

Midocean University

College of Administration

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Research Proposal

**The Impact of Artificial Intelligence Adoption on Risk Management
Effectiveness in Information Technology Projects in Saudi Arabia**

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1. Introduction

Artificial Intelligence (AI) has become a significant technological force in reshaping how organizations plan, execute, monitor, and control projects. In project management, AI is increasingly associated with data-driven decision-making, predictive analysis, automation of routine activities, forecasting, resource allocation, and risk analysis. Recent systematic reviews show that AI applications in project management are no longer limited to experimental models; they now cover areas such as cost estimation, duration forecasting, risk assessment, decision support, and project monitoring (Adamantiadou & Tsironis, 2025; Salimimoghadam et al., 2025).

Information Technology (IT) projects are especially relevant to this development because they operate in environments characterized by technological uncertainty, changing requirements, cybersecurity concerns, complex stakeholder expectations, and continuous pressure to deliver value quickly. These characteristics increase the importance of effective risk management. Traditional risk management depends heavily on human judgment, historical records, and periodic reviews. However, AI-enabled tools can process large volumes of data, identify patterns, and support earlier detection of risks, which may improve the quality and timeliness of risk-related decisions (Li, 2024; PMI, 2024a).

The relevance of this topic is particularly strong in Saudi Arabia. The Kingdom has placed data and AI at the center of its national transformation agenda. SDAIA states that data and AI contribute to achieving Vision 2030, with 66 of the 96 direct and indirect Vision 2030 goals linked to data and AI. In addition, Saudi Vision 2030 reporting highlights the role of SDAIA in leading the national data and AI agenda, alongside broader digital transformation and cybersecurity initiatives (SDAIA, n.d.; Saudi Vision 2030, 2025).

At the same time, international reports indicate that AI-related skills are becoming increasingly important in the labor market. The World Economic Forum (2025) identifies AI, big data, technological literacy, analytical thinking, and cybersecurity among the skills expected to grow in importance. This reinforces the need for project professionals to understand how AI can be used responsibly and effectively in project environments rather than viewing it as a replacement for professional judgment.

Despite the growing attention to AI in project management, the literature still shows an important limitation. Many studies discuss the general role of AI in project success, decision-making, scheduling, cost estimation, and productivity. Fewer empirical studies examine how AI adoption affects the specific processes of project risk management, such as risk identification, risk assessment, risk response planning, and risk monitoring. This limitation is more visible in the Saudi context, where AI adoption is growing, but empirical research on AI-enabled project risk management remains limited (Bakr, 2023; Salimimoghadam et al., 2025).

Accordingly, this research proposal investigates the impact of AI adoption on risk management effectiveness in IT projects in Saudi Arabia. The study is designed as a quantitative survey of project professionals working in IT projects. It aims to provide empirical evidence on whether AI adoption improves the effectiveness of risk management processes and to support organizations seeking to use AI more effectively in project management practice.

2. Research Problem

IT projects continue to face high levels of uncertainty. Common challenges include schedule delays, budget pressure, changing requirements, system integration problems, data security issues, and the difficulty of predicting risks early enough to respond effectively. Project risk management is therefore essential for improving project outcomes, particularly in technology-driven environments where risks can emerge quickly and evolve throughout the project life cycle.

AI adoption has been promoted to strengthen project management by supporting forecasting, pattern recognition, automation, and decision-making. PMI (2024a) highlights AI as an emerging capability in project management, while recent systematic reviews indicate that AI can support cost estimation, duration prediction, resource allocation, and risk assessment (Adamantiadou & Tsironis, 2025; Su & Ayob, 2025). However, the existence of AI tools does not automatically mean that organizations obtain measurable improvements in risk management effectiveness.

The reviewed literature suggests that much of the current research is either conceptual, based on systematic literature reviews, or focused on general project performance rather than risk management effectiveness as a separate measurable construct. Bakr (2023) examined AI in project management decision-making in the Saudi private sector and found growing recognition of AI benefits, including improved risk assessment. However, the study did not directly test AI adoption against the four core risk management dimensions: risk identification, risk assessment, risk response planning, and risk monitoring.

The central problem is therefore the lack of sufficient empirical evidence regarding the extent to which AI adoption improves risk management effectiveness in IT projects in Saudi Arabia. Without this evidence, organizations may invest in AI tools without a clear understanding of how these tools contribute to project risk management processes.

