



## **Project Risk Management Practices in Saudi Construction Projects:**

**A Study on Planning and Execution Challenges**

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**#Assignment2**

### **CHAPTER 3: RESEARCH METHODOLOGY**

#### **3.1 Introduction**

This chapter outlines the research methodology employed in this study to investigate project risk management practices within the Saudi Arabian construction sector. It provides an in-depth explanation of the research design, philosophical approach, population and sampling methods, data collection techniques, types of data, and the statistical analysis procedures adopted. The purpose of this methodology is to ensure that the study's findings are valid, reliable, and capable of answering the research questions presented in Chapter One.

The methodology was designed to align with the research objectives, focusing on identifying the extent of risk management implementation, challenges faced during planning and execution, and the relationship between planning quality, communication

effectiveness, and project success under Vision 2030. Each section in this chapter builds upon the principles of empirical research to guarantee that the study outcomes are both credible and replicable.

### 3.2 Operational Definitions for Research Variables

**The research is structured around four main variables: Planning Quality, Risk Identification, Communication Effectiveness, and Project Success. The following operational definitions were established to ensure clarity and measurement consistency:**

•**Planning Quality (PQ):** Refers to the thoroughness and effectiveness of project planning activities, including scheduling, budgeting, task sequencing, and risk anticipation. It reflects how well project managers prepare and organize resources before project initiation.

•**Risk Identification (RI):** The systematic process of recognizing potential risks that may affect project objectives during the planning and execution phases. This involves identifying internal and external threats, classifying risks, and assessing their potential impact on cost, schedule, and performance.

•**Communication Effectiveness (CE):** Measures the efficiency, clarity, and timeliness of information shared among project stakeholders, including contractors, consultants, and clients. Effective communication fosters better decision-making and enhances team collaboration.

•**Project Success (PS):** The degree to which a project meets its predefined goals within scope, time, cost, and quality constraints, while also satisfying stakeholder expectations.

Each construct was measured through a set of questionnaire items using a five-point Likert scale ranging from Strongly Disagree (1) to Strongly Agree (5). This scale allows respondents to express the intensity of their perceptions and experiences related to risk management practices.

### 3.3 Research Design (Research Onion)

This study adopts a quantitative research design following the Research Onion Model proposed by Saunders et al. (2019). The model provides a structured framework for determining the research philosophy, approach, strategy, choice, and time horizon.

#### 3.3.1 Research Philosophy – Positivism

The research follows the positivist philosophy, which emphasizes observable and measurable data to establish objective truths. This approach is suitable for investigating risk management practices through quantifiable variables such as planning quality, communication, and project performance.

#### 3.3.2 Research Approach – Deductive

A deductive approach was used, where hypotheses derived from existing literature were tested through empirical data. This approach is appropriate as the study aims to verify theoretical relationships among the variables (e.g., between risk identification and project success).

### **3.3.3 Research Strategy – Survey Method**

The survey strategy was selected because it allows for the collection of large amounts of data efficiently from professionals across Saudi Arabia's construction industry. The survey method also provides statistical representativeness, making it ideal for quantitative studies.

### **3.3.4 Time Horizon – Cross-sectional**

The study employs a cross-sectional time horizon, meaning that data were collected once at a specific point in time. This design captures the current state of risk management practices in the construction sector during the implementation of Vision 2030 initiatives.

### **3.3.5 Techniques and Procedures**

Structured questionnaires were used to gather data, and statistical tools (SPSS version 26) were applied for analysis. The research onion layers ensured methodological consistency and validity throughout the study process.

## **3.4 Research Population and Sampling Methods**

The target population consists of professionals working in the Saudi construction industry, including project managers, engineers, consultants, and risk management officers. These individuals possess firsthand experience in planning, executing, and monitoring construction projects.

### **3.4.1 Population Description**

Saudi Arabia's construction sector was chosen due to its pivotal role in national economic diversification under Vision 2030. The sector encompasses government mega-projects (e.g., NEOM, Qiddiya) and private developments. Hence, the population represents both public and private sector projects.

### **3.4.2 Sampling Technique**

The study employed a stratified random sampling technique to ensure representation from various categories of organizations—government, private contractors, and consulting firms.

Each stratum was proportionally represented to reduce bias and increase data validity.

### **3.4.3 Sample Size**

A total of 120 valid responses were collected out of 150 distributed questionnaires, representing an 80% response rate. This sample size is considered statistically acceptable for social science research and sufficient for inferential analysis such as correlation and regression testing.

## **3.5 Data Collection Method**

Data were collected through a structured self-administered questionnaire, designed based on previous studies in project risk management. The questionnaire was distributed

electronically via Google Forms and shared through professional networks such as LinkedIn and email invitations.

**The instrument consisted of five sections:**

|                                                                                              |   |
|----------------------------------------------------------------------------------------------|---|
| Demographic Information (e.g., gender, experience, position, .organization type)             | 1 |
| Planning Quality – 6 items assessing scheduling, resource allocation, .and planning accuracy | 2 |
| Risk Identification – 5 items evaluating how risks are recognized and .prioritized           | 3 |
| Communication Effectiveness – 5 items assessing clarity and .transparency in communication   | 4 |
| .Project Success – 5 items measuring outcomes in cost, quality, and time.                    | 5 |

To ensure ethical compliance, participants were informed about the purpose of the study, anonymity of responses, and voluntary participation. No personal or organizational identifiers were collected.

### 3.6 Types of Data

This study used both primary and secondary data sources:

- Primary Data:** Quantitative data collected directly from respondents through the questionnaire.

- Secondary Data:** Supporting literature including scholarly articles, academic journals, industry reports, and Vision 2030 documents that provide background and theoretical insights.

Using both data types enhanced the reliability and depth of the research by linking theoretical concepts with real-world practices.

### 3.7 Statistical Analysis Procedures

The collected data were analyzed using SPSS version 26, which is widely recognized for its robustness in quantitative data analysis.

#### 3.7.1 Descriptive Analysis

Descriptive statistics (mean, standard deviation, and frequency distribution) were computed to summarize responses and describe patterns in the data.

### 3.7.2 Reliability and Validity Testing

Reliability was tested using Cronbach's Alpha, where values above 0.70 indicated high internal consistency across questionnaire items.

Validity was ensured through expert review and pilot testing conducted before final data collection.

### 3.7.3 Inferential Analysis

Inferential statistics, including Pearson correlation and multiple regression analysis, were applied to test hypotheses and determine relationships among variables.

The correlation test measured the strength and direction of linear relationships, while regression analysis assessed how independent variables (Planning Quality, Risk Identification, and Communication Effectiveness) influence the dependent variable (Project Success).

### 3.7.4 Ethical Considerations

The research followed ethical standards by ensuring voluntary participation, data confidentiality, and transparency. All participants provided informed consent prior to submission.

## 3.8 Conclusion

This chapter presented the methodological framework that guided the research process.

By employing a quantitative, positivist, and deductive approach, the study ensured a systematic investigation of project risk management practices within Saudi Arabia's construction industry.

The use of structured questionnaires, statistical analysis, and representative sampling enhanced the reliability and generalizability of findings.

**The next chapter, Chapter 4:** Statistical Analysis and Findings Discussion, will present the results of the data analysis, interpret statistical relationships among variables, and discuss how these findings contribute to improving project risk management practices under Vision 2030.