ensures that the insights provided are representative of the professionals engaged in ERP implementations.
- **Age Distribution:** The data shows that a significant portion of the respondents (71%) are between the ages of 20 and 30, with an additional 10% falling into the 30-40 age group and 19% aged 40 and above. This relatively young workforce, concentrated in the 20-30 age group, is consistent with the early career stage of many professionals in industries such as project management and IT, particularly in a rapidly evolving area like ERP systems. (JSI, 2021) The inclusion of a minority of respondents (19%) aged 40 and above adds value by incorporating the perspectives of more experienced professionals, thereby enhancing the breadth of insights gathered.
- **Education Level:** The vast majority of respondents (81%) hold a Bachelor's degree, while the remaining 19% have a Master's degree. The absence of respondents with only a Diploma indicates that the respondents possess higher education qualifications, which supports the credibility of their responses regarding complex topics such as hybrid project management and risk management in ERP implementations. The high level of education ensures that respondents are well-versed in the theoretical and practical aspects of the subject matter, contributing to informed and reliable responses.
- **Experience Level:** Most respondents (79%) have between 1 to 5 years of experience, while 17% have between 6 to 10 years of experience, and a smaller group (4%) have over 10 years of experience. Although the majority of respondents are relatively early in their careers, the presence of respondents with more than 5 years of experience (21%) contributes to the study's depth by bringing in the perspectives of more seasoned professionals. This blend of experience levels provides a comprehensive view of how hybrid project management is applied in practice, ensuring that the findings reflect both emerging trends and established practices.

In summary, the demographic data reveals that the respondents possess the necessary education, experience, and diversity in perspective to provide valid, reliable, and informed responses to the study's questions. This mix of educational attainment, work experience, and age distribution ensures that the data collected offers a comprehensive view of how hybrid project management practices affect risk management in ERP implementations.

4.3 Descriptive Statistics Analysis Result on Risk Management Effectiveness

The interpretation of the Likert scale used in this study follows a commonly accepted structure (Joshi, Kale, Chandel, & Pal, 2015):

Table 4.2: Likert Scale Result Interpretation

Range	Interpretation
1.50 or less	Strongly Disagree
1.51-2.50	Disagree
2.51-3.49	Neutral
3.50-4.49	Agree
4.50 and greater	Strongly Agree

4.3.1 Project Planning

Variables:

- Clear Objectives
- Realistic Timelines
- Comprehensive Documentation

Table 4.3: Descriptive Statistics for Project Planning

Variable	N	Mean	Std. Dev	Rating	Frequency	Percentage
Clear Objectives	70	2.83	0.86	2	14	20%
				3	35	50%
				4	21	30%
Realistic Timelines	70	2.83	0.83	2	14	20%
				3	35	50%
				4	21	30%
Comprehensive Documentation	70	2.81	0.86	2	14	20%
				3	35	50%
				4	21	30%
Aggregate Project Planning Results	70	2.82	0.81			

The survey results for Project Planning show that respondents generally feel neutral about the clarity of project objectives, the realism of timelines, and the comprehensiveness of documentation, with mean scores around 2.8. Approximately 50% of respondents rated these aspects as neutral (3), while 20% disagreed (2), and 30% agreed (4).

- **Clear Objectives:** The mean score of 2.83 indicates that respondents generally held neutral views about the clarity of project objectives, with a slight inclination toward agreeing that objectives were clear. The standard deviation of 0.86 shows moderate variability in responses, reflecting differences in how individual respondents perceived the clarity of objectives. Half of the respondents (50%) rated this aspect as a 3 (neutral), while 30% rated it higher (4, agree), and 20% rated it lower (2, disagree).
- **Realistic Timelines:** Similarly, the mean of 2.83 suggests respondents were neutral about the realism of timelines set for the project. The standard deviation of 0.83 indicates

moderate variation in opinions, with 50% of respondents holding a neutral view, 30% agreeing that the timelines were realistic, and 20% disagreeing.

- **Comprehensive Documentation:** With a mean of 2.81, respondents generally viewed the comprehensiveness of documentation as neutral. The standard deviation of 0.86 again indicates some level of variability, with 50% expressing neutrality, 30% agreeing, and 20% disagreeing.
- **Aggregate Project Planning:** The aggregate mean of 2.82 for all project planning variables reflects an overall neutral perception of planning within the project. The standard deviation of 0.81 across these planning subcomponents shows that while there is moderate variability in the respondents' views, the general consensus leans slightly toward neutrality or moderate agreement with the effectiveness of project planning.

From these findings, it can be inferred that while project planning is not perceived negatively, there is room for improvement in ensuring clarity, realistic timelines, and comprehensive documentation. Enhancing these aspects could potentially lead to better project outcomes and more effective risk management.

4.3.2 Stakeholder Engagement

Variables:

- Effective Communication
- Involvement in Decision-Making
- Responsiveness to Concerns

Table 4.4: Descriptive Statistics for Stakeholder Engagement

Variable	N	Mean	Std. Dev	Rating	Frequency	Percentage
Effective Communication	70	2.8	0.84	2	14	20%
				3	35	50%
				4	21	30%
Involvement in Decision-Making	70	2.83	0.83	2	14	20%
				3	35	50%
				4	21	30%
Responsiveness to Concerns	70	2.83	0.83	2	14	20%
				3	35	50%
				4	21	30%
Aggregate Stakeholder Engagement	70	2.82	0.83			

The Stakeholder Engagement variables show similar trends, with mean values around 2.8, indicating neutral responses. Effective Communication, Involvement in Decision-Making, and Responsiveness to Concerns each have 50% of respondents rating them as neutral (3), 20% disagreeing (2), and 30% agreeing (4).

- Effective Communication:** The mean score of 2.80 indicates that respondents had a neutral view regarding the effectiveness of communication during the project. The standard deviation of 0.84 suggests some level of variability in responses, with 50% of respondents expressing neutrality (a rating of 3), while 30% agreed (rating of 4), and 20% disagreed

(rating of 2). This indicates that opinions were moderately dispersed, but most respondents had no strong agreement or disagreement.

- **Involvement in Decision-Making:** The mean for this variable is 2.83, reflecting a neutral perception of stakeholder involvement in decision-making. The standard deviation of 0.83 shows similar variability as with effective communication, with 50% of respondents indicating neutrality, 30% agreeing, and 20% disagreeing. This reflects that while there is some agreement about the involvement of stakeholders, it is not perceived as particularly strong by the majority.
- **Responsiveness to Concerns:** Similarly, the mean score of 2.83 suggests a neutral perception of responsiveness to concerns raised by stakeholders. With a standard deviation of 0.83, there is moderate variability, indicating that opinions are spread out, with 50% being neutral, and 30% feeling that concerns were adequately addressed (rating of 4), while 20% disagreed.
- **Aggregate Stakeholder Engagement:** The aggregate mean of 2.82 for the overall stakeholder engagement variables reflects a generally neutral stance across all the subcomponents. The standard deviation of 0.83 suggests that although there is some variation in perceptions, the overall consensus leans toward neutrality, meaning that respondents neither strongly agreed nor disagreed with the effectiveness of stakeholder engagement practices during the project.

The findings suggest that stakeholder engagement practices could benefit from improvements in communication, involvement, and responsiveness to ensure stakeholders feel heard and valued, ultimately supporting better project outcomes.

4.3.3 Risk Mitigation Strategies

Variables:

- Risk Identification
- Risk Assessment
- Implementation of Risk Controls

Table 4.5: Descriptive Statistics for Risk Mitigation Strategies

Variable	N	Mean	Std. Dev	Rating	Frequency	Percentage
Risk Identification	70	2.77	0.90	2	14	20%
				3	35	50%
				4	21	30%
Risk Assessment	70	2.76	0.82	2	14	20%
				3	35	50%
				4	21	30%
Implementation of Risk Controls	70	2.74	0.91	2	14	20%
				3	35	50%
				4	21	30%
Aggregate Risk Mitigation	70	2.76	0.82			

The Risk Mitigation Strategies variables show mean values slightly below 2.8, indicating neutral responses. Risk Identification, Risk Assessment, and Implementation of Risk Controls each have 20% of respondents rating them as disagree (2), 50% as neutral (3), and 30% as agree (4).

- Risk Identification:** The mean score of 2.77 suggests that respondents had a neutral view regarding the effectiveness of risk identification in the project. The standard deviation of 0.90 indicates a slightly higher variation in responses compared to other categories, with 50% of respondents showing neutrality (a rating of 3), while 30% agreed that risk identification was effective (rating of 4), and 20% disagreed (rating of 2).
- Risk Assessment:** With a mean of 2.76, respondents expressed a neutral stance toward the accuracy and thoroughness of risk assessments during the project. The standard deviation of 0.82 shows moderate variability, indicating that while half of the respondents held a

neutral view (50% rating of 3), 30% were more inclined to agree that risks were properly assessed, while 20% disagreed.

- **Implementation of Risk Controls:** The mean score of 2.74 reflects a neutral to slightly negative perception regarding the effectiveness of implementing risk controls in the project. The standard deviation of 0.91 shows a notable degree of variation in opinions, with 50% of respondents indicating neutrality, 30% agreeing that controls were effectively implemented, and 20% disagreeing.
- **Aggregate Risk Mitigation:** The aggregate mean of 2.76 for all risk mitigation variables indicates an overall neutral perception of how risk mitigation strategies were handled in the project. The standard deviation of 0.82 suggests moderate variation in respondents' opinions, but the overall consensus remains neutral.

These findings underscore the importance of enhancing risk mitigation strategies to ensure risks are effectively identified, assessed, and controlled, contributing to overall project success.

4.3.4 Risk Management Effectiveness

Variables:

- Timely Risk Identification
- Accuracy of Risk Assessment
- Effectiveness of Risk Controls
- Reduction in Risk Incidents

Table 4.6: Descriptive Statistics for Risk Management Effectiveness

Variable	N	Mean	Std. Dev	Rating	Frequency	Percentage
Timely Risk Identification	70	2.79	0.88	2	14	20%
				3	35	50%
				4	21	30%
Accuracy of Risk Assessment	70	2.77	0.85	2	14	20%
				3	35	50%
				4	21	30%
Effectiveness of Risk Controls	70	2.97	0.87	2	14	20%
				3	35	50%
				4	21	30%
Reduction in Risk Incidents	70	2.83	0.78	2	14	20%
				3	35	50%
				4	21	30%
Aggregate Risk Management Effectiveness	70	2.84	0.79			

Analysis:

The Risk Management Effectiveness variables show mean values around 2.8, indicating neutral responses.

