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Classification: Restricted

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2026

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Chapter Two: Literature Review

2.1 Introduction

This chapter provides a comprehensive and critical review of the literature relating to project risk management and its impact on the success of construction projects. The goal is to establish a solid theoretical background by analyzing definitions, frameworks, and empirical findings from previous studies. The chapter also highlights research gaps and explains why further investigation is required, particularly in the context of construction projects in Dammam, Saudi Arabia.

2.2 Project Risk Management

Project risk management is a systematic and structured process that aims to identify, assess, and respond to uncertainties that may affect project objectives. According to PMI (2021), effective risk management helps organizations reduce uncertainty, improve decision-making, and enhance project performance. Construction projects are highly sensitive to risks due to their dynamic nature, involvement of multiple stakeholders, environmental fluctuations, and heavy reliance on equipment and labor. Studies show that organizations with strong risk management practices are more likely to complete projects within time, budget, and quality requirements.

2.3 Risk Identification:

Risk identification is the first and most crucial step of the risk management process. It focuses on recognizing potential internal and external risks that may hinder project success.

In the construction field, common risks include:

Equipment failures

Labor shortages

Financial constraints

Regulatory or governmental changes

Safety hazards

Weather conditions

Supply chain issues

Early identification ensures better preparedness and allows project managers to respond before risks create major disruptions.

2.4 Risk Assessment

Risk assessment evaluates the probability and impact of identified risks. It includes both **qualitative techniques** such as expert judgment, risk ranking, and risk matrices, and **quantitative techniques** such as probabilistic modeling, sensitivity analysis, and simulation.

The purpose of assessment is to prioritize high-severity risks so that project teams can focus resources on areas that pose the greatest threat to project success.

Studies indicate that projects with structured risk assessment demonstrate higher stability and improved forecasting accuracy.

2.5 Risk Mitigation

Risk mitigation involves developing strategies to reduce or eliminate the negative impacts of risks. Common strategies include:

Risk avoidance: Changing plans to eliminate the risk altogether

Risk transfer: Shifting the impact to a third party (e.g., insurance, contractors)

Risk reduction: Implementing controls to reduce probability or impact

Risk acceptance: Acknowledging the risk when its impact is minor or manageable

Effective mitigation ensures continuity, reduces cost overruns, and minimizes schedule delays. Many construction studies confirm that mitigation strategies improve site safety, material quality, and workflow efficiency.

2.6 Impact on Project Success

Project success is often evaluated based on four major criteria:

Cost performance

Time (schedule) performance

Quality of output

Stakeholder satisfaction

Effective risk management enhances all these dimensions. Construction projects with strong risk management frameworks achieve greater stability, fewer reworks, stronger cost control, smoother operations, and higher client satisfaction.

Several studies have demonstrated a direct positive relationship between risk management maturity and project performance indicators.

2.7 Critical Analysis

While the literature strongly supports the importance of risk management, there is limited research focusing specifically on **construction projects in**

Dammam.

Most previous studies focus on:

General industries

Other regions in Saudi Arabia

Broader GCC countries

This creates a **research gap**, as Dammam's construction environment has unique challenges including coastal climate, humidity-related material degradation, and high urban expansion.

Therefore, the current study contributes valuable insights by analyzing the impact of risk management within this specific regional context.

2.8 Comparative Analysis of Previous Studies



Author	Focus	Method	Key Findings
PMI (2021)	Risk Management Framework	Conceptual	Enhances project decision-making
Hillson (2017)	Risk Analysis	Qualitative	Reduces uncertainty and improves planning
Zou et al. (2019)	Construction Risk	Survey	Improves safety and overall performance
Kerzner (2022)	Project Management	Conceptual	Strengthens planning and control practices
Chapman & Ward (2018)	Opportunity & Risk	Analytical	Increases project value and reduces threats

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