

Final Project 2

PMG 497

Project Template

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Project title

**The Impact of Risk Management Practices on Project
Success in the Construction Sector**

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Dedication

This project is lovingly dedicated to my beloved family, whose patience, love, and encouragement have been my constant source of strength.

To my parents, for their endless prayers and unwavering belief in me.

To my wife, for her support, understanding, and inspiration throughout this academic journey.

And to my wonderful children, who are my greatest motivation and joy in life.

Abstract

This study examined the impact of risk management practices on project success in the construction sector in Saudi Arabia. The research focused on three key dimensions of risk management: risk identification, risk assessment, and risk mitigation, and their influence on project success. A quantitative research approach was adopted, using a structured questionnaire to collect data from construction professionals, including project managers, engineers, supervisors, and coordinators. A total of 200 valid responses were analyzed using descriptive statistics, reliability analysis, and multiple linear regression techniques.

The findings revealed that all three risk management practices have a significant and positive effect on project success. Risk assessment demonstrated the strongest influence, followed by risk mitigation and risk identification. The regression model explained 62% of the variance in project success, indicating a strong predictive capability of structured risk management practices. The results highlight the importance of systematic risk identification, comprehensive assessment procedures, and effective mitigation strategies in improving project performance and achieving successful outcomes.

This study contributes to the existing body of knowledge by providing empirical evidence from the Saudi construction sector and offers practical insights for project practitioners. The findings emphasize the need for organizations to integrate formal risk management frameworks into their project management processes to enhance project success and sustainability.

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3. Chapter 3: Research Methodology

3.1. Introduction

This chapter presents the research methodology adopted to investigate the impact of risk management practices on project success in the construction sector in Saudi Arabia. The methodology outlines the systematic plan used to collect, analyze, and interpret data to answer the research questions and test the hypotheses developed in Chapter One.

The study adopts a quantitative approach, as the research aims to establish measurable relationships between the independent variables—risk management practices (risk identification, risk assessment, and risk mitigation)—and the dependent variable, project success. The quantitative method allows for statistical testing and generalization of results to a broader population of construction professionals.

To ensure methodological rigor, this chapter provides detailed explanations of the operational definitions of the research variables, the research design following the “Research Onion” framework, the research population and sampling techniques, data collection procedures, data types, and statistical analysis methods. The chapter concludes with a summary highlighting the rationale for choosing the adopted methodology and its relevance to achieving the study’s objectives.

The chosen methodology supports objective, reliable, and valid measurement of the research constructs. By applying structured data collection and statistical analysis through the Statistical Package for the Social Sciences (SPSS), version 28, the researcher aims to produce empirical evidence on how effective risk management practices contribute to enhancing project success across time, cost, and quality performance dimensions in the Saudi construction industry.

3.2. Operational definitions for research variables

Operational definitions are essential to ensure that the study variables are measured and interpreted consistently. They provide a clear explanation of how each variable in this research will be defined, observed, and quantified. The present study includes four main variables: three independent variables related to risk management practices—risk identification, risk assessment, and risk mitigation—and one dependent variable, project success. These operational definitions ensure clarity and alignment between the conceptual framework and the empirical measurement process.

Table 3.1 Operational Definitions of the Research Variables

Variable	Type	Operational Definition	Source
Risk Identification	Independent	Refers to the process of recognizing potential risks that may affect project objectives. It involves systematic identification of risks at different project stages, with the participation of stakeholders and lessons learned from past projects.	Adapted from PMI (2017); Smith et al. (2018)
Risk Assessment	Independent	The process of analyzing identified risks in terms of their likelihood and impact on project objectives. It includes evaluating and prioritizing risks based on severity and probability.	Based on ISO 31000 (2018); Hillson (2017)
Risk Mitigation	Independent	The set of actions and strategies developed to minimize the probability and impact of risks. It includes contingency planning, monitoring of mitigation actions, and integrating risk control into project plans.	Adapted from Kerzner (2019); Aven (2016)
Project Success	Dependent	Represents the extent to which a project achieves its goals in terms of time, cost, and quality performance, while satisfying client and stakeholder expectations.	Adapted from Pinto & Slevin (1988); Turner (2014)

In this research, each variable is measured through a structured questionnaire using a five-point Likert scale ranging from (1) “Strongly Disagree” to (5) “Strongly Agree.” This ensures that the responses are quantifiable, standardized, and suitable for statistical analysis.