Based on this problem, the current study seeks to answer the following general issue: to what extent does AI adoption influence the effectiveness of project risk management in IT projects in Saudi Arabia?

3. Significance of the Study

3.1 Academic Significance

This study contributes to the academic literature by examining the relationship between AI adoption and risk management effectiveness in IT projects. While prior studies have explored AI in project management broadly, this study focuses on risk management effectiveness as a measurable outcome. This contributes to narrowing the gap between general AI adoption research and project risk management research.

The study also contributes by applying the Technology-Organization-Environment (TOE) framework alongside the Project Risk Management framework. This combination offers a useful theoretical foundation: TOE explains organizational adoption of AI, while project risk management theory explains the processes through which risk management effectiveness can be evaluated.

3.2 Practical Significance

For project managers, the findings may clarify how AI can support early risk identification, accurate risk assessment, effective response planning, and continuous monitoring. This is particularly important in IT projects where emerging risks may be technical, organizational, security-related, or stakeholder-driven.

For organizations, the study may support decision-making about AI investments. If AI adoption is shown to improve risk management effectiveness, organizations may justify investments in AI tools, training, data quality, and governance as part of project management improvement initiatives.

For policymakers and professional bodies, the research aligns with Saudi Arabia's national direction toward AI-enabled transformation. It may provide evidence that supports responsible AI adoption in professional project management settings.

4. Research Objectives

4.1 General Objective

To investigate the impact of Artificial Intelligence adoption on risk management effectiveness in Information Technology projects in Saudi Arabia.

4.2 Specific Objectives

1. To examine the level of Artificial Intelligence adoption in Information Technology projects in Saudi Arabia.
2. To investigate the effect of Artificial Intelligence adoption on project risk identification.
3. To examine the effect of Artificial Intelligence adoption on project risk assessment.
4. To evaluate the effect of Artificial Intelligence adoption on project risk response planning.
5. To investigate the effect of Artificial Intelligence adoption on project risk monitoring and control.
6. To provide recommendations for improving project risk management practices through Artificial Intelligence adoption.

5. Research Questions

The main research question is: What is the impact of Artificial Intelligence adoption on risk management effectiveness in Information Technology projects in Saudi Arabia?

7. To what extent is Artificial Intelligence adopted in Information Technology projects in Saudi Arabia?
8. How does Artificial Intelligence adoption influence project risk identification?
9. What is the impact of Artificial Intelligence adoption on project risk assessment?
10. How does Artificial Intelligence adoption affect project risk response planning?
11. What is the effect of Artificial Intelligence adoption on project risk monitoring and control?
12. What recommendations can improve the use of Artificial Intelligence in project risk management?

6. Research Hypotheses

The study adopts the following alternative and null hypotheses for quantitative testing:

- H1: Artificial Intelligence adoption has a statistically significant positive effect on overall risk management effectiveness in Information Technology projects in Saudi Arabia.
- H1a: Artificial Intelligence adoption has a statistically significant positive effect on project risk identification.
- H1b: Artificial Intelligence adoption has a statistically significant positive effect on project risk assessment.
- H1c: Artificial Intelligence adoption has a statistically significant positive effect on project risk response planning.
- H1d: Artificial Intelligence adoption has a statistically significant positive effect on project risk monitoring and control.
- H0: Artificial Intelligence adoption has no statistically significant effect on risk management effectiveness in Information Technology projects in Saudi Arabia.

7. Literature Review and Previous Studies

7.1 Artificial Intelligence Adoption in Project Management

Recent research shows that AI has become a growing area within project management research. Adamantiadou and Tsironis (2025) reviewed 97 peer-reviewed studies published between 2011 and 2024. They identified several major AI applications in project management, including cost estimation, duration forecasting, risk assessment, machine learning models, and decision-support techniques. Similarly, Salimimoghadam et al. (2025) examined opportunities, enablers, and barriers to AI adoption in project management and found that AI can support efficiency, communication, data-driven decision-making, safety improvement, and risk management.

The literature also suggests that AI adoption is not only a technical issue. Successful adoption depends on organizational readiness, data availability, workforce capability, integration with existing systems, and ethical governance (Salimimoghadam et al., 2025; SDAIA, 2025). These factors are particularly relevant to project management because AI tools depend on accurate project data and appropriate human interpretation.

