

The Effect of Project Management Office Effectiveness on Project Performance in Saudi Arabia's Giga-Project Sector

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Chapter 1: Introduction

1.1 Research Background

Saudi Arabia's Vision 2030 program has put a massive set of demands on the country's project management infrastructure. Giga-projects such as NEOM, Red Sea Global, Qiddiya, and Diriyah Gate combine city-scale physical scope with compressed delivery timelines, and each has built large, fast-growing networks of contractors, subcontractors, and specialist consultants to run overlapping streams of design and construction at once, rather than in the sequential phases typical of conventional developments (Calabrese, 2026). Several of the highest-profile components have already needed rescoping, deferral, or a budget revision as delivery realities collided with the original ambitions (Calabrese, 2026). The coordination structures wrapped around these projects remain unproven in practice. Recent modelling of project control systems across 222 completed Saudi construction projects found that 64% exceeded their planned schedule and 53% exceeded their planned budget (Alotaibi et al., 2025). Those figures describe the broader delivery environment giga-projects sit within, even though the study itself was not limited to giga-project sites.

Governments and private developers lean on one specific organizational structure to manage exactly this kind of complexity: the Project Management Office, or PMO. A PMO is generally defined as a centralized or federated unit tasked with standardizing project governance, consolidating reporting, coordinating resources across a portfolio, and spreading project management practice through an organization, or in the giga-project case, across a wider network of delivery partners (Hobbs & Aubry, 2010). A single project's management team once sufficed for this. Giga-project owners in Saudi Arabia have since had to build PMO structures capable of governing dozens of concurrent contracts, a scale of coordination with few precedents in the regional construction sector. That scale raises a direct, practical question: are these PMOs actually improving delivery outcomes, or just adding another administrative layer onto an already strained system?

The relationship between PMO presence and project outcomes has been studied for roughly two decades, and a fairly consistent picture has emerged. Hobbs and Aubry (2008) drew on a large, empirically grounded study of PMOs across multiple industries and found that PMOs vary enormously in structure and mandate. Still, the more mature and better-resourced offices were consistently the ones associated with improved standardization, reporting discipline, and portfolio-level resource allocation. Hill (2004) took a different angle, proposing a five-stage competency continuum that describes how a PMO's function set expands as it matures, from basic project oversight and control at the lower stages toward strategic business alignment at the higher ones. On this account, a PMO's effectiveness is simply a variable of how far along that continuum it has developed. Bae, Kim, and Kim (2008) went further and tested this directly: their structural model showed project success factors shaping PMO capability, which in turn affected multiple dimensions of project performance. Sandhu, Al Ameri, Shahzad, and Naseem (2024) surveyed staff across nineteen project-based organizations and reached a similar conclusion, rating methodology development and performance monitoring among a PMO's most valuable contributions. None of this is really contested. The more mature and better-resourced a PMO is, the better its project outcomes tend to look.

Whether that general expectation holds under the specific operating conditions of a giga-project, including in Saudi Arabia, is still an open question. Two recent Saudi-based studies get close without quite landing on it. Alghaseb and Alali (2024) looked at which PMO structural model, enterprise, program, or centre-of-excellence, best fits public construction projects in Hail, Saudi Arabia, and found the Enterprise PMO model to be the dominant fit there, evidence of which model owners tend to choose rather than of whether that choice actually improves schedule, cost, or quality outcomes. Alotaibi, Sohail, and Soetanto (2025) come at it from a different angle, modelling project control system effectiveness across Saudi construction delivery more broadly and finding that organizational, human, and technological inputs shape control outcomes generally, again without breaking any of

that down into the specific PMO functions this study is interested in, or restricting the sample to giga-project-scale developments.

The picture looks much the same at the wider megaproject level. Zani, Denicol, and Broyd (2024) ran the largest systematic literature review of megaproject organization design to date, screening more than ten thousand articles, and organizational capability kept surfacing as a theme. What the field still lacks, in their reading, is a settled understanding of which design choices, PMO structure among them, actually drive performance at megaproject scale. Their review calls explicitly for more empirical work connecting those design choices to measurable outcomes.

