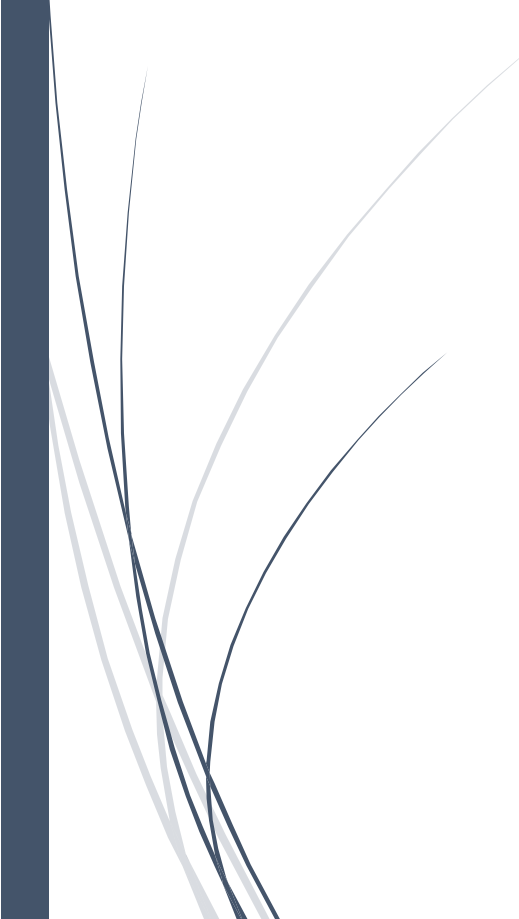




Final Project 2

PMG 497

Project Template



Project title

**The Role of Artificial Intelligence in Managing Project
Risks in Companies**

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1. Chapter 1: Introduction

1.1. Research Background

In today's highly dynamic and competitive business environment, companies are increasingly exposed to various types of project risks that may negatively affect cost, time, quality, and overall project success. Project risk management has therefore become a critical component of effective project management, as it enables organizations to anticipate potential uncertainties and take proactive actions to minimize their negative impact. Traditional project risk management approaches often rely on historical data, expert judgment, and qualitative analysis, which may be insufficient in complex and rapidly changing project environments.

Artificial Intelligence (AI) has emerged as one of the most influential technologies shaping modern organizational practices. AI refers to the ability of computer systems to perform tasks that normally require human intelligence, such as learning from data, recognizing patterns, predicting outcomes, and supporting decision-making. In recent years, AI applications have expanded significantly across business functions, including finance, operations, marketing, and project management. In the field of project management, AI technologies such as machine learning, predictive analytics, and intelligent automation offer new opportunities to enhance risk management practices.

The integration of artificial intelligence into project risk management represents a shift from reactive and experience-based practices toward proactive and data-driven approaches. AI systems are capable of analyzing large volumes of structured and unstructured data, identifying hidden risk patterns, and generating predictive insights that support early risk detection. This enables project managers to respond more effectively to emerging risks and improve the overall quality of risk-related decision-making.

For companies that manage multiple projects simultaneously, unmanaged risks can lead to financial losses, schedule delays, and reputational damage. AI-driven risk management tools support organizations by improving risk identification accuracy, prioritizing risks more effectively, and enhancing mitigation strategies. As companies increasingly pursue digital transformation initiatives, understanding the role of artificial intelligence in managing project risks has become a strategic necessity rather than an optional innovation.

Despite the growing interest in AI-based project management solutions, the adoption and effective utilization of artificial intelligence in project risk management vary widely among companies. While some organizations have successfully implemented AI tools, others face challenges related to technological readiness, data quality, employee skills, and organizational resistance to change. These challenges highlight the need for academic research that examines the role of artificial intelligence in managing project risks within companies and evaluates its effectiveness in practice.

1.2. Research Problem

Companies today operate in environments characterized by uncertainty, technological change, and complex stakeholder demands. As a result, project risks have become more frequent and difficult to manage using traditional risk management approaches alone. Although artificial intelligence is widely promoted as a powerful tool for improving project management practices, there is still limited understanding of its actual role in managing project risks in companies.

Many organizations invest in artificial intelligence technologies with the expectation that these systems will enhance risk identification, analysis, and mitigation. However, the extent to which AI improves project risk management effectiveness remains unclear. This lack of clarity creates a research problem that requires systematic investigation.

1.2.1. Theoretical Gaps

From a theoretical perspective, existing literature extensively discusses project risk management frameworks and artificial intelligence as separate research domains. However, limited attention has been given to integrating AI capabilities within established project risk management theories. Most theoretical models focus on traditional risk management processes without adequately explaining how artificial intelligence enhances these processes through predictive analytics and automated decision support. This creates a theoretical gap in understanding the role of AI in project risk management within companies.

1.2.2. Practical Gaps

Empirically, previous studies examining artificial intelligence in project management often focus on general project performance rather than specifically addressing project risk management. In addition, existing empirical research is frequently limited to specific industries or case studies, which restricts the generalizability of findings. There is a lack of quantitative studies that examine employees' and managers' perceptions of the effectiveness of artificial intelligence in managing project risks across companies. This empirical gap highlights the need for a comprehensive and data-driven study.

1.3. Research Significance

1.3.1. At the theoretical level

This study contributes to the academic literature by integrating artificial intelligence concepts with project risk management theory. By examining artificial intelligence as an enabling tool within the project risk management process, the study extends existing theoretical frameworks and enhances understanding of technology-driven risk management. The findings provide a foundation for future research on the application of advanced technologies in project risk management.

1.3.2. At the practical level

From a practical perspective, this study offers valuable insights for companies seeking to enhance their project risk management practices through artificial intelligence. The findings can support managers in making informed decisions regarding AI adoption and implementation. In addition, the study highlights potential challenges associated with AI integration, helping organizations improve project performance and reduce uncertainty.

1.4. Research Questions

1. What artificial intelligence applications are used in managing project risks in companies?
2. How does artificial intelligence contribute to project risk identification and analysis?
3. What is the impact of artificial intelligence on project risk mitigation and decision-making?
4. What challenges do companies face when implementing artificial intelligence in project risk management?

1.5. Research Objectives

The objectives of this study are:

- To examine the role of artificial intelligence in managing project risks in companies.
- To analyze the contribution of artificial intelligence to project risk identification and analysis.
- To assess the impact of artificial intelligence on project risk mitigation and decision-making.
- To identify challenges associated with implementing artificial intelligence in project risk management.
- To provide recommendations for companies seeking to adopt AI-based risk management practices.

1.6. Research Hypotheses

- **H1:** Artificial intelligence has a significant positive impact on project risk identification in companies.
- **H2:** Artificial intelligence positively influences the accuracy of project risk analysis.
- **H3:** The use of artificial intelligence improves project risk mitigation and decision-making effectiveness.
- **H4:** Organizational and technological factors moderate the relationship between artificial intelligence and project risk management effectiveness.

1.7. Research Model

This study proposes a research model in which Artificial Intelligence represents the independent variable and Project Risk Management Effectiveness represents the dependent variable. Organizational and technological factors act as moderating variables influencing this relationship.

1.8. Scope of The Study

This study focuses on companies that apply project management practices and utilize artificial intelligence technologies in managing project risks. The research examines AI applications related to risk identification, analysis, and mitigation from the perspective of employees and managers involved in project activities. The study does not address artificial intelligence applications outside the context of project risk management.

1.9. The Project Structure

The project is structured into five chapters. Chapter One presents the research background, problem, objectives, and hypotheses. Chapter Two reviews the relevant literature. Chapter Three explains the research methodology. Chapter Four presents the statistical analysis and discussion of findings. Chapter Five concludes the study with research limitations, recommendations, and conclusions.

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