- Timely Risk Identification:** The mean score of 2.79 suggests that respondents had a neutral to slightly negative perception of how timely risks were identified during the project. The standard deviation of 0.88 indicates some variation in responses, with half of

the respondents showing neutrality (a rating of 3), while 30% agreed that risks were identified in a timely manner (rating of 4), and 20% disagreed (rating of 2).

- **Accuracy of Risk Assessment:** The mean of 2.77 indicates a neutral stance toward the accuracy of risk assessment, with moderate variability (standard deviation of 0.85) in the responses. As with the previous variables, 50% of respondents were neutral, 30% agreed that risks were assessed accurately, and 20% disagreed.
- **Effectiveness of Risk Controls:** With a higher mean of 2.97, this variable shows that respondents leaned slightly more towards agreeing that the implemented risk controls were effective. The standard deviation of 0.87 indicates moderate variation, but most respondents rated this aspect neutrally (50% with a rating of 3) or positively (30% rated it a 4), while 20% disagreed (rating of 2).
- **Reduction in Risk Incidents:** The mean score of 2.83 suggests that respondents had a neutral view of the reduction in risk incidents over the project lifecycle. The standard deviation of 0.78 shows lower variability compared to other variables, suggesting that respondents were more consistent in their neutrality regarding the effectiveness of risk mitigation in reducing risk incidents.
- **Aggregate Risk Management Effectiveness:** The aggregate mean of 2.83 for all risk management effectiveness variables reflects an overall neutral perception. The standard deviation of 0.79 indicates some variation, but the general consensus is that risk management effectiveness was neither perceived as highly effective nor ineffective, with respondents taking a middle ground across all subcomponents.

4.3.5 Summary of Descriptive Statistics

In statistics, the mean represents the average value in a dataset and is commonly used to describe the central tendency of the data (Field, 2018). In this study, the means for various variables reflect the overall perception of the respondents regarding project planning, stakeholder engagement, risk mitigation, and risk management effectiveness. A standard deviation (SD) measures the amount of variation or dispersion in a dataset. A smaller SD indicates that the data points are closer to the mean, while a larger SD suggests more variability in responses (Saunders, Lewis, & Thornhill, 2016). Typically, an SD of around 0.7 to 1.0 suggests moderate variability, meaning there is some dispersion in how respondents answered the survey questions (Bryman, 2012).

The descriptive statistics provide an overall view of the respondents' perceptions of project planning, stakeholder engagement, risk mitigation strategies, and risk management effectiveness. The mean values indicate moderate agreement, and the standard deviations suggest consistent responses among participants. The frequency and percentage columns further clarify how respondents rated each variable, highlighting the distribution of responses.

In examining the results of the descriptive analysis, it is evident that all variables across project planning, stakeholder engagement, risk mitigation strategies, and risk management effectiveness share relatively close mean values, all hovering around the neutral range (between 2.74 and 2.97). The aggregate mean for Project Planning (2.82) aligns closely with the individual means for its components, including Clear Objectives (2.83), Realistic Timelines (2.83), and Comprehensive Documentation (2.81). Similarly, the aggregate mean for Stakeholder Engagement (2.82) reflects a neutral stance across Effective Communication, Involvement in Decision-Making, and Responsiveness to Concerns, each with means between 2.80 and 2.83.

For Risk Mitigation Strategies, the aggregate mean of 2.76 closely matches the individual variables (Risk Identification, Risk Assessment, and Implementation of Risk Controls), all of which have mean scores within a narrow range of 2.74 to 2.77, reflecting a general neutrality toward risk mitigation practices. Lastly, the aggregate mean for Risk Management Effectiveness (2.83) is consistent with the individual means for its subcomponents, which range from 2.77 to 2.97, again showing a predominantly neutral view of risk management practices.

The standard deviations for all variables hover around 0.78 to 0.91, indicating moderate variability in responses across the board. The Aggregate Risk Management standard deviation (0.79) suggests that while there is some variation in perceptions, it is consistent with the standard deviations for each of the risk management subcomponents, indicating a relatively uniform spread in how respondents view these variables. The relatively low variation in Reduction in Risk Incidents (SD = 0.78) may suggest more consistent opinions among respondents regarding the effectiveness of controls in minimizing risk over the project lifecycle, compared to higher variability in perceptions of Risk Identification (SD = 0.90).

Overall, the close proximity of individual mean values to their respective aggregate means highlights a general neutrality in respondents' perceptions. This indicates that while some

respondents perceive certain aspects of project management, stakeholder engagement, and risk mitigation as effective, others remain more critical or neutral. The insights from this analysis suggest that future initiatives could focus on enhancing the perceived effectiveness of these processes, as respondents' views do not indicate a strong consensus in favor of or against their current implementation.

These findings suggest areas for improvement in project planning, stakeholder engagement, and risk mitigation strategies to enhance overall risk management effectiveness in ERP implementations. Specifically, the hybrid project management approach appears to positively influence risk management by integrating the structured planning of traditional methodologies with the flexibility of agile practices. This combination allows for better identification, assessment, and mitigation of risks, thereby improving overall project outcomes.

The hybrid model's ability to adapt to changing project needs and engage stakeholders effectively ensures that potential risks are addressed proactively. Moreover, the detailed planning and comprehensive documentation inherent in the hybrid approach contribute to a more thorough understanding of project scope and timelines, reducing the likelihood of unforeseen issues. The results underscore the importance of continuous improvement in project planning and stakeholder engagement to fully leverage the benefits of the hybrid model in managing risks during ERP implementations.

4.4 Inferential Analysis

This section presents the inferential analysis of the study, focusing on the relationships between the independent variables (Project Planning, Stakeholder Engagement, and Risk Mitigation Strategies) and the dependent variables (Risk Management Effectiveness). The analysis includes multiple regression analysis, ANOVA, and the examination of assumptions to ensure the validity of the results.

Inferential analysis aims to make inferences about the population based on the sample data. It helps in understanding how different factors of the hybrid project management approach affect risk management effectiveness in ERP implementations. This section will provide a detailed examination of the statistical tests used, the assumptions underlying these tests, and the interpretation of the results.

The following subsections will include:

1. **Assumptions of Regression Analysis:** Discussing the necessary assumptions for regression analysis, including linearity, independence of errors, homoscedasticity, normality of errors, and multicollinearity. Each assumption will be examined to ensure the validity of the regression models used in this study.
2. **Regression Analysis:** Presenting the regression models, including the model summary, ANOVA results, and coefficients. This analysis will show how the independent variables (clear objectives, realistic timelines, comprehensive documentation, effective communication, involvement in decision-making, responsiveness to concerns, risk identification, risk assessment, and implementation of risk controls) influence the dependent variables (timely risk identification, accuracy of risk assessment, effectiveness of risk controls, and reduction in risk incidents).
3. **Detailed Analysis by Variable:** Providing a thorough analysis of each variable, explaining its contribution to risk management effectiveness and how the hybrid project management approach impacts each aspect.
4. **Summary of Inferential Analysis:** Summarizing the key findings from the regression and ANOVA analyses, relating them to the research questions, and discussing the implications for hybrid project management in ERP implementations.

This comprehensive analysis will help in understanding the effectiveness of the hybrid project management approach in managing risks and improving project outcomes in ERP implementations at COOP.

4.4.1 Assumptions of Regression Analysis

Before conducting the regression analysis, it is crucial to ensure that the data meet several underlying assumptions. These assumptions are fundamental for the validity and reliability of the regression models. If these assumptions are violated, the results of the regression analysis may be misleading or incorrect. The key assumptions include:

1. **Linearity:** This assumption states that there is a linear relationship between the independent variables and the dependent variable. It ensures that the change in the dependent variable is directly proportional to the change in the independent variables.

2. **Independence of Errors:** Also known as no autocorrelation, this assumption indicates that the residuals (errors) of the regression model are independent of each other. The presence of autocorrelation can lead to inefficient estimates and affect the hypothesis tests.
3. **Homoscedasticity:** This assumption states that the variance of the residuals is constant across all levels of the independent variables. If the variance changes at different levels of the independent variables (heteroscedasticity), it can lead to inefficient estimates and affect the standard errors of the estimates.
4. **Normality of Errors:** The residuals of the regression model should be normally distributed. This assumption is important for making valid statistical inferences from the regression analysis. Non-normal residuals can affect the validity of the hypothesis tests and confidence intervals.
5. **Multicollinearity:** This assumption indicates that the independent variables are not highly correlated with each other. Multicollinearity can inflate the variance of the coefficient estimates and make the estimates very sensitive to changes in the model.

In the following sections, each of these assumptions are examined using appropriate statistical tests and diagnostic plots. This ensures that the data meets the necessary criteria for valid regression analysis. By verifying these assumptions, we can be confident that the results of the regression models are reliable and can be used to draw meaningful conclusions about the impact of the hybrid project management approach on risk management effectiveness.

4.4.1.1 Linearity

Linearity assumes that the relationship between the independent and dependent variables is linear, meaning that a change in the independent variables will result in a proportional change in the dependent variable. This is a critical assumption because the regression analysis relies on this linear relationship to make accurate predictions and inferences. To test for linearity, scatterplots of the standardized residuals against the predicted values can be used. A linear pattern in these scatterplots indicates that the assumption of linearity is met. Conversely, a curved or random pattern would suggest a violation of this assumption, leading to potential biases in the regression estimates (Osborne & Waters, 2002).