In the Saudi context, Bakr (2023) found that awareness of AI among private-sector participants was relatively high, whereas actual use of AI in project management decision-making was lower. The study reported that AI can improve decision accuracy, efficiency, resource allocation, and risk management, but also identified concerns related to data privacy, trust, bias, and implementation cost.

7.2 Risk Management in IT Projects

Risk management is a core process in project management. PMI defines risk analysis as the examination of how project objectives may change due to risk events, and risk processes generally involve identifying, analyzing, responding to, and monitoring risks throughout the project life cycle (PMI, n.d.; PMI, 2021). ISO 31000 also frames risk management as a structured set of principles and guidelines that support informed decisions under uncertainty (International Organization for Standardization, 2018). These processes are especially important for IT projects because risks can

emerge from technical uncertainty, cybersecurity, integration complexity, user acceptance, data migration, and changing business requirements.

The literature on IT project risk management shows that risk management effectiveness depends on timely risk identification, accurate assessment, realistic response planning, and continuous monitoring. Rodríguez et al. (2016) proposed a method for evaluating risk in IT projects, illustrating the importance of systematic risk evaluation in technology environments. In a Saudi IT-sector study, Kozzabah (2024) found that AI can enhance project management processes by improving efficiency, accuracy, decision-making, and reducing human error among IT professionals. However, many traditional approaches remain dependent on manual data collection and the experience of project professionals.

AI can potentially improve these processes by analyzing historical data, detecting patterns, and generating risk signals earlier than manual approaches. Li (2024) argues that AI shifts project risk management from a largely reactive practice toward a more predictive and adaptive practice. This is consistent with the broader AI project management literature, where risk assessment is frequently identified as a major application area (Adamantiadou & Tsironis, 2025).

7.3 Artificial Intelligence and Risk Management Effectiveness

AI can support risk management in several ways. First, AI can improve risk identification by scanning project data, documents, code repositories, issue logs, and communication records to identify patterns that may indicate emerging risks. Second, AI can support risk assessment by estimating likelihood and impact based on historical project data, predictive models, or similar project patterns. Third, AI can support risk response planning by suggesting mitigation options or highlighting response strategies used in comparable situations. Finally, AI can improve risk monitoring by tracking indicators continuously and alerting project teams to changes in risk exposure (Chang, 2024; Li, 2024).

However, the literature also indicates that AI-enabled risk management is not without limitations. Data quality is repeatedly identified as a key condition for reliable AI outputs. AI-generated

recommendations may also be affected by bias, incomplete data, poor integration with legacy systems, or insufficient human oversight (Bakr, 2023; Salimimoghadam et al., 2025). Therefore, AI adoption should be treated as a decision-support capability rather than an automatic replacement for professional risk judgment.

This study focuses on AI adoption as a practical project management capability and risk management effectiveness as the outcome. This focus differs from prior research that often examines AI and project success in broad terms. By testing the effect of AI adoption on each risk management process, the study provides a more specific and measurable contribution.

7.4 Summary of Previous Studies

Table 1 summarizes the most relevant previous studies and reports used to support the current proposal. The table focuses on the objective, methodology, key findings, and direct relevance of each source to the relationship between AI adoption and risk management effectiveness in IT projects.

Author(s)	Year	Context	Methodology	Key Findings	Relevance to Current Study
Adamantiadou & Tsironis	2025	International	Systematic literature review; 97 studies	AI applications in project management include cost estimation, duration forecasting, risk assessment, and decision support.	Supports the link between AI and risk-related project management processes.
Salimimoghadam et al.	2025	International	Systematic literature review	AI adoption in project management creates opportunities but depends on enablers such as data quality, readiness, and governance.	Supports AI adoption dimensions and adoption challenges.