The deficiency matters because the giga-project environment differs from the conventional single-project or single-organization context in which most PMO effectiveness research has been conducted. A giga-project PMO works differently. It coordinates an unusually large and rapidly scaling network of contractors and subcontractors, often from different countries and regulatory backgrounds, all delivering interdependent packages of work under compressed timelines. Governance, resource oversight, knowledge management, monitoring: these are the functions that make a PMO “effective” in a conventional corporate setting. Whether they translate cleanly to a coordination problem this size, specifically within Saudi Arabia's giga-project sector, is a different question, and each of the studies above, read on its own, leaves it only partly answered.

This gap matters to a specific, identifiable audience. Giga-project owners, boards, and program-management consultancies operating in Saudi Arabia are deciding, right now, how much to invest in PMO structures, what functions to prioritize, and how to justify that investment to stakeholders and financiers, mostly without local empirical evidence linking specific PMO functions to delivery outcomes. Project management professionals working inside these PMOs face the same blind spot: they lack a clear, evidence-based picture of which of their functions actually move schedule, cost, and quality performance, as opposed to which just look important on paper. The stakes are not abstract. These programs are

already absorbing the schedule and budget pressure documented by Calabrese (2026) and Alotaibi et al. (2025), and getting the allocation of PMO effort right affects whether these giga-projects stay within the budgets now being renegotiated.

This study's purpose, then, is to examine the relationship between Project Management Office effectiveness and project performance within Saudi Arabia's giga-project sector. It breaks PMO effectiveness down into its separate functional dimensions, so the relationship can be examined with more precision than a single composite PMO variable, or a single composite control-systems variable of the kind Alotaibi et al. (2025) used, would allow. It is not trying to introduce a new theoretical model. Instead, it applies an established lens, organizational capability and Resource-Based View reasoning, to a context where that lens has rarely been tested at this level of functional detail. In doing so, it lays the empirical and methodological groundwork for a future survey-based investigation of that relationship among project management professionals working within or alongside giga-project PMO structures.

1.2 Research Problem

PMO effectiveness is generally understood to relate to project performance, but almost all of that evidence comes from conventional project and corporate program settings. Even the closest Saudi-based studies address PMO model choice or general control-system effectiveness, not PMO functional effectiveness at giga-project scale specifically. One gap is theoretical, then, and one is practical.

1.2.1 Theoretical Gaps

Bae et al. (2008) and Sandhu et al. (2024) have already established a general link between Project Management Office effectiveness and project performance in conventional corporate and program-level settings. What is much less understood is how the specific PMO functional dimensions, governance and standardization, resource and portfolio oversight, knowledge management, and monitoring and reporting, drive project

performance once the setting shifts to something organizationally distinct: megaproject and giga-project delivery (Zani et al., 2024).

1.2.2 Practical Gaps

Few empirical studies have looked at Project Management Office effectiveness and its relationship to project performance specifically within Saudi Arabia's giga-project sector. PMO structures across this sector were built quickly to coordinate large, fast-scaling contractor networks, but how well they actually perform against the schedule, cost, and quality outcomes they exist to protect is largely undocumented.

Together, these two gaps point to the same underlying question.

How does Project Management Office Effectiveness influence Project Performance in Saudi Arabia's giga-project sector?

1.3 Research Significance

Establishing whether, and how, PMO effectiveness relates to project performance in this setting matters on two fronts: for the theoretical literature on project organizations, and for the practical decisions giga-project leadership in Saudi Arabia is making right now.

1.3.1 At the Theoretical Level

This study is grounded in organizational capability theory and the Resource-Based View (Barney, 1991; Teece et al., 1997). Together, these frame a PMO not merely as an administrative unit but as an organizational capability: a bundle of governance routines, coordination knowledge, and monitoring processes that can be valuable, difficult to imitate, and therefore a source of superior project outcomes when well developed. Teece et al.'s (1997) subsequent dynamic-capabilities extension adds a useful refinement for the giga-project setting specifically. It emphasizes a firm's capacity to reconfigure its capabilities as conditions change, a capacity giga-project PMOs rely on directly: they must scale and

adapt their governance and coordination routines as the network of contractors around them grows.