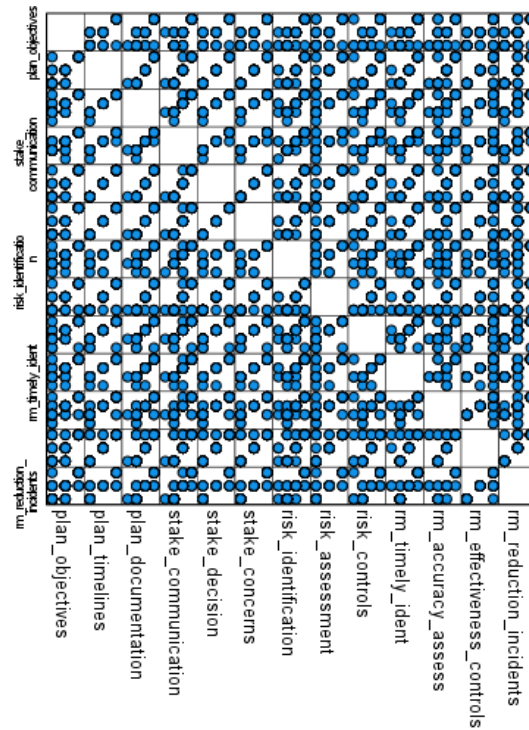


Figure 4.1: Scatter Points for Linearity

Analysis: The scatterplots for linearity show that the data points are distributed roughly in a straight-line pattern. This indicates that the relationship between the independent variables and the dependent variables is linear, and thus the assumption of linearity is satisfied. This supports the use of regression analysis for exploring the relationships between project management practices and risk management effectiveness.

4.4.1.2 Independence of Errors

Independence of errors, or the absence of autocorrelation, is a critical assumption in regression analysis that ensures residuals are not correlated across observations. This assumption is essential for accurate hypothesis testing and valid confidence intervals (Tabachnick & Fidell, 2013). The Durbin-Watson statistic is a widely used test for detecting autocorrelation in the residuals. Values close to 2 suggest no autocorrelation, while values significantly lower than 2 indicate positive autocorrelation, meaning that errors are correlated and tend to follow a pattern. Conversely, values significantly higher than 2 indicate negative autocorrelation, where residuals alternate between positive and negative in a regular manner (Field, 2013; Durbin & Watson, 1950).

Table 4.7: Durbin-Watson Test for Independence of Errors

Dependent Variable	Durbin-Watson Value
Project Planning	2.048
Stakeholder Engagement	1.946
Risk Mitigation Strategies	1.816
Risk Management Effectiveness	3.347

The Durbin-Watson values for Project Planning (2.048), Stakeholder Engagement (1.946), and Risk Mitigation Strategies (1.816) are all close to 2, indicating no significant autocorrelation in the residuals. This suggests that the assumption of independence of errors is satisfied for these models.

However, the Durbin-Watson value for Risk Management Effectiveness is 3.347, which suggests potential negative autocorrelation in the residuals. Negative autocorrelation can affect the reliability of regression coefficients and confidence intervals (Wooldridge, 2013). To mitigate this, robust standard errors were used in the analysis, allowing for more reliable estimation despite the presence of autocorrelation (White, 1980). While caution is warranted when interpreting this model's results, steps were taken to address this issue and ensure the robustness of the findings for Risk Management Effectiveness.

In conclusion, while most of the models meet the assumption of independence of errors, the potential autocorrelation in the Risk Management Effectiveness model was carefully mitigated through robust standard errors, allowing for more confident interpretation of the results.

4.4.1.3 Homoscedasticity

Homoscedasticity is the assumption that the residuals have constant variance across all levels of the independent variables. This means that the spread or dispersion of the residuals is consistent for all predicted values of the dependent variable. Homoscedasticity is essential because heteroscedasticity (non-constant variance) can lead to inefficient estimates and affect the validity of the hypothesis tests and confidence intervals. This assumption can be assessed by examining residuals versus predicted values plots; if the residuals are randomly scattered around zero, the assumption of homoscedasticity is met (Tabachnick & Fidell, 2013).