Author(s)	Year	Context	Methodology	Key Findings	Relevance to Current Study
Su & Ayob	2025	International	Systematic literature review	AI contributes to project success, although many studies focus on project performance rather than individual PM processes.	Shows the need to move from general project success to risk management effectiveness.
Taboada et al.	2023	International	Systematic literature review	AI-enabled project management has increased over the last decade and applies across PM performance domains.	Provides broad support for AI-enabled project management as a research area.
Bento et al.	2022	International	Systematic literature review	AI is gaining attention in project management, but several areas remain under-explored and adoption is uneven.	Supports the research gap and need for further empirical work.
Bakr	2023	Saudi Arabia	Questionnaire/interviews; private sector	AI supports decision accuracy, efficiency, resource allocation, and risk assessment; adoption remains limited.	Provides Saudi context but does not test risk management effectiveness directly.

Author(s)	Year	Context	Methodology	Key Findings	Relevance to Current Study
Kozzabah	2024	Saudi Arabia IT sector	Quantitative survey; 135 IT professionals	AI improves project management processes in Saudi IT organizations and reduces human errors.	Provides direct Saudi IT-sector evidence, but the focus is general PM processes rather than risk management effectiveness.
Li	2024	Project risk management	Conceptual/chapter discussion	AI shifts risk management toward predictive, adaptive, and real-time decision-support practices.	Supports the theoretical connection between AI and risk processes.
Rodríguez et al.	2016	IT projects	Risk evaluation model	Proposed a structured method for risk evaluation in IT projects.	Supports the relevance of systematic IT project risk evaluation.
Santos et al.	2023	Project control	Machine learning and Monte Carlo simulation	Explainable machine learning can support project control under uncertainty.	Supports the use of AI/ML for monitoring and control-related project decisions.
PMI	2024	Global	Professional report	AI supports project professionals in planning, decision-making, documentation, and risk-related activities.	Supports practical relevance and industry context.
SDAIA	2025	Saudi Arabia	Government framework	Provides national guidance for AI adoption across sectors in Saudi Arabia.	Justifies Saudi Arabia as the context of the study.

Author(s)	Year	Context	Methodology	Key Findings	Relevance to Current Study
WEF	2025	Global	Employer survey report	AI, big data, technological literacy, analytical thinking, and cybersecurity are growing skills.	Supports the future relevance of AI skills for project professionals.

7.5 Critical Analysis of Previous Studies

The reviewed studies show a consistent pattern: AI is widely recognized as a useful capability for improving project management, but the strongest evidence is concentrated in planning, forecasting, resource allocation, and general decision support. Risk management appears frequently as a promising application area, yet it is often treated as one component of project performance rather than as a separate dependent variable.

Another observation is that many recent studies are systematic literature reviews. These reviews are valuable because they synthesize broad research trends, but they do not always provide field-based quantitative evidence from organizations. This supports the need for a survey-based study that collects empirical data from project professionals.

The Saudi context also remains under-researched. Bakr (2023) provides a useful Saudi study on AI and project management decision-making, but the study focuses on decision-making within the private sector and does not examine the effectiveness of risk management processes individually. The current study addresses this limitation by focusing on IT projects and measuring four risk management dimensions.

8. Research Gap

The literature review reveals three main gaps. First, previous studies have extensively examined the role of AI in project management, but many of them focus on general project success, productivity, planning, or decision-making rather than risk management effectiveness as a specific construct.

Second, studies that discuss AI and risk management often remain conceptual or review based. They frequently explain how AI can support risk identification, assessment, response, and monitoring, but fewer studies test these relationships empirically using quantitative data from project professionals.

Third, limited research has examined AI-enabled project risk management within the Saudi Arabian context. This is a significant gap because Saudi Arabia is actively investing in data, AI, and digital transformation under Vision 2030, and IT projects are central to this transformation (SDAIA, n.d.; Saudi Vision 2030, 2025).

Based on these gaps, the current study investigates the impact of AI adoption on risk management effectiveness in IT projects in Saudi Arabia. It contributes by examining overall risk management effectiveness and its four dimensions: risk identification, risk assessment, risk response planning, and risk monitoring and control.

9. Theoretical Framework

9.1 Technology-Organization-Environment (TOE) Framework

The Technology-Organization-Environment (TOE) framework was developed by Tornatzky and Fleischer (1990) to explain how organizations adopt technological innovations. The framework suggests that adoption is influenced by technological, organizational, and environmental contexts. Oliveira and Martins (2011) note that TOE has been widely used in information technology adoption studies because it explains technology adoption at the organizational level.