3.3. Research design (research onion)

The research design represents the overall plan that guides the process of collecting, analyzing, and interpreting data to achieve the study objectives. In this study, the research design is developed according to the “Research Onion” framework, which provides a structured approach to selecting appropriate methodological choices.

Research Philosophy:

The study adopts a **positivist philosophy**, which emphasizes objective observation and measurable evidence. This philosophy is suitable for quantitative research as it relies on observable data and statistical analysis to test hypotheses and derive generalizable conclusions.

Research Approach:

A deductive approach is applied, where the researcher begins with established theories and concepts from previous literature, formulates hypotheses, and then tests them empirically using quantitative data. This approach ensures logical reasoning and alignment with the study objectives.

Research Strategy:

The study uses a **survey strategy** to collect data from a sample of professionals working in the Saudi construction sector, including project managers, engineers, and site supervisors. This strategy is appropriate for gathering standardized responses and enables statistical comparison between variables.

Research Choice:

The research adopts a **quantitative choice**, using numerical data collected through a structured questionnaire to measure the relationship between risk management practices and project success.

Time Horizon:

A **cross-sectional design** is employed, as the data will be collected at a single point in time rather than over a prolonged period. This is appropriate for identifying relationships between variables in ongoing construction projects.

Data Collection and Analysis Techniques:

Data collection will be conducted using a structured questionnaire, and the responses will be analyzed using the Statistical Package for the Social Sciences (**SPSS**, version 28). The analysis includes descriptive statistics, reliability and validity testing, and regression analysis to test the study hypotheses.

In summary, the selected research design supports a systematic and scientific investigation that ensures validity, reliability, and objectivity, aligning with the quantitative nature of this study.

3.4. Research population & Sampling methods and technique

This section describes the target population and the sampling methods adopted in this study. The research population includes professionals in the Saudi construction sector who are directly involved in project planning, execution, and risk management activities. This population is suitable because it provides firsthand insights into how risk management practices influence project success.

3.4.1 Research Population

The research population consists of employees working in construction firms operating in Saudi Arabia, including project managers, site engineers, supervisors, and risk officers. These participants are responsible for project delivery and are familiar with risk management procedures in their organizations. According to the Saudi Contractors Authority, thousands of professionals are currently engaged in the construction industry, making it an appropriate population for this study.

3.4.2 Research Sample

The study sample represents a subset of the total population selected to participate in the survey. The sample size is determined based on **Krejcie and Morgan's (1970)** sampling table, which specifies the minimum number of participants required to achieve a reliable level of confidence and accuracy. The study aims to collect responses from approximately *150–200 respondents*, which ensures a statistically valid sample to conduct the planned analyses.

3.4.3 Sampling Method and Techniques

This study applies a **probability sampling technique, specifically the stratified random sampling method**. The population is divided into strata according to job titles (project managers, engineers, supervisors, and risk officers), and random samples are selected from each group to ensure representation across all professional levels. This approach minimizes selection bias and increases the generalizability of results to the entire construction sector.

The sampling technique ensures that every individual within the defined population has a known, non-zero chance of being selected, which aligns with the quantitative nature of the research and supports the reliability and validity of the collected data.

3.5. Data collection method

This section describes the procedures and instruments used to collect the necessary data to answer the research questions and test the hypotheses. The study adopts a **survey method** for collecting quantitative data through a **structured questionnaire** distributed to professionals in the Saudi construction sector. This method is appropriate for quantitative research as it enables the collection of standardized data suitable for statistical analysis.