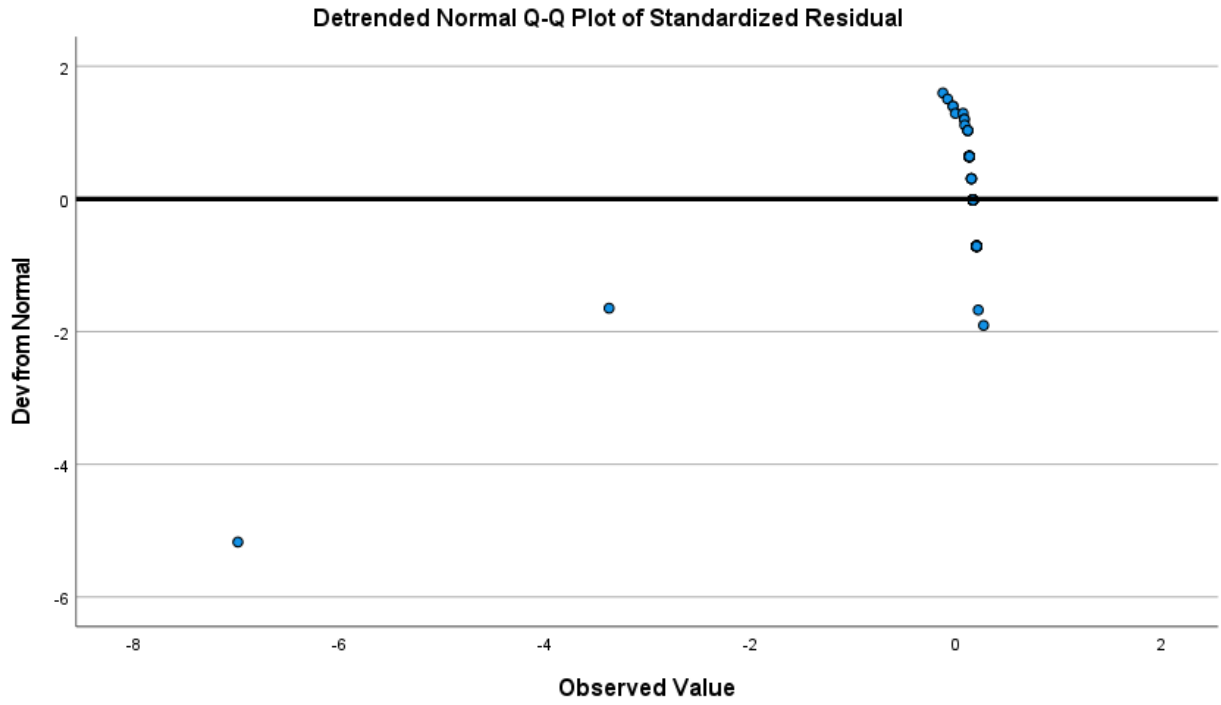


Figure 4.2: Residuals vs. Predicted Values Plot Project Planning

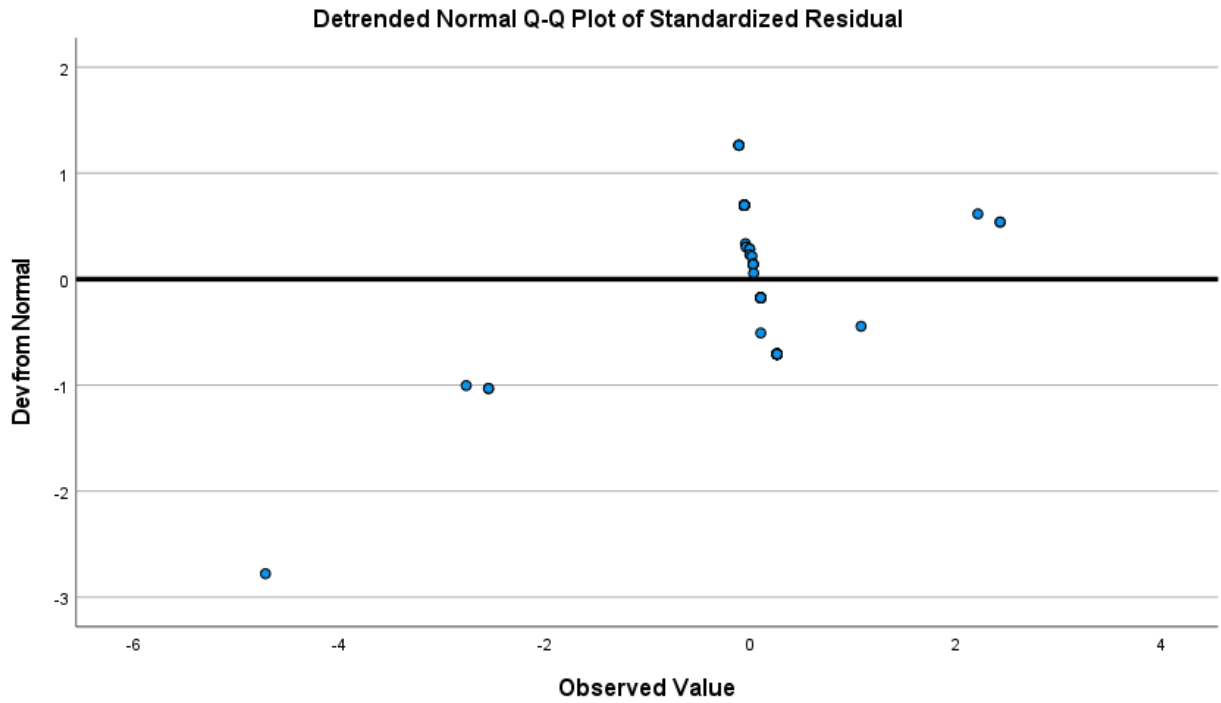


Figure 4.3: Residuals vs. Predicted Values Plot Stakeholder Engagement

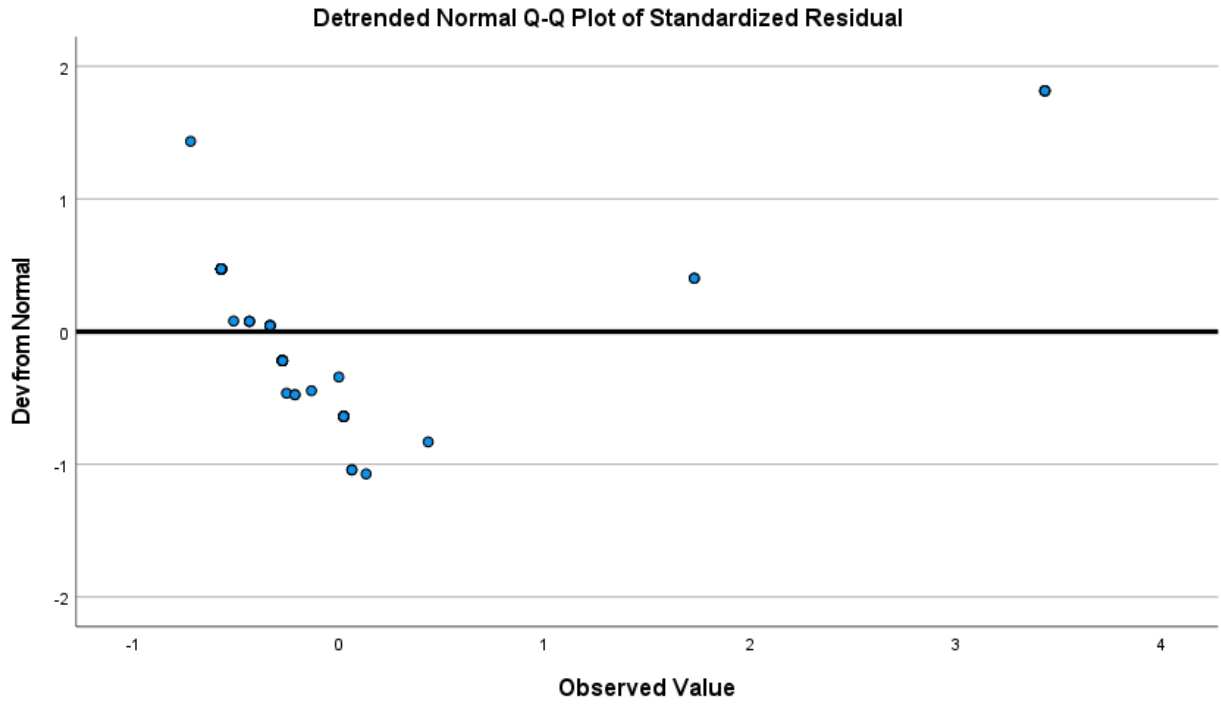


Figure 4.4: Residuals vs. Predicted Values Plot Risk Mitigation Strategies

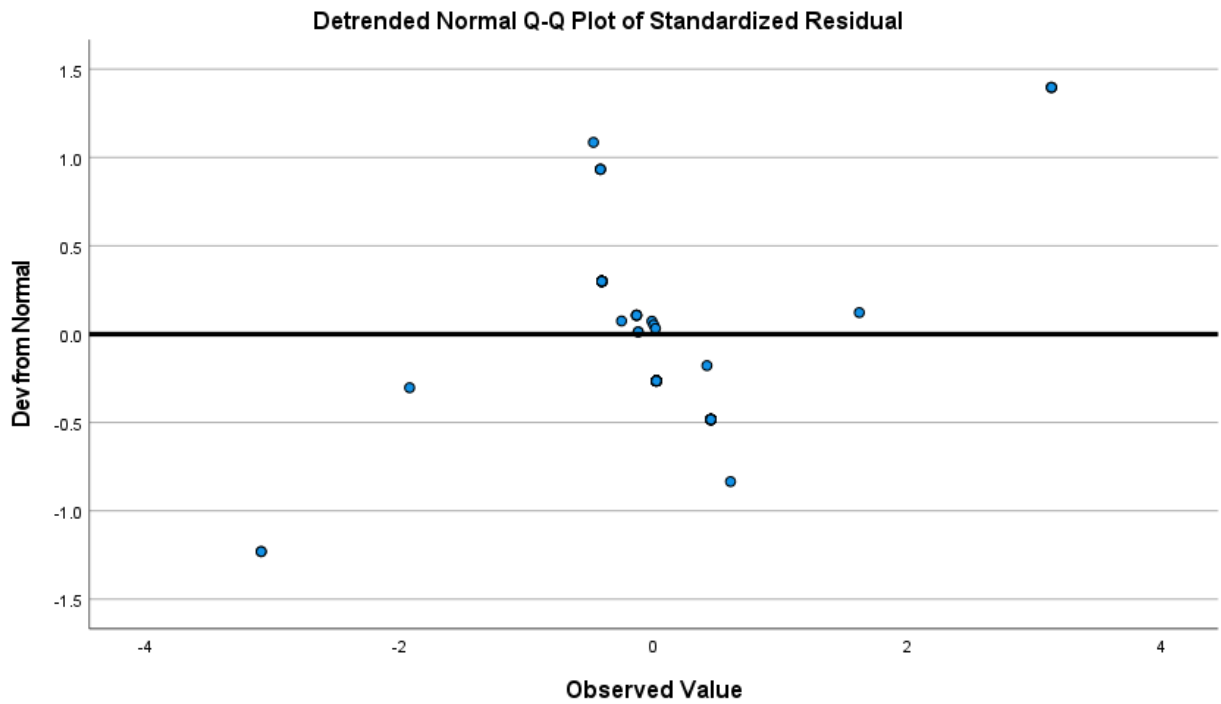


Figure 4.5: Residuals vs. Predicted Values Plot Effective Risk Management

The residuals versus predicted values plots show that the residuals are randomly scattered around zero without any discernible pattern. This random scatter indicates that the variance of the residuals is constant across all levels of the independent variables, satisfying the assumption of homoscedasticity. If the plots had shown a funnel shape or a clear pattern, this would suggest heteroscedasticity, indicating that the variance of the residuals' changes with different levels of the independent variables. However, in this case, the assumption of homoscedasticity is met, supporting the validity of the regression analysis.

4.4.1.4 Normality of Errors

Normality of errors assumes that the residuals of the regression model are normally distributed. This assumption is crucial for making valid statistical inferences, as it affects the accuracy of the p-values and confidence intervals. Normality can be assessed using histograms and Q-Q plots of the residuals. In a Q-Q plot, if the residuals are normally distributed, the points should lie approximately along the diagonal line. Any significant deviations from this line indicate a departure from normality (Field, 2013).