Applying this framework to giga-project PMOs addresses the theoretical gap identified in Section 1.2.1: it tests whether a capability-based explanation of PMO effectiveness, developed and validated mainly in single-project and conventional program contexts, extends to a setting defined by an unusually large and rapidly scaling contractor base. It responds directly to Zani et al.'s (2024) call for empirical work linking organizational design choices to measurable performance outcomes in megaproject research. Examining the PMO-performance relationship at the level of individual functional dimensions, rather than as a single composite variable, also pushes capability theory further than most PMO research does, and it could help refine how organizational capability frameworks get used for megaproject-scale organizations more broadly.

1.3.2 At the Practical/Empirical Level

At the practical level, findings from the eventual empirical study could directly inform decision-making for giga-project leadership, who are already weighing how much to invest in PMO structures and which functions to prioritize, under the budget and schedule pressure documented by Calabrese (2026) and Alotaibi et al. (2025). Suppose specific PMO functions, monitoring and reporting versus knowledge management, say, turn out to relate more strongly to schedule and cost performance than others. That would give giga-project owners something concrete to act on: where to point limited PMO resources to best protect delivery outcomes. It would also complement Alghaseb and Alali's (2024) work on which PMO structural model Saudi construction projects tend to adopt, adding evidence on which functions within that model matter most.

More broadly, the study's findings could give project management professionals working within these PMOs an evidence base for improving coordination across the large, multi-national supplier base that characterizes giga-project delivery, a coordination challenge specific to megaproject scale and not well addressed by PMO guidance built for

conventional single-organization projects. With NEOM, Red Sea Global, Qiddiya, and Diriyah Gate all in delivery at once, Saudi Arabia hosts a dense concentration of active giga-project PMOs. This local evidence base, then, is of direct relevance not just to giga-project owners but to policymakers and program-management consultancies operating across the wider Gulf giga-project pipeline.

1.4 Research Questions

Main Research Question

How does Project Management Office Effectiveness influence Project Performance in Saudi Arabia's giga-project sector?

Section 1.8 explains how both variables will actually be measured. The survey planned for Project 2 is designed to answer this question directly, closing the theoretical and practical gaps raised above.

Research Sub-questions

1. How does the governance and standardization function of Project Management Offices relate to project performance in Saudi Arabia's giga-project sector?
2. How does the resource and portfolio oversight function of Project Management Offices relate to project performance in Saudi Arabia's giga-project sector?
3. How does the knowledge management and best-practice dissemination function of Project Management Offices relate to project performance in Saudi Arabia's giga-project sector?
4. How does the monitoring and reporting function of Project Management Offices relate to project performance in Saudi Arabia's giga-project sector?

1.5 Research Objectives

1. To examine the current effectiveness of Project Management Offices in Saudi Arabia's giga-project sector.
2. To identify the key challenges faced by Project Management Offices in supporting project performance in this sector.
3. To evaluate the strength and direction of the relationship between Project Management Office effectiveness and project performance.
4. To propose recommendations for improving Project Management Office effectiveness in giga-project contexts.
5. To generate insights for future research on Project Management Offices in megaproject settings.

1.6 Research Hypotheses

H0 (Null Hypothesis): There is no statistically significant relationship between Project Management Office Effectiveness and Project Performance in Saudi Arabia's giga-project sector.

Ha / H1 (Alternative/Directional Hypothesis): There is a statistically significant positive relationship between Project Management Office Effectiveness and Project Performance in Saudi Arabia's giga-project sector.

Sub-hypotheses (matching the four PMO functional dimensions and the Research Model in Section 1.7):

H1a: The governance and standardization function of Project Management Office effectiveness has a statistically significant positive relationship with project performance in Saudi Arabia's giga-project sector.

H1b: The resource and portfolio oversight function of Project Management Office effectiveness has a statistically significant positive relationship with project performance in Saudi Arabia's giga-project sector.

H1c: The knowledge management and best-practice dissemination function of Project Management Office effectiveness has a statistically significant positive relationship with project performance in Saudi Arabia's giga-project sector.