In this study, the technological context is represented by AI tools and their perceived ability to support project management processes. The organizational context includes leadership support, availability of skills, data readiness, and the willingness of project teams to use AI. The environmental

context includes Saudi Arabia's national AI direction, market expectations, and the pressure on organizations to improve digital project delivery.

9.2 Project Risk Management Framework

The second foundation is the project risk management framework adopted in PMI standards. Project risk management involves identifying risks, analyzing their likelihood and impact, planning appropriate responses, and monitoring risks throughout the project life cycle (PMI, 2021; PMI, n.d.). These processes provide the basis for the dependent variable in the present study.

By integrating TOE with project risk management theory, the study proposes that AI adoption can improve project risk management effectiveness when AI tools support decision-making, data analysis, forecasting, and monitoring. This theoretical integration supports the proposed conceptual framework.

10. Conceptual Framework

The conceptual framework proposes that Artificial Intelligence adoption positively influences risk management effectiveness in Information Technology projects. AI adoption is treated as the independent variable, while risk management effectiveness is treated as the dependent variable. Risk management effectiveness is measured through risk identification, risk assessment, risk response planning, and risk monitoring and control.

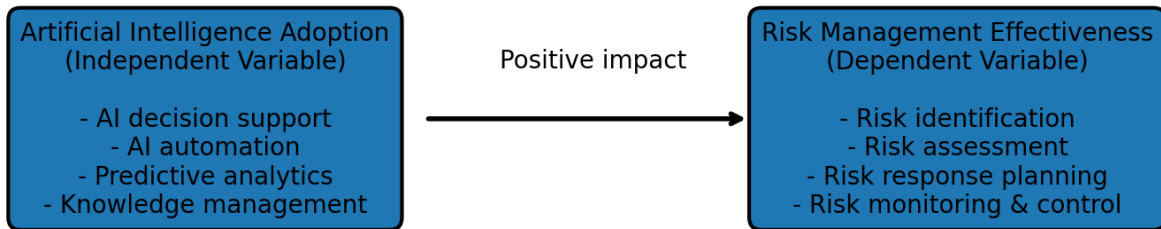


Figure 1. Conceptual framework of the study.

11. Research Methodology

The study adopts a positivist research philosophy because it examines measurable relationships between variables using quantitative data. The research follows a deductive approach, beginning with theory and previous research before testing hypotheses through empirical data.

A quantitative cross-sectional survey design will be used. This design is appropriate because the study aims to measure project professionals' perceptions at a single point in time and to statistically test the relationship between AI adoption and risk management effectiveness.

The survey strategy is suitable because it allows standardized data collection from a relatively large number of project professionals. The results will be analyzed using statistical techniques such as descriptive statistics, reliability analysis, correlation, and regression.

12. Population and Sample

The target population consists of project professionals working in IT projects in Saudi Arabia. This includes project managers, project coordinators, PMO members, business analysts, software engineers, quality assurance engineers, scrum masters, and other professionals involved in IT project delivery.

A non-probability convenience sampling technique will be used due to time limitations and the practical difficulty of accessing a complete list of IT project professionals in Saudi Arabia. The questionnaire will be distributed electronically through professional networks, workplace contacts, WhatsApp, LinkedIn, and similar channels.

The study aims to collect approximately 150 to 250 valid responses. This sample size is considered appropriate for the proposed statistical analyses in a master's level quantitative study.

13. Research Instrument

The primary data collection instrument will be a structured questionnaire. This approach is consistent with several empirical studies on AI adoption and project management that use survey data to measure perceptions, adoption level, and perceived performance outcomes (Bakr, 2023; Kozzabah, 2024). The questionnaire will be developed based on the reviewed literature and adapted to the context of IT projects in Saudi Arabia.

The questionnaire will consist of three sections. Section A will collect demographic and professional information. Section B will measure AI adoption. Section C will measure risk management effectiveness. A five-point Likert scale will be used, ranging from 1 = Strongly Disagree to 5 = Strongly Agree.

13.1 Validity and Reliability

Content validity will be established by adapting questionnaire items from previous studies and reviewing them with academic experts in project management. The questionnaire may also be reviewed by practitioners to ensure clarity and relevance to IT project environments.

Reliability will be assessed using Cronbach's Alpha. A Cronbach's Alpha value of 0.70 or above will be considered acceptable for internal consistency. A pilot study of 20 to 30 respondents may be conducted before the main data collection to check clarity and reliability.