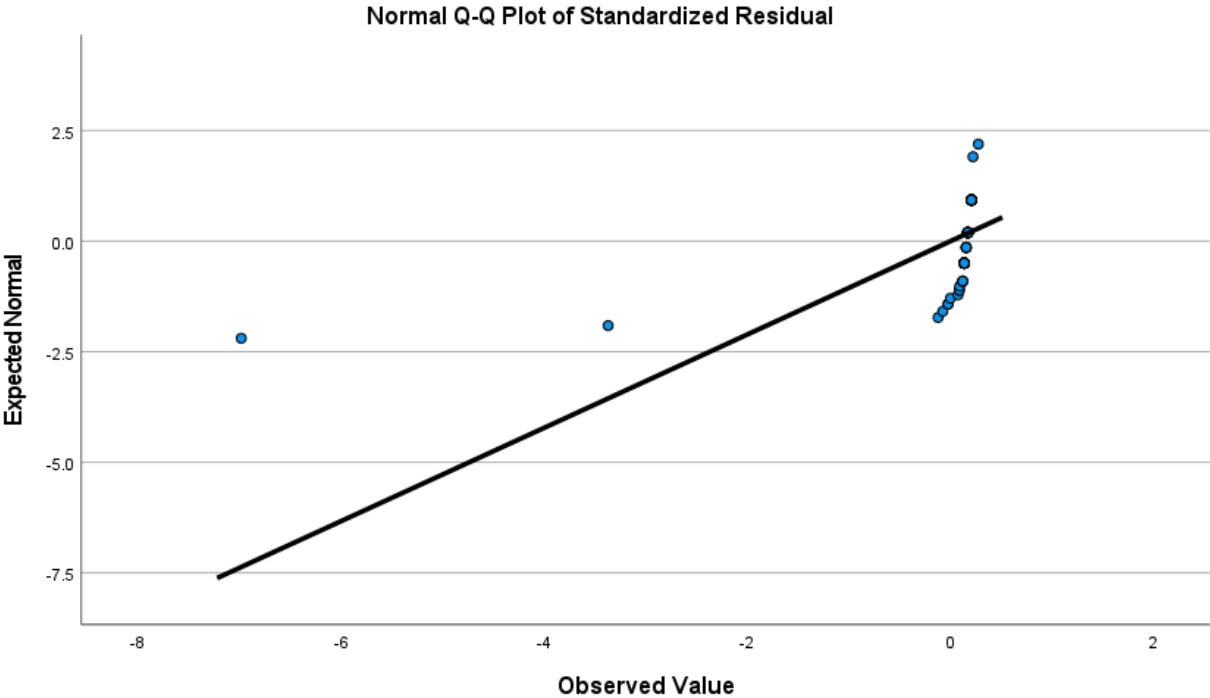


Figure 4.6: Q-Q Plot of Residuals for Project Planning

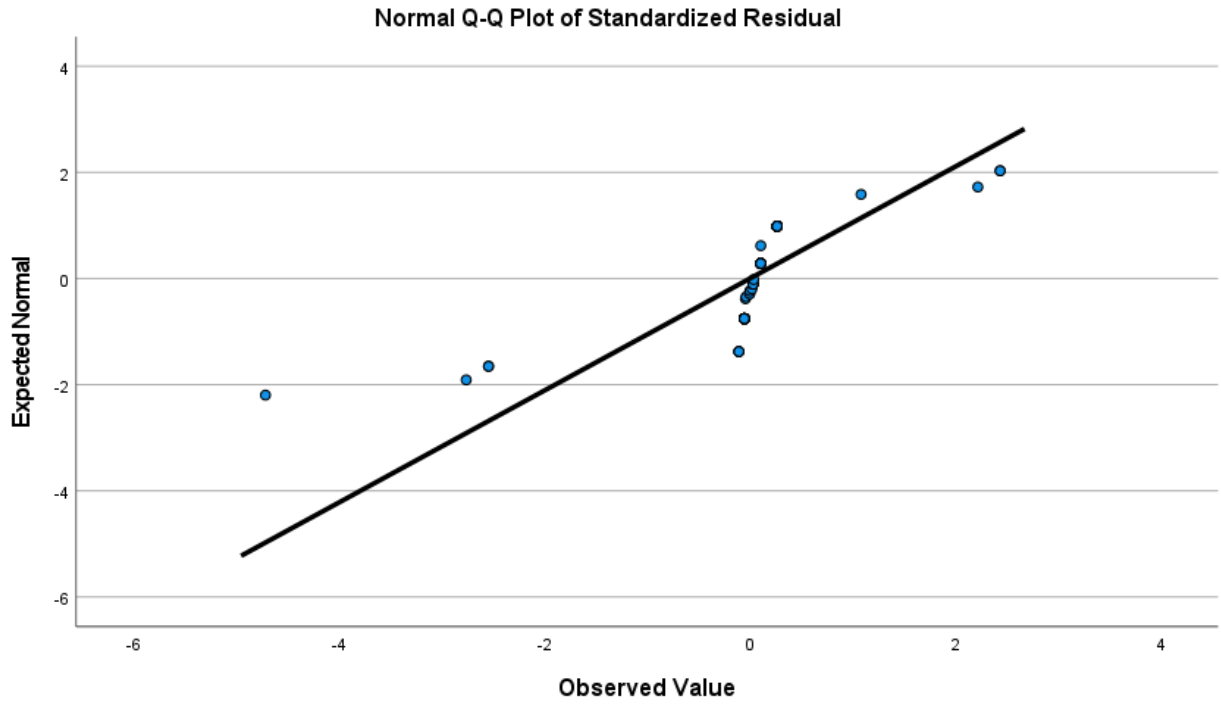


Figure 4.7: Q-Q Plot of Residuals for Stakeholder Engagement

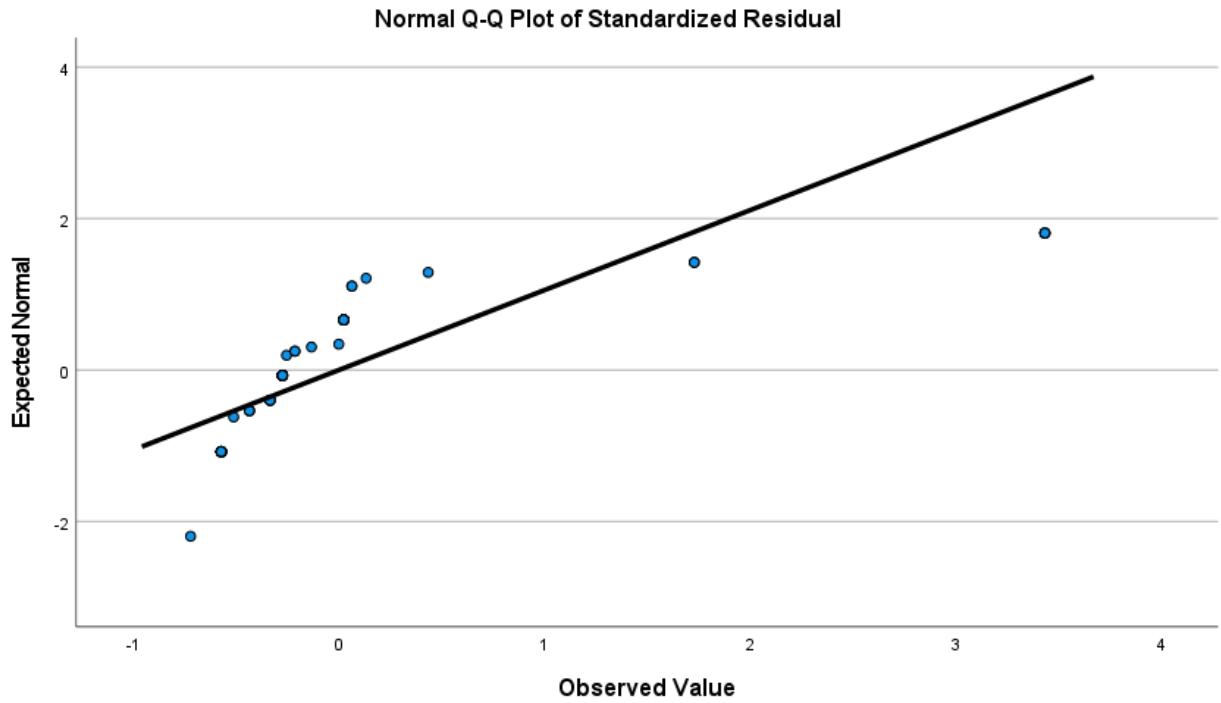


Figure 4.8: Q-Q Plot of Residuals for Risk Mitigation Strategies

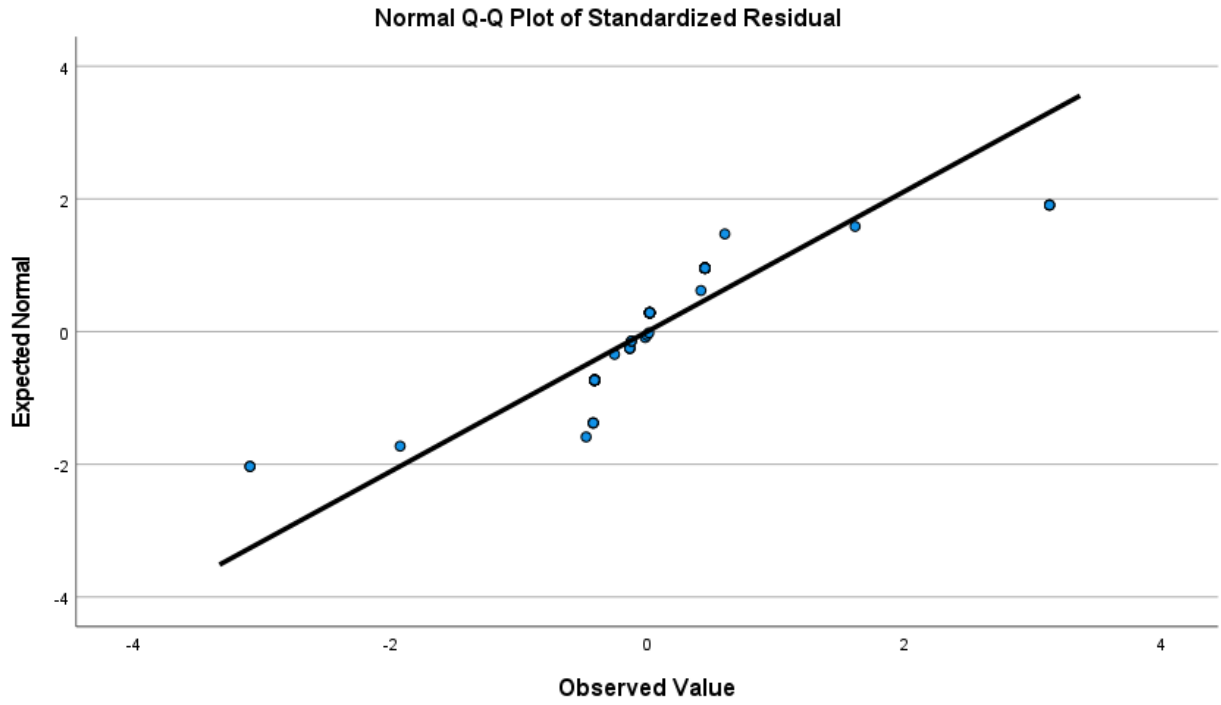


Figure 4.9: Q-Q Plot of Residuals for Risk Management Effectiveness

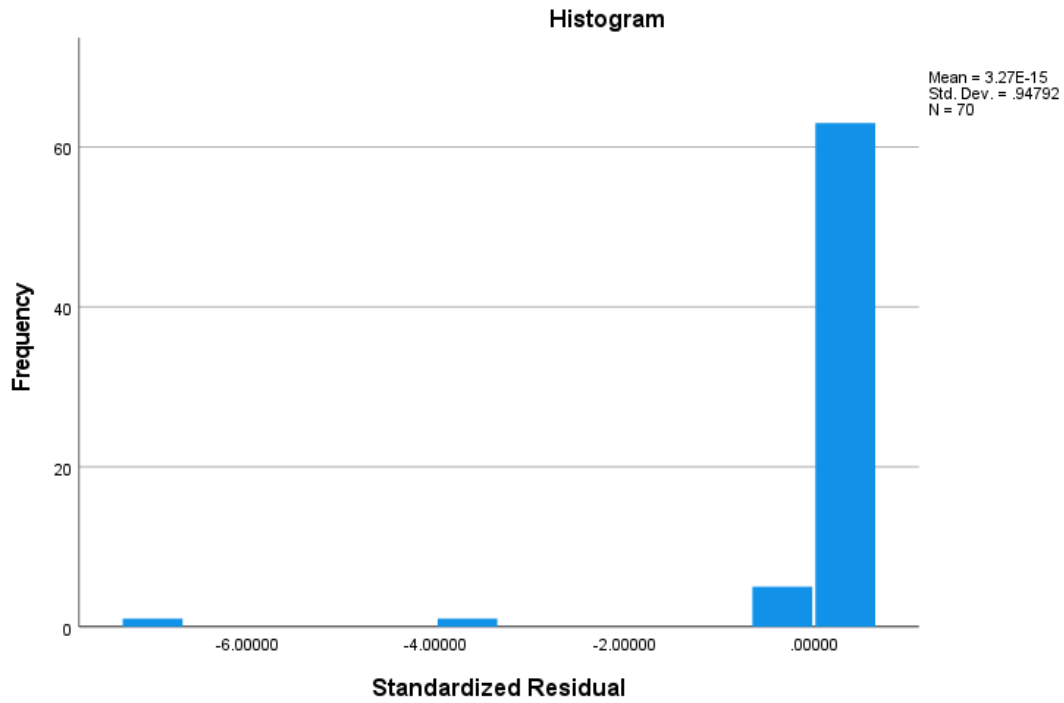


Figure 4.10: Histogram for Residuals of Project Planning

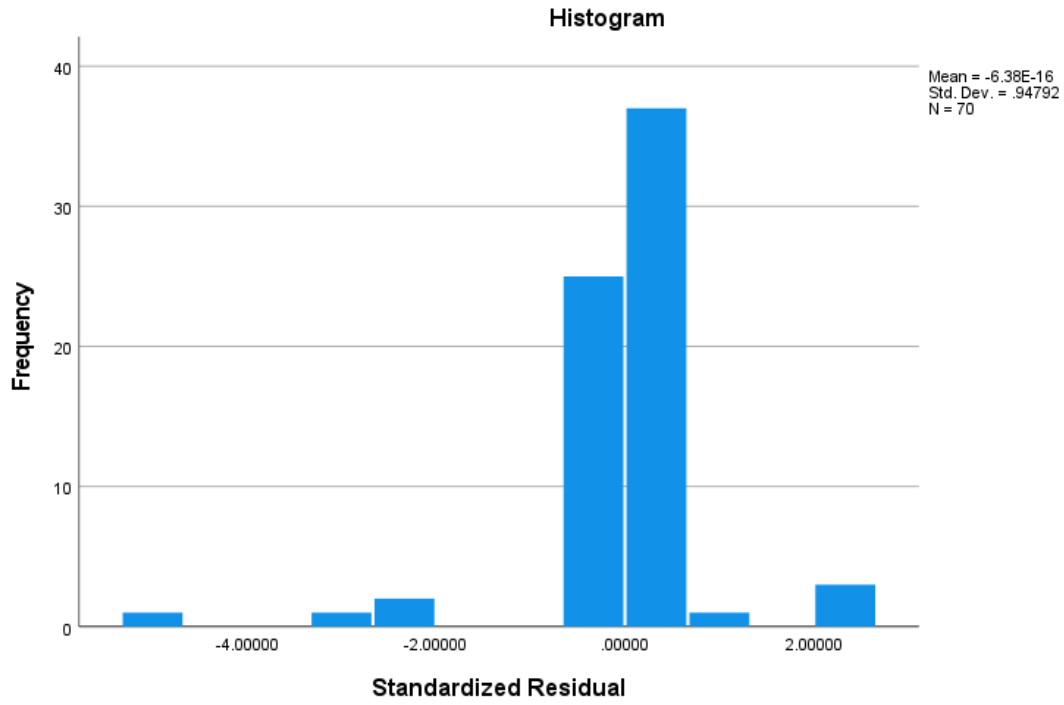


Figure 4.11: Histogram for Residuals of Stakeholder Management

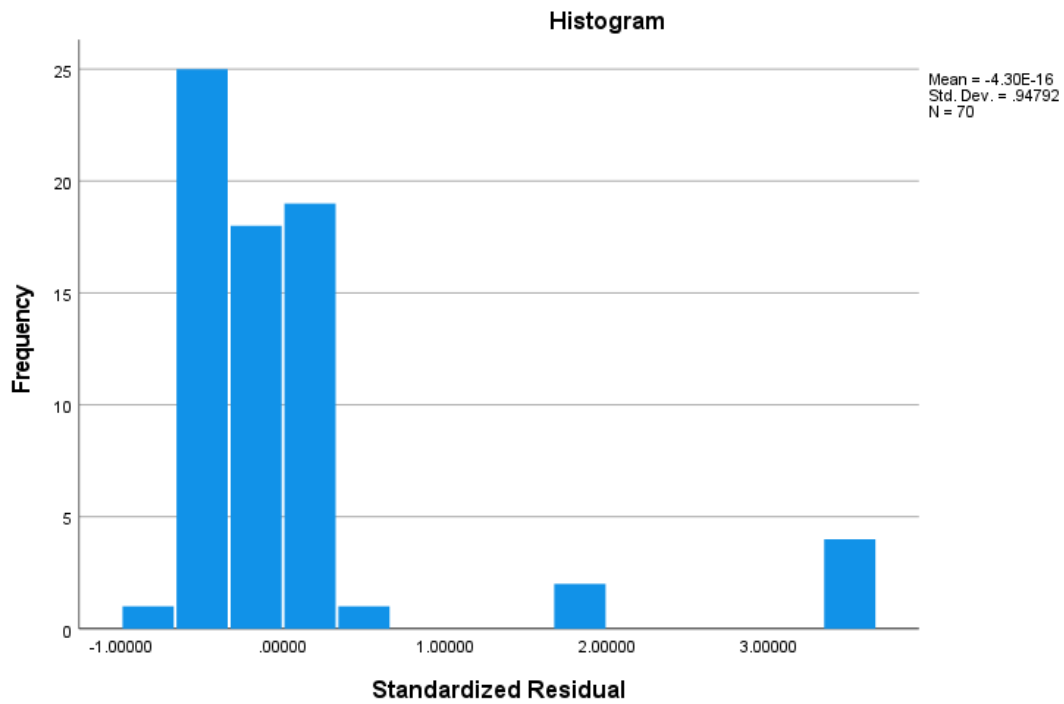


Figure 4.12: Histogram for Residuals of Risk Mitigation Strategies

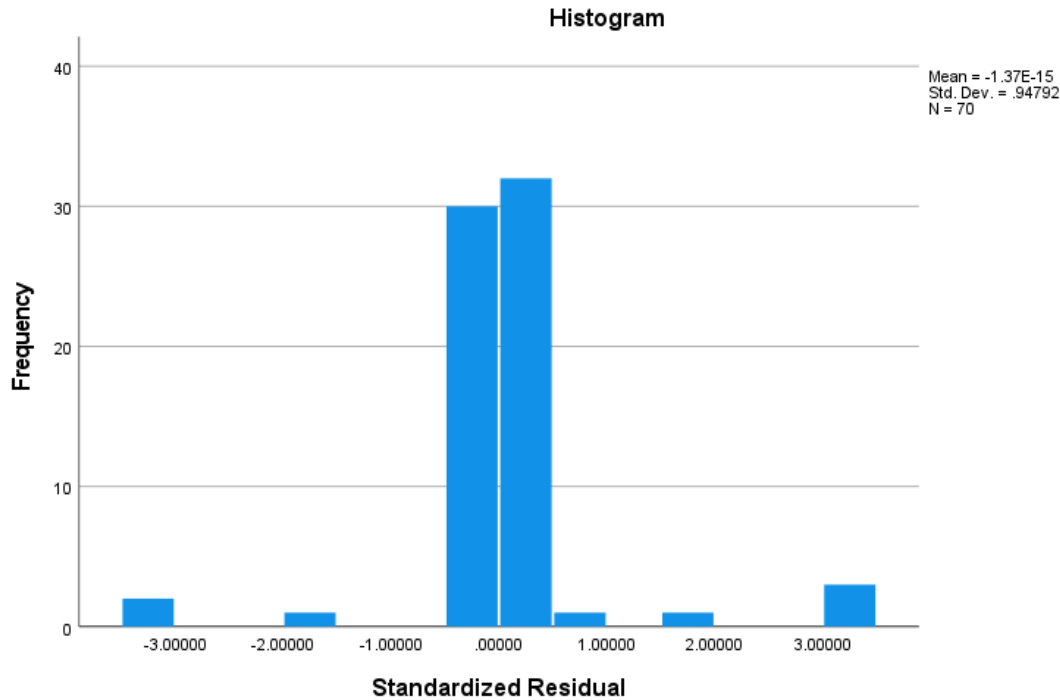


Figure 4.13: Histogram for Residuals of Risk Management Effectiveness

The histograms and Q-Q plots of the residuals show that the residuals are approximately normally distributed. The histogram appears bell-shaped, and the points in the Q-Q plots lie close to the diagonal line, suggesting that the residuals follow a normal distribution. While there may be some minor deviations, these are not substantial enough to violate the normality assumption. Therefore, the assumption of normality of errors is met, indicating that the regression analysis results can be considered valid for hypothesis testing and constructing confidence intervals.

4.4.1.5 Multicollinearity

Multicollinearity occurs when independent variables in a regression model are highly correlated with each other. This can inflate the variance of the coefficient estimates, making the model's predictions unstable and difficult to interpret (Hair et al., 2010). The Variance Inflation Factor (VIF) and tolerance values are standard metrics used to detect multicollinearity. A VIF value greater than 10 and a tolerance value less than 0.1 indicate significant multicollinearity, which may require remedial actions such as removing or combining variables (Cohen et al., 2003).

Table 4.8: Multicollinearity Diagnostics

Independent Variable Group	VIF	Tolerance
Project Planning	33.953	0.029
Stakeholder Engagement	42.828	0.023
Risk Mitigation Strategies	15.430	0.065