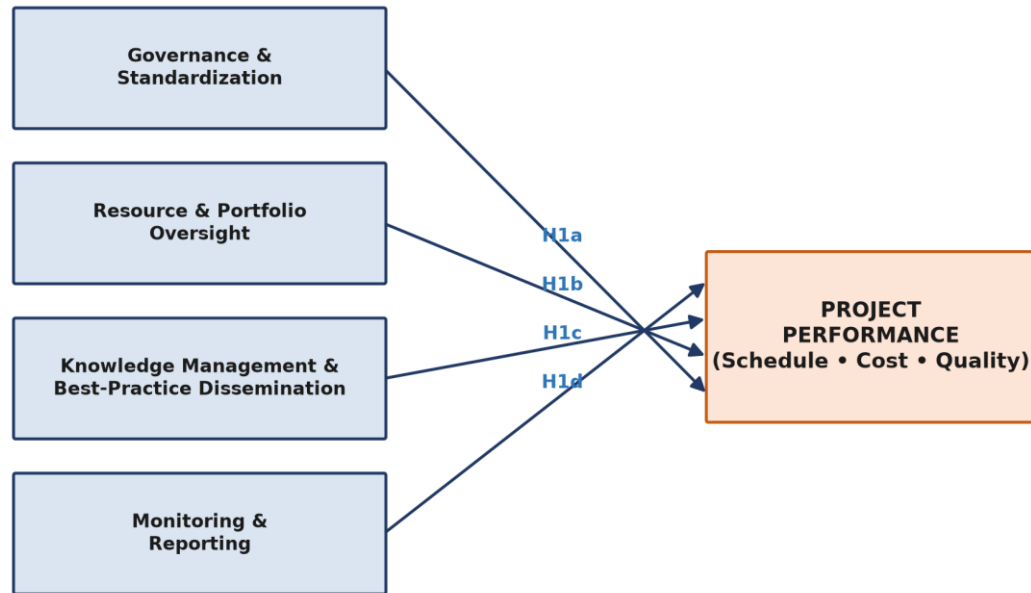
H1d: The monitoring and reporting function of Project Management Office effectiveness has a statistically significant positive relationship with project performance in Saudi Arabia's giga-project sector.

1.7 Research Model

The research model treats Project Management Office Effectiveness as four functional dimensions, consistent with the PMO typology and competency literature (Hill, 2004; Hobbs & Aubry, 2008, 2010): (1) Governance and Standardization, (2) Resource and Portfolio Oversight, (3) Knowledge Management and Best-Practice Dissemination, and (4) Monitoring and Reporting. Project Performance is measured using the iron-triangle tradition (Atkinson, 1999): Schedule/Time Performance, Cost Performance, and Quality/Technical Performance.

Figure 1 below illustrates the proposed research model, linking the four PMO functional dimensions (H1a–H1d) to Project Performance, matching the four sub-hypotheses set out in Section 1.6.

PROJECT MANAGEMENT OFFICE (PMO) EFFECTIVENESS
(Independent Variable)



*Note. Option A layout. IV dimensions per Hill (2004) and Hobbs & Aubry (2008, 2010);
DV per Atkinson's (1999) iron-triangle tradition. H0/Ha test the overall relationship;
H1a-H1d test each PMO functional dimension individually.*

Figure 1. Proposed Research Model

Source: Author's construction, based on Hill (2004), Hobbs & Aubry (2008, 2010), and Atkinson (1999).

1.8 Research Methodology

This study's methodology is structured using Saunders, Lewis, and Thornhill's (2019) Research Onion, working inward through all six layers.

Layer 1: Research Philosophy. Positivism is adopted because this study treats Project Management Office effectiveness and project performance as objectively measurable constructs, ones whose relationship can be tested through observable, quantifiable data collected via a structured instrument. This follows a philosophy holding that social and organizational phenomena can be studied using the same logic of observation and measurement used in the natural sciences (Saunders et al., 2019). An interpretivist stance would suit a study trying to understand how individual PMO staff subjectively experience

their roles; that is not the aim here, which is instead to test a hypothesized relationship between two measurable variables.

Layer 2: Research Approach. This study takes a deductive approach. It starts from an established theoretical position, organizational capability theory and the Resource-Based View (Barney, 1991; Teece et al., 1997), and derives a testable hypothesis from that theory (Section 1.6). Project 2 will then collect data specifically to test that hypothesis, rather than starting from raw observation and building theory inductively.