The questionnaire was designed based on previous validated instruments and academic references, ensuring reliability and construct validity. It consists of two main sections:

1. **Section A – Demographic Information:** Includes items related to participants' job title, years of experience, organization type, position level, and project location.
2. **Section B – Research Variables:** Contains statements measuring the independent variables (risk identification, risk assessment, and risk mitigation) and the dependent variable (project success) using a five-point Likert scale ranging from (1) Strongly Disagree to (5) Strongly Agree.

Each dimension of the research variables was measured through multiple items adapted from prior studies to ensure accurate operationalization:

- **Risk Identification:** Adapted from PMI (2017) and Smith et al. (2018).
- **Risk Assessment:** Based on ISO 31000 (2018) and Hillson (2017).
- **Risk Mitigation:** Adapted from Kerzner (2019) and Aven (2016).
- **Project Success:** Adapted from Pinto & Slevin (1988) and Turner (2014).

The questionnaire was distributed electronically through email and professional

3.6. Types of data

This study relies on both **primary** and **secondary** data sources to ensure the comprehensiveness and validity of the research findings. The use of multiple data sources enhances the accuracy of results and supports triangulation between empirical evidence and existing literature.

3.6.1 Primary Data

Primary data refers to information that is collected firsthand by the researcher specifically for the purpose of this study. In this research, primary data were obtained through a structured questionnaire distributed to professionals in the Saudi construction sector. The collected responses reflect real-world insights into how risk management practices—such as risk identification, risk assessment, and risk mitigation—affect project success. These data form the core of the quantitative analysis conducted using statistical methods.

3.6.2 Secondary Data

Secondary data consists of information gathered from existing sources such as books, academic journals, industry reports, and standards related to project management and risk management. The researcher reviewed key references including **PMI (2017)**, **ISO 31000 (2018)**, **Kerzner (2019)**, and other relevant empirical studies to support the theoretical foundation and interpretation of results. Secondary data were used to define research constructs, develop the questionnaire, and compare the findings of this study with previous research outcomes.

By combining both types of data, the study ensures a balanced and evidence-based understanding of the relationship between risk management practices and project success in the construction sector.

3.7. Statistical analysis procedures

After the data were collected through the questionnaire, the information was analyzed using the **Statistical Package for the Social Sciences (SPSS, version 28)**. The statistical analysis aimed to test the hypotheses and examine the relationships between the independent and dependent variables.

The following statistical procedures were applied:

1. Descriptive Analysis:

Used to summarize the demographic information of the respondents and to describe their responses to the questionnaire items related to each variable. Measures such as mean, standard deviation, and frequency distribution were calculated.

2. Reliability and Validity Tests:

- **Reliability Test:** Conducted using Cronbach's Alpha to measure the internal consistency of the questionnaire. A coefficient value of 0.70 or above indicates acceptable reliability.
- **Validity Test:** Conducted through Exploratory Factor Analysis (EFA) to ensure that each construct accurately measures the intended concept.

3. Correlation Analysis:

Applied to examine the strength and direction of the relationship between the independent variables (risk identification, risk assessment, and risk mitigation) and the dependent variable (project success).

4. Regression Analysis:

Conducted to test the research hypotheses and determine the predictive effect of risk management practices on project success in the construction sector.

These procedures ensured that the data analysis was statistically valid, reliable, and aligned with the study objectives.

3.8. Conclusion

This chapter presented the research methodology adopted to examine the impact of risk management practices on project success in the construction sector in Saudi Arabia. The chapter explained the operational definitions of the research variables, the research design based on the “Research Onion” framework, and the methods used for sampling, data collection, and data analysis.

The study employed a quantitative approach supported by a structured questionnaire distributed to professionals in the construction field. The chosen methods ensure objectivity, accuracy, and reliability in data collection and analysis.

By applying appropriate statistical tools, such as descriptive analysis, reliability and validity tests, correlation, and regression analysis, the study aims to produce empirical evidence that contributes to understanding how risk management practices influence project success.

The next chapter, **Chapter 4: Statistical Analysis and Findings Discussion**, will present the analysis results, test the research hypotheses, and interpret the findings in light of the study objectives.