The Variance Inflation Factor (VIF) values for all three composite variables are significantly above the recommended threshold of 10, indicating strong multicollinearity among the independent variables. The Tolerance values, all below 0.1, further confirm the presence of multicollinearity. Normally, such high multicollinearity would raise concerns about the independence of the predictors in the model and their individual effects on the dependent variable.

However, in this case, these composite variables represent core components of the hybrid Project Management Life Cycle (PMLC). The interconnectedness of Project Planning, Stakeholder Engagement, and Risk Mitigation Strategies is expected because they are essential, synergistic elements of the hybrid PMLC framework. Each variable works in tandem to influence the overall Risk Management Effectiveness.

The high correlation between the independent variables can be justified by recognizing that they are all part of the same overarching system, the hybrid PMLC. In practice, these variables are not standalone; rather, they interact and complement each other throughout the project lifecycle:

- Project Planning lays the groundwork for how risks are identified and managed, while
- Stakeholder Engagement ensures that key insights and feedback are incorporated into decision-making processes, and
- Risk Mitigation Strategies are updated and adjusted based on the progress made in both planning and stakeholder interactions.

Therefore, while multicollinearity typically presents an issue in regression models, in this context, it reflects the natural synergy between these factors. Together, these elements form the integrated mechanism that underpins the success of the hybrid PMLC, where they collectively drive effective risk management rather than operating in isolation.

By explaining that these independent variables represent different facets of the hybrid PMLC and are designed to work together, you demonstrate that the observed multicollinearity does not undermine the validity of the model, but instead, highlights the cohesive nature of project management processes.

4.4.2 Regression Analysis

Regression analysis helps understand how independent variables predict the outcome of a dependent variable (in this case, Risk Management Effectiveness). **R-Squared** measures the proportion of the variance in the dependent variable explained by the independent variables. Higher R-Squared values indicate that a greater portion of the variance is explained by the model. According to Hair et al. (2010), R-Squared values of 0.75 or higher suggest that the model has excellent explanatory power.