Layer 3: Research Choice. The research choice here is quantitative. The constructs of interest are operationalized as numerical scale scores collected from a structured questionnaire, and the analysis planned for Project 2 (correlation and regression, following the modelling approach used by Alotaibi et al., 2025, in a related Saudi construction context) is designed to test statistical relationships between those numerical scores.

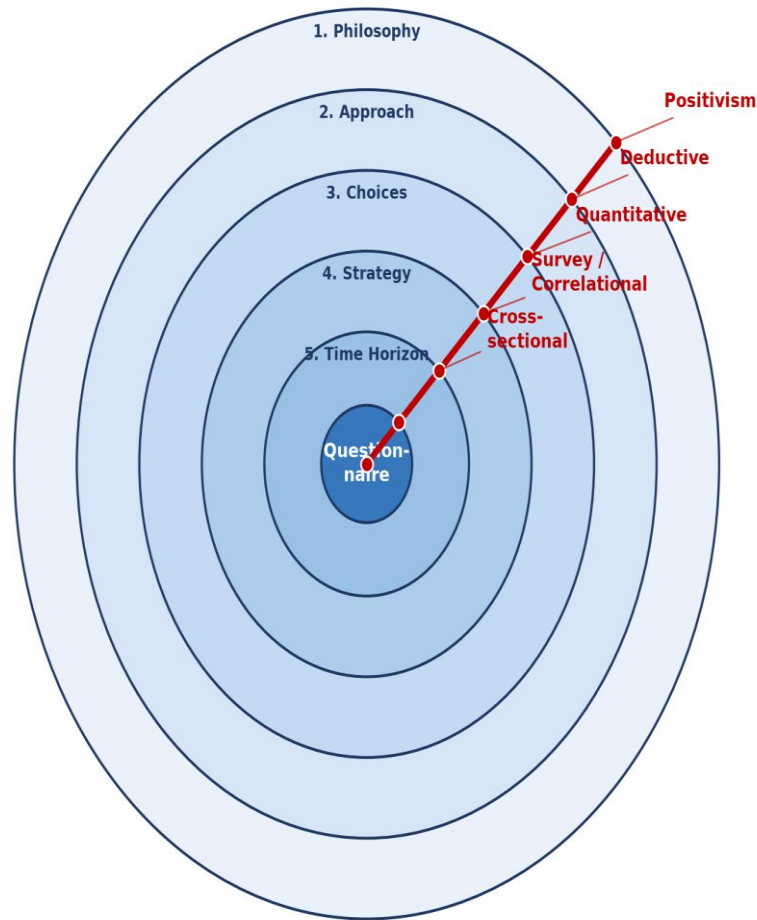
Layer 4: Research Strategy/Design. Within that quantitative choice, "survey" and "correlational" describe two complementary aspects of the same design: the survey is the data-collection vehicle (a structured questionnaire administered to a sample of respondents), while "correlational" describes the analytical classification, since the study tests the strength and direction of a relationship between two variables (PMO effectiveness and project performance) without manipulating either one experimentally.

Layer 5: Time Horizon. Data will be collected at a single point in time from respondents across the giga-project sector, rather than tracking the same respondents or projects longitudinally. A cross-sectional design fits the one-semester scope of Project 2 and the exploratory, relationship-testing purpose of the study.

Layer 6: Data Collection Method. Finally, the planned instrument will adapt items from established PMO and project-performance measurement traditions rather than developing an unvalidated scale from scratch. For the PMO Effectiveness (independent variable) side, item development will draw on Hill's (2004) competency-continuum functions and the functional dimensions validated in Hobbs and Aubry's (2008, 2010) empirically grounded

PMO typology research, supplemented by Pemsel and Wiewiora's (2013) knowledge-broker items for the knowledge-management dimension specifically. For the Project Performance (dependent variable) side, item development will draw on Atkinson's (1999) time-cost-quality criteria as operationalized in subsequent construction and megaproject performance-measurement research. Several named "PMO maturity model" instruments appear in the practitioner literature, but their structural details, the number of focus areas or capability dimensions claimed, vary inconsistently across sources. This proposal therefore anchors its instrument description in sources whose functional content can be independently confirmed, rather than citing a maturity-model instrument whose exact structure remains unsettled. Final instrument selection and any necessary permissions for use of a validated scale will be confirmed at the start of Project 2.