14. Data Collection and Data Analysis Methods

Data will be collected through an online questionnaire created using Google Forms or a similar survey platform. Participation will be voluntary, anonymous, and limited to professionals involved in IT projects in Saudi Arabia.

Data will be analyzed using SPSS. Descriptive statistics will summarize respondent characteristics and variable levels. Reliability analysis will test internal consistency. Pearson correlation will assess the strength and direction of relationships between AI adoption and risk management effectiveness. Multiple regression analysis will test the effect of AI adoption on the overall dependent variable and its dimensions.

The significance level for hypothesis testing will be set at $p < 0.05$. The analysis will support the testing of the main hypothesis and the four sub-hypotheses.

15. Limitations of the Study

The study is limited to IT projects in Saudi Arabia; therefore, findings may not be generalizable to other sectors or countries. The use of convenience sampling may reduce the representativeness of the sample. The study also relies on self-reported questionnaire responses, which may be affected by perception bias. Finally, the study examines AI adoption as the main independent variable and does not test all organizational factors that may influence risk management effectiveness.

16. Proposed Questionnaire

The following questionnaire is proposed for the empirical phase of the study. Items will be measured using a five-point Likert scale: 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree.

Section A: Demographic Information

1. Gender: Male / Female / Prefer not to say
2. Age group: Under 25 / 25-34 / 35-44 / 45 and above
3. Highest educational qualification: Diploma / Bachelor / Master / PhD / Other
4. Job role: Project Manager / Project Coordinator / PMO / Business Analyst / Software Engineer / QA Engineer / Scrum Master / Other
5. Years of professional experience: Less than 3 / 3-5 / 6-10 / More than 10
6. Years of experience in IT projects: Less than 3 / 3-5 / 6-10 / More than 10
7. Have you used AI tools such as GitHub Copilot, Microsoft Copilot, ChatGPT, or similar tools in project work? Yes / No / Occasionally

Section B: Artificial Intelligence Adoption

1. AI tools are used to support activities in IT projects.
2. AI tools improve decision-making in IT projects.
3. AI tools help automate repetitive project tasks.
4. AI tools improve the accuracy of project forecasting.
5. AI tools support project documentation and reporting.
6. AI tools improve communication and knowledge sharing within project teams.
7. AI tools help project teams analyze project data more effectively.
8. AI tools support project monitoring and control activities.
9. AI tools help identify potential project issues earlier.
10. The organization provides sufficient support for using AI tools in project work.

Section C: Risk Management Effectiveness

1. Project risks are identified early in the project lifecycle.
2. Potential technical risks are detected effectively.
3. Project teams document identified risks clearly.
4. AI-supported tools help identify emerging project risks.
5. Project risks are assessed accurately in terms of likelihood and impact.

6. Risk priorities are determined effectively.
7. Project risk assessment is supported by reliable project data.
8. AI tools improve the accuracy of risk assessment.
9. Appropriate risk response plans are developed for major project risks.
10. Project teams respond quickly to identified risks.
11. Risk mitigation strategies are implemented effectively.
12. AI tools support the selection of appropriate risk response actions.
13. Project risks are monitored continuously throughout the project lifecycle.
14. Risk status is updated regularly.
15. Emerging risks are identified promptly during project execution.
16. AI tools support continuous monitoring and control of project risks.

Optional Open-Ended Question

1. In your opinion, what are the main challenges that may limit the use of Artificial Intelligence in project risk management?

17. Ethical Considerations

The study will follow ethical principles related to voluntary participation, informed consent, anonymity, and confidentiality. Participants will be informed of the purpose of the study before completing the questionnaire. No personally identifiable information will be collected. The collected data will be used only for academic purposes and stored securely. Participants will have the right to withdraw at any time before submitting the questionnaire.

18. Research Structure

The proposed final research project will be organized into five chapters. Chapter One will introduce the study, problem, objectives, questions, significance, and hypotheses. Chapter Two will present the literature review, theoretical framework, previous studies, and research gap. Chapter Three will discuss the methodology, population, sample, instrument, validity, reliability, and data analysis procedures. Chapter Four will present data analysis and results. Chapter Five will provide conclusions, recommendations, limitations, and suggestions for future research.