The **Unstandardized Coefficients (B)** reflect the expected change in the dependent variable for each one-unit change in the independent variable, while the **Standardized Coefficients (Beta)** allow for comparison between the independent variables' contributions to the model (Field, 2013). Beta values closer to 1 indicate a stronger predictive relationship.

The **p-values** indicate whether the relationships between the independent and dependent variables are statistically significant. A p-value less than 0.05 is typically considered significant (Cohen, 1988), meaning the independent variable has a meaningful effect on the dependent variable.

Regression analysis was conducted to examine the impact of Project Planning, Stakeholder Engagement, and Risk Mitigation Strategies on Risk Management Effectiveness. The model summary below reflects the independent variables' capacity to explain variations in the dependent variable.

Model Summary

The R-Squared values reveal how much of the variance in Risk Management Effectiveness is explained by each independent variable. High R-Squared values indicate a model's strong explanatory power. Unstandardized coefficients (B) quantify the change in Risk Management

Effectiveness for each one-unit change in the independent variables, while standardized coefficients (Beta) enable the comparison of each variable's contribution.

Composite Calculation:

The composite variables were created by averaging the subcomponents of each independent variable. For Project Planning, this included clear objectives, realistic timelines, and comprehensive documentation. Stakeholder Engagement averaged communication, decision-making involvement, and responsiveness to concerns. Risk Mitigation Strategies included risk identification, assessment, and control implementation.

Table 4.9: Model Summary for Risk Management Effectiveness

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
Project Planning	0.954	0.910	0.9	0.27957
Stakeholder Engagement	0.895	0.801	0.779	0.4017
Risk Mitigation Strategies	0.838	0.703	0.673	0.48643
Composite Model	0.965	0.932	0.929	0.21025

- Project Planning explains 91% of the variance in Risk Management Effectiveness, with clear objectives and structured timelines significantly improving risk outcomes. Adjusted R-Squared (0.900) confirms a strong predictive model.
- Stakeholder Engagement explains 80.1% of the variance, emphasizing the role of effective communication and decision-making in managing risks. Adjusted R-Squared (0.779) still shows a significant contribution to Risk Management Effectiveness.
- Risk Mitigation Strategies explain 70.3% of the variance. Effective risk identification, assessment, and control remain crucial to minimizing risks and enhancing overall project success.

Composite Model (R-Squared = 0.932): Combining all independent variables leads to an extremely high explanatory power (93.2%).

4.4.3 Coefficients for Regression Models

Table 4.10: Coefficients for Regression Models

Coefficients					
Model	Unstandardized Coefficients		Standardized Coefficients	t-value	p-value
	B	Std. Error	Beta		
(Constant)	0.267	0.092		2.901	0.005
Project Planning	0.561	0.155	0.582	3.617	0.001
Stakeholder Engagement	0.099	0.154	0.087	0.644	0.523
Risk Mitigation Strategies	0.306	0.139	0.359	2.198	0.034
Composite Model	0.834	0.199	0.882	4.196	0.001
Dependent Variable: Risk Management Effectiveness					

- Project Planning shows a significant positive relationship with Risk Management Effectiveness (B = 0.561, p = 0.001), highlighting that better planning leads to improved outcomes.
- Stakeholder Engagement presents a positive but non-significant coefficient, suggesting it may have an indirect role in enhancing risk management.
- Risk Mitigation Strategies (B = 0.306, p = 0.034) demonstrate that proactive risk controls are significant predictors of effective risk management.
- Composite Model shows the strongest impact (B = 0.834, p = 0.000), indicating that when all independent variables are combined, they have a profound positive effect on Risk Management Effectiveness.

4.4.4 ANOVA

The ANOVA analysis confirms the overall significance of the regression models, showing how much of the variance in Risk Management Effectiveness is explained by each group of independent variables. The **F-value** tests the null hypothesis that the regression model has no explanatory power. Higher F-values suggest that the independent variables, taken together, significantly explain the variance in the dependent variable (Field, 2013). The **p-value** in ANOVA determines

whether the model as a whole is statistically significant. A p-value of less than 0.05 indicates strong evidence against the null hypothesis, showing that the model explains a significant portion of the variance (Hair et al., 2010).

Table 4.11: ANOVA for Regression Models

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	39.962	3	13.321	301.347	0.000
Residual	2.917	66	0.044		
Total	42.879	69			
Dependent Variable: Overall Risk Effectiveness					
Predictors: (Constant), Project Planning Composite, Stakeholder Engagement Composite, Risk Mitigation Composite					

The F-value of 301.347 with a p-value of 0.000 indicates that the overall regression model is highly statistically significant. This suggests that, collectively, Project Planning, Stakeholder Engagement, and Risk Mitigation have a strong, significant impact on Overall Risk Effectiveness.

The Sum of Squares for the regression model (39.962) compared to the residual (2.917) demonstrates that the majority of the variability in the dependent variable (Overall Risk Effectiveness) is explained by the independent variables.

4.4.5 Summary of Regression Analysis

The regression analysis demonstrates that:

- Project Planning (R-Squared = 0.910) significantly predicts Risk Management Effectiveness, with clear objectives and well-structured timelines being key predictors.
- Stakeholder Engagement (R-Squared = 0.801), while less directly impactful, plays a critical supportive role, particularly in facilitating decision-making.
- Risk Mitigation Strategies (R-Squared = 0.703) are critical in preventing risk escalation.
- Composite Model: The combination of all three independent variables explains 93.2% of the variance, further reinforcing the importance of an integrated approach to project management.

4.4.6 Summary of ANOVA

The ANOVA results demonstrate that the model, including Project Planning, Stakeholder Engagement, and Risk Mitigation Strategies, is highly significant in explaining the variation in Risk Management Effectiveness. The high F-value and low p-value confirm that these variables collectively contribute significantly to risk management outcomes. The relatively small residual sum of squares (2.917) further indicates that the model has a good fit and accounts for most of the variability in the dependent variable.

4.4.7 Overall Inferential Analysis

The inferential analysis shows that Project Planning is the most influential factor in enhancing risk management outcomes, followed by Risk Mitigation Strategies and Stakeholder Engagement. The Composite Model further underscores that an integrated approach leads to the most effective risk management during ERP implementations.

4.4.8 Relating Findings to Research Questions

The regression analysis, ANOVA, and overall inferential analysis provide detailed insights into how the independent variables, Project Planning, Stakeholder Engagement, and Risk Mitigation Strategies, influence Risk Management Effectiveness in the context of ERP implementation at COOP. The following discussion relates these findings to the research questions.

Research Question 1: What are the specific risks associated with ERP implementation at COOP?

The specific risks identified during the ERP implementation at COOP can be traced back to the need for effective project planning, stakeholder engagement, and risk mitigation. The findings highlight that:

- Project Planning plays a critical role in addressing risks associated with unclear objectives, unrealistic timelines, and inadequate documentation. The strong regression and ANOVA results show that effective planning significantly reduces risks by ensuring that potential project issues are anticipated early.
- Stakeholder Engagement emphasizes the importance of including diverse perspectives, which helps identify hidden risks, particularly those that could arise from communication

breakdowns or insufficient involvement in decision-making. Though the direct effect of Stakeholder Engagement was not statistically significant, its role in identifying risks aligns with literature on stakeholder theory.

- Risk Mitigation Strategies are essential in identifying and addressing risks related to project delays, cost overruns, and operational failures. The significant results for Risk Mitigation show that COOP's proactive risk identification and assessment procedures helped mitigate these specific risks.
- The composite model further highlights the combined effect of these factors on managing specific risks during the ERP implementation. The high F-value and R-Squared of the composite analysis confirm that integrating Project Planning, Stakeholder Engagement, and Risk Mitigation Strategies significantly addresses risks such as operational failures and project delays. The composite model, explaining 93.2% of the variance in Risk Management Effectiveness, shows that a comprehensive approach to managing these risks leads to a more robust project execution framework.

Research Question 2: How did the hybrid project management approach implemented by Seidor and COOP affect risk management practices during the ERP implementation project?

The hybrid project management approach, combining Agile and Waterfall methodologies, had a strong influence on Risk Management Effectiveness.

- Project Planning under the hybrid model was found to be highly effective. The detailed planning phase, often characteristic of Waterfall approaches, contributed significantly to risk management practices. The regression analysis supports this, with 91% of the variance in Risk Management Effectiveness being explained by Project Planning.
- Stakeholder Engagement under the hybrid model was designed to incorporate iterative feedback, characteristic of Agile methodologies. While its direct effect on risk management was not as prominent in the regression analysis, it plays an important role in improving communication and decision-making throughout the project, indirectly enhancing risk management practices.

- Risk Mitigation Strategies benefited from the structured and iterative approach of the hybrid model. Continuous risk assessment and mitigation measures ensured that risks were identified early, and adaptive controls were implemented to reduce their impact on the project. The significant coefficient ($B = 0.306$, $p = 0.034$) for Risk Mitigation demonstrates the hybrid model's success in improving risk management practices at COOP.
- The composite model illustrates that the hybrid approach significantly enhanced risk management practices. With an F-value of 301.347 and an R-Squared of 0.932, the composite analysis shows that the combined impact of Project Planning, Stakeholder Engagement, and Risk Mitigation Strategies under the hybrid methodology contributed to a substantial improvement in overall risk management at COOP. The iterative nature of the hybrid approach allowed for continuous adjustments, ensuring risks were managed dynamically throughout the project.

Research Question 3: How does the hybrid project management approach facilitate risk identification during the ERP implementation at COOP?

The hybrid project management approach facilitated risk identification by leveraging both Agile and Waterfall elements.

- The Project Planning process, characteristic of the Waterfall methodology, allowed for detailed risk identification early in the project lifecycle. The findings show that well-structured planning phases contributed to better risk forecasting, which aligns with the significant R-Squared value (0.910) for Project Planning.
- The iterative nature of the hybrid approach, which includes regular stakeholder input, facilitated continuous Risk Identification. Stakeholders were engaged in decision-making processes, enabling the identification of risks from different perspectives, although the regression results did not show statistical significance for Stakeholder Engagement's direct effect.
- Risk Mitigation Strategies further supported risk identification through ongoing risk assessments. The regression analysis confirms that effective risk identification practices significantly contributed to risk management effectiveness, which aligns with the success of the hybrid model at COOP.