The diagram below (Figure 2) shows the Research Onion as six concentric rings, labeled from outermost to innermost: Philosophy → Approach → Strategy → Choices → Time Horizon → Techniques and Procedures (Saunders et al., 2019). This study's path is marked with a bold line cutting through all six rings at the segments named above (Positivism → Deductive → Survey/Correlational → Quantitative → Cross-sectional → Questionnaire), visually distinguishing the chosen path from the unselected segments at each layer (e.g., Interpretivism, Inductive, Case Study, Qualitative, Longitudinal, Interviews).



Outer → inner rings (this study's selection in red, bold): Philosophy (Positivism) → Approach (Deductive) → Choices (Quantitative) → Strategy (Survey / Correlational) → Time Horizon (Cross-sectional) → Techniques & Procedures (Questionnaire).
 Unselected alternatives at each layer (not shown on path): Interpretivism, Inductive, Case Study, Qualitative, Longitudinal, Interviews.

Figure 2. Saunders' Research Onion, With This Study's Path Marked

Source: Adapted from Saunders, Lewis, & Thornhill (2019).

Target Population: Project management professionals working within or alongside Project Management Office structures in Saudi Arabia's giga-project sector (e.g., PMO analysts, project controls staff, project managers, and program management consultancy staff assigned to giga-project developments such as NEOM, Red Sea Global, Qiddiya, and Diriyah Gate).

Target Sample Size: Approximately 150–200 respondents. This range is consistent with the sample sizes used in comparable PMO- and project-control-performance survey research (e.g., Bae et al., 2008, analyzed 132 valid responses; Sandhu et al., 2024, analyzed 268 valid responses out of 450 distributed; Alotaibi et al., 2025, analyzed data from 222 completed projects) and is expected to provide sufficient statistical power for the correlational and regression analysis planned for Project 2, while remaining a realistic target given the researcher's access constraints to this specialized population.

Actual data collection, sampling, and statistical analysis will take place in Final Project 2; this term's deliverable is limited to the research proposal, design justification, and instrument planning set out above.

1.9 Scope of the Study

The study's setting is evaluated against this course's four Criteria for Selecting a Research Study Setting:

Saudi Arabia's giga-project sector is directly relevant to the research topic. It is a live, large-scale setting in which PMO structures have been rapidly established specifically to coordinate the kind of large, fast-scaling contractor network that motivates this study's theoretical and practical gaps (Section 1.2), which makes it a setting where the research question can be meaningfully tested rather than a convenient but tangential population.

Reaching this population is realistic, though not unlimited. Giga-project PMO staff, project controls professionals, and program-management consultancy employees are a specialized but reachable group, accessible through professional networks, project management professional associations operating in Saudi Arabia, and the researcher's own contacts within the sector, which should support a survey of the target sample size described in Section 1.8. Data collection in Project 2 will follow standard human-subjects protections appropriate to a workplace survey: voluntary participation, informed consent, and anonymized or confidential handling of individual responses. No commercially sensitive

project data will be collected beyond what is needed to answer the research questions, which protects both individual respondents and the organizations that employ them.

The four giga-projects named throughout this proposal (NEOM, Red Sea Global, Qiddiya, Diriyah Gate) collectively represent a large share of Saudi Arabia's active giga-project pipeline and share the structural feature that motivates this study: PMOs coordinating unusually large and fast-scaling delivery-partner networks. A sample drawn from professionals working across these developments should reasonably represent the broader population of giga-project PMO practitioners in the Kingdom, supporting generalization of findings within this sector.

1.10 The Suggested Project Structure

This proposal (Project 1) corresponds to Chapters 1 and 2 of the following five-chapter structure planned for the complete graduation project:

Chapter 1: Introduction. Research background, problem, significance, questions, objectives, hypotheses, model, methodology, and scope (this document).

Chapter 2: Literature Review. Synthesis of the independent variable, dependent variable, and the relationship between them (this document).

Chapter 3: Research Methodology (*Project 2*). Detailed instrument design, sampling procedure, and data collection protocol.

Chapter 4: Statistical Analysis (*Project 2*). Descriptive statistics, