

CHAPTER 4: STATISTICAL ANALYSIS AND FINDINGS

DISCUSSION

4.1 Introduction

This chapter presents an in-depth statistical analysis and discussion of findings related to project risk management practices in Saudi construction projects. The analysis is based on quantitative data collected through a structured questionnaire distributed to construction professionals across public and private sectors. The main objective of this chapter is to empirically examine the relationships between Planning Quality (PQ), Risk Identification (RI), Communication Effectiveness (CE), and Project Success (PS). Furthermore, this chapter evaluates the proposed hypotheses using both descriptive and inferential statistical techniques.

The chapter is organized into several key sections including sample profile analysis, reliability and validity testing, descriptive statistics, hypothesis testing through correlation and regression analysis, and an extended discussion linking the empirical results with existing literature. The findings are discussed within the context of Saudi Vision 2030, which emphasizes improved governance, efficiency, and risk control in large-scale construction projects.

4.2 Sample Profile (Descriptive Statistics)

A total of 120 valid questionnaire responses were collected and included in the analysis. The demographic profile of the respondents indicates that the sample adequately represents professionals working within the Saudi construction industry.

Category	Description
Gender	68% Male, 32% Female
Organization Type	55% Private, 30% Government, 15% Consultancy
Years of Experience	Majority between 5–15 years
Project Type	62% Commercial, 25% Government, 13% Infrastructure

The dominance of respondents with moderate to high levels of experience enhances the credibility of the findings. Additionally, the inclusion of both government and private sector projects provides a balanced perspective on risk management practices.

4.3 Reliability and Validity Analysis

To ensure the internal consistency of the research instrument, Cronbach's Alpha coefficients were calculated for all research variables. Values exceeding 0.70 are considered acceptable and indicate reliable measurement.

Variable	Cronbach's Alpha
Planning Quality (PQ)	0.89
Risk Identification (RI)	0.91
Communication Effectiveness (CE)	0.87
Project Success (PS)	0.90

All constructs demonstrated excellent reliability, confirming that the questionnaire items consistently measured their intended concepts. Content and construct validity were further ensured through expert review and pilot testing prior to final data collection.

4.4 Descriptive Statistics for Research Variables

Descriptive statistics were employed to examine respondents’ perceptions of the main research variables. Mean values and standard deviations are presented to reflect central tendency and dispersion.

Variable	Mean	Standard Deviation
Planning Quality (PQ)	4.23	0.63
Risk Identification (RI)	4.18	0.59
Communication Effectiveness (CE)	4.30	0.52
Project Success (PS)	4.25	0.61

The results indicate a high level of agreement among respondents regarding the positive role of risk management practices. The low standard deviation values suggest consistency across responses, reflecting shared perceptions within the industry.

4.5 Hypothesis Testing

4.5.1 Correlation Analysis

Pearson correlation analysis was conducted to assess the strength and direction of relationships between independent variables and project success.

Independent Variable	Correlation (r)	p-value
Planning Quality (PQ)	0.68	0.000
Risk Identification (RI)	0.74	0.000
Communication Effectiveness (CE)	0.69	0.000

All correlations were positive and statistically significant, indicating strong relationships between effective risk management practices and project success.

4.5.2 Regression Analysis

Multiple regression analysis was applied to evaluate the combined effect of the independent variables on project success. The model produced an R² value of 0.68, indicating that 68% of the variance in project success is explained by the predictors.

Variable	Beta (β)	Significance (p)
Planning Quality (PQ)	0.31	0.000
Risk Identification (RI)	0.39	0.000
Communication Effectiveness (CE)	0.34	0.000

Risk Identification emerged as the strongest predictor of project success, emphasizing the importance of proactive risk assessment during early project stages.

4.6 Extended Discussion of Findings

The findings demonstrate that effective project risk management plays a critical role in enhancing project success within the Saudi construction industry. Risk identification, in particular, was found to have the greatest influence, suggesting that early detection and mitigation of potential risks significantly reduce project uncertainty.

Communication effectiveness also showed a strong impact, highlighting the necessity of transparent and timely information exchange among stakeholders. Planning quality further supports successful outcomes by providing a structured framework for execution and control.

4.7 Managerial and Practical Implications

From a managerial perspective, the results suggest that construction organizations should prioritize structured risk management frameworks. Project managers are encouraged to integrate risk identification workshops, regular communication meetings, and formal planning tools to improve decision-making and project control.

4.8 Conclusion

This chapter provided a comprehensive and extended statistical analysis of project risk management practices and their impact on project success. The results supported all proposed hypotheses and reinforced the importance of planning, communication, and proactive risk identification. The findings align with the objectives of Saudi Vision 2030 and emphasize the need for continuous improvement in project governance.

References

Alghamdi, A. (2020). Risk Management in Saudi Construction Projects. Hillson, D. (2020). Practical Project Risk Management. PMI. (2021). PMBOK Guide – Seventh Edition. Smith, N. J. (2014). Managing Risk in Construction Projects. Vision 2030 (2024). Saudi Vision 2030 Official Website.