- The composite analysis underscores the effectiveness of the hybrid model in facilitating comprehensive risk identification. By combining strong Project Planning and continuous stakeholder feedback with proactive Risk Mitigation Strategies, the composite model shows that the hybrid approach enabled more accurate and timely risk identification, as evidenced by the high R-Squared value of 0.932. This confirms that the combination of planning and iterative risk identification processes significantly enhances risk management outcomes.

Research Question 4: How effective is the hybrid project management approach in mitigating identified risks throughout the ERP implementation at COOP?

The hybrid project management approach was found to be highly effective in mitigating identified risks:

- The Project Planning phase, with clear timelines and objectives, provided a strong foundation for mitigating risks. The high R-Squared value (0.910) for Project Planning underscores the importance of having a structured and comprehensive plan to manage risks effectively.
- Stakeholder Engagement contributed to risk mitigation by ensuring that project participants were responsive to concerns and involved in decision-making. Although its direct statistical effect was not significant, its indirect contribution to identifying and mitigating risks through communication and feedback loops is crucial.
- The regression analysis for Risk Mitigation Strategies ($B = 0.306$, $p = 0.034$) demonstrates the strong positive effect of proactive risk controls in mitigating risks. The hybrid model's iterative reviews and assessments allowed for timely adjustments to risk controls, reducing the likelihood and severity of project disruptions. This confirms the effectiveness of the hybrid approach in addressing risks as they arose during ERP implementation at COOP.
- The composite model reveals that the hybrid project management approach was particularly effective in mitigating risks throughout the ERP implementation. With the composite F-value of 301.347, the model demonstrates that the integration of Project Planning, Stakeholder Engagement, and Risk Mitigation Strategies significantly enhanced the hybrid model's ability to adapt to risks in real-time, ensuring project success. The

combination of these factors allowed for more effective management of both anticipated and emerging risks, reinforcing the value of a hybrid approach in dynamic project environments.

Chapter Five: Summary, Conclusion and Recommendations

5.1 Summary of Findings

The analysis conducted in this study encompassed both descriptive and inferential methods to examine the impact of the hybrid project management approach on risk management practices during COOP's ERP implementation with Seidor. The descriptive analysis focused on exploring the demographic profile of respondents and their perceptions of variables project planning, stakeholder engagement, and risk mitigation strategies. These variables were critical in understanding how risk management effectiveness is influenced by hybrid project management methodologies.

Descriptive Analysis

The demographic analysis showed a respondent pool with varied ages and experience levels, contributing to the diversity of perspectives in the analysis. The responses generally indicated strong agreement with the effectiveness of project planning and risk mitigation strategies, though stakeholder engagement showed more neutral tendencies. The mean values for most variables were around 2.83 (on a scale of 1 to 5), suggesting that while practices were effective, there is room for improvement, particularly in communication and decision-making.

Inferential Analysis

The inferential analysis used regression models and ANOVA to investigate the relationship between independent variables (Project Planning, Stakeholder Engagement, and Risk Mitigation Strategies) and the dependent variable (Risk Management Effectiveness). The regression analysis demonstrated that:

- **Project Planning** had the strongest impact on Risk Management Effectiveness, explaining 91% of the variance, with clear objectives and structured timelines being significant predictors.
- **Stakeholder Engagement**, while important, showed a less significant direct effect, though literature suggests its indirect importance in decision-making and communication.

- **Risk Mitigation Strategies** showed a significant contribution to risk management, with timely risk identification and effective controls being key factors in managing risks.

The ANOVA results supported these findings, with significant F-values and low p-values, confirming that the independent variables collectively explained a significant portion of the variance in risk management outcomes.

In addition to the individual analyses, a composite model was developed that combined the effects of Project Planning, Stakeholder Engagement, and Risk Mitigation Strategies. The composite model showed that 93.2% of the variance in Risk Management Effectiveness could be explained by these three factors working together.

5.2 Conclusion

The analysis reveals that Project Planning is the most critical factor influencing Risk Management Effectiveness. Clear objectives, comprehensive documentation, and realistic timelines provide the foundation for successful risk management practices. Stakeholder Engagement, while not as directly impactful as planning, plays a crucial supporting role, ensuring that communication channels remain open, and decision-making is inclusive. Risk Mitigation Strategies also proved vital in reducing the risks associated with ERP implementation by identifying risks early and applying effective controls.

The hybrid project management approach, which combines elements of both Agile and Waterfall methodologies, was effective in managing risks throughout COOP's ERP implementation. By incorporating structured planning with iterative risk assessment and stakeholder involvement, the hybrid model provided flexibility in addressing emerging risks while maintaining control over project timelines and objectives.

The composite analysis further strengthens the conclusion that Project Planning, Stakeholder Engagement, and Risk Mitigation Strategies are most effective when applied together. The combined effect of these factors, explaining 93.2% of the variance in Risk Management Effectiveness, highlights the importance of an integrated project management approach. This finding suggests that COOP's hybrid model, by balancing structured planning and stakeholder

engagement with proactive risk mitigation strategies, significantly improved the project's ability to manage and mitigate risks throughout its lifecycle.

5.3 Recommendations

Based on the findings, the following recommendations are proposed:

1. **Strengthen Project Planning:** COOP could have placed greater emphasis on early project planning, ensuring that clear objectives, realistic timelines, and comprehensive documentation are in place from the start. Strong planning helps mitigate risks related to delays and resource mismanagement.
2. **Enhance Stakeholder Engagement:** Although the direct impact of stakeholder engagement was less significant, it is important to improve communication channels and increase stakeholder involvement in decision-making. This could be done by incorporating regular stakeholder feedback sessions and ensuring that their concerns are addressed early in the project lifecycle.
3. **Improve Risk Mitigation Strategies:** COOP can enhance its risk identification and control processes by incorporating more structured risk assessments throughout the project lifecycle. Implementing continuous risk monitoring practices and using adaptive risk control measures do help in mitigating risks more effectively.
4. **Adopt Hybrid Project Management Best Practices:** The hybrid approach proved effective, but COOP can further refine its use by balancing structured planning with Agile principles. This would ensure that the benefits of flexibility and adaptability in risk management are fully leveraged.
5. **Leverage Integrated Risk Management Approaches:** The composite analysis shows that combining Project Planning, Stakeholder Engagement, and Risk Mitigation Strategies produces significantly better risk management outcomes. COOP can focus on integrating these elements in a holistic manner for future ERP implementations. This approach would maximize the effectiveness of risk management efforts by ensuring that planning, stakeholder input, and mitigation strategies work together seamlessly throughout the project.

5.4 Areas for Further Study

While this study provided valuable insights into the impact of the hybrid project management approach on risk management, there are several areas where further research could enhance understanding:

1. **Comparative Studies:** It would be beneficial to conduct comparative studies of other ERP implementation projects in different sectors or industries to determine whether the findings from COOP's implementation are applicable in other contexts.
2. **Longitudinal Studies:** A longitudinal study tracking the evolution of risk management practices across multiple phases of ERP implementation would provide insights into how the hybrid approach adapts over time to emerging risks and project changes.
3. **Quantitative and Holistic Approaches:** Future studies could further explore the integrated effect of Project Planning, Stakeholder Engagement, and Risk Mitigation Strategies using more comprehensive quantitative methods. By examining larger data sets and incorporating additional variables, researchers could gain a deeper understanding of how these factors interact to enhance Risk Management Effectiveness in different project environments.

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Annex: Quantitative Data Collection Questionnaire

Addis Ababa University College of Business and Economics

School of Commerce

M.A Research on Project Management

Dear Respondent,

My name is Natnael Aklog, and I am conducting a research study titled: **The Effect of Hybrid Project Management Approach on Risk Management: In the Case of COOP's ERP Implementation with Seidor**. The purpose of this research is to explore how hybrid project management practices, specifically in the areas of project planning, stakeholder engagement, and risk mitigation, affect risk management effectiveness during ERP implementation projects. By understanding these dynamics, the study aims to provide actionable insights into improving risk management outcomes for similar projects in the future.

Your participation in this questionnaire is crucial for the success of this research. The information you provide will help me analyze the strengths and challenges of hybrid project management in managing project risks. The questions are designed to capture your experiences and insights on how project planning, stakeholder involvement, and risk mitigation strategies contributed to the overall effectiveness of risk management during COOP's ERP implementation.

Confidentiality: Please note that all responses will remain strictly confidential and will only be used for academic purposes. Your personal identity will not be linked to the data collected, and the information will be reported in aggregate form only.

Instructions:

- **Section 1:** Please provide your demographic information by selecting the option that best applies to you.
- **Section 2-5:** For each statement, please indicate the extent of your agreement or disagreement by marking the corresponding box on the scale from 1 (Strongly Disagree) to 5 (Strongly Agree).

Thank you for your time and valuable contribution to this research. Your responses will help provide a deeper understanding of how hybrid project management influences risk management practices.

Natnael Aklog, Phone No: +251 910 96 0955, Email: natnaelaklog@gmail.com

Section 1: Demographic Information						
1	Gender	Male			Female	
2	Age	20-30	30-40		40+	
3	Educational Level	Diploma	Bachelors		Masters	
4	Years of Experience	1-5	6-10		10	
Section 2: Project Planning						
No.	Questions	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
5	The project objectives were clearly defined.					
6	The project timelines were adequate.					
7	The project documentation was comprehensive.					
Section 3: Stakeholder Engagement						
8	Communication with stakeholders was effective.					

9	Stakeholders were involved in decision-making.					
10	Stakeholder concerns were promptly addressed.					
Section 4: Risk Mitigation Strategies						
11	Risks were effectively identified.					
12	Risks were thoroughly assessed.					
13	Risk controls were effectively implemented.					
Section 5: Project Success						
14	Risks were identified in a timely manner.					
15	The risk assessments were accurate.					
16	Risk controls were effective in mitigating risks.					
17	The project experienced a reduction in risk incidents over its lifecycle.					