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Appendix A: Operational Definitions

Concept	Operational Definition
Artificial Intelligence Adoption	The extent to which AI-enabled tools are used in IT project work to support decision-making, automation, forecasting, documentation, communication, and monitoring activities. In this study, AI adoption is measured through questionnaire items that capture actual use and perceived integration of AI tools in project activities.
Information Technology Projects	Projects that involve the development, implementation, integration, testing, enhancement, or support of software systems, digital platforms, data systems, cloud solutions, cybersecurity solutions, or related technology services.
Risk Management Effectiveness	The perceived effectiveness of project risk management processes, including the ability to identify risks early, assess risks accurately, plan appropriate responses, and monitor risks continuously throughout the project lifecycle.
Risk Identification	The process of recognizing potential threats, uncertainties, and opportunities that may affect IT project objectives before they become active issues.

Concept	Operational Definition
Risk Assessment	The process of evaluating identified risks in terms of their probability, impact, urgency, and priority in order to support informed risk response decisions.
Risk Response Planning	The process of selecting and preparing mitigation, avoidance, transfer, acceptance, or contingency actions for project risks.
Risk Monitoring and Control	The process of tracking identified risks, identifying new risks, updating risk status, and evaluating the effectiveness of risk responses during project execution.

Appendix B: Research Alignment Matrix

The following matrix ensures alignment between the research objectives, research questions, hypotheses, variables, and questionnaire sections. This alignment is important because it demonstrates that the proposed instrument directly measures the constructs identified in the research problem and objectives.

Research Objective	Research Question	Hypothesis / Analysis	Construct Relationship	Measurement Source
Objective 1: Examine AI adoption level	RQ1	Descriptive analysis	AI Adoption	Section B: AI adoption items
Objective 2: Investigate effect on risk identification	RQ2	H1a	AI Adoption -> Risk Identification	Section B and Section C items 1-4
Objective 3: Investigate effect on risk assessment	RQ3	H1b	AI Adoption -> Risk Assessment	Section B and Section C items 5-8
Objective 4: Investigate effect on response planning	RQ4	H1c	AI Adoption -> Risk Response Planning	Section B and Section C items 9-12
Objective 5: Investigate effect on monitoring and control	RQ5	H1d	AI Adoption -> Risk Monitoring and Control	Section B and Section C items 13-16

Research Objective	Research Question	Hypothesis / Analysis	Construct Relationship	Measurement Source
Objective 6: Provide recommendations	RQ6	Based on results	Overall model	Findings and recommendations

Appendix C: Notes on the Use of AI Tools in IT Project Contexts

In the context of IT projects, AI adoption may include the use of tools such as code assistants, AI-enabled documentation tools, intelligent search, automated test generation, predictive analytics dashboards, and AI-enabled reporting solutions. These tools are relevant to project risk management because IT project risks often appear through technical defects, unclear requirements, integration failures, security vulnerabilities, or schedule slippage.

For example, AI-assisted coding and documentation tools may reduce the time required for repetitive technical tasks and may support earlier detection of code-related issues. However, these tools do not remove the need for human review, quality assurance, cybersecurity controls, or project governance. This supports the study assumption that AI adoption should be examined as a support mechanism that enhances risk management effectiveness rather than as a replacement for professional project management judgment.

The questionnaire therefore measures AI adoption through practical project activities rather than through abstract perceptions alone. This approach is consistent with the research objective of studying how AI adoption contributes to concrete risk management processes in IT projects.

Appendix D: Proposed Data Screening Plan

Before analysis, collected responses will be screened for completeness and consistency. Responses with extensive missing data may be removed from the final dataset. Basic descriptive statistics will be used to identify unusual values and to understand the profile of respondents.

Normality will be assessed where appropriate using skewness and kurtosis indicators. Reliability will be assessed using Cronbach's Alpha for the AI adoption scale and risk management effectiveness sub-scales. If any item reduces scale reliability substantially, the researcher may consider removing it while reporting the decision transparently.

Correlation analysis will be used to test the association between AI adoption and risk management effectiveness. Regression analysis will be used to estimate the predictive effect of AI adoption on each risk management dimension. These analyses are appropriate for the proposed quantitative design and the five-point Likert scale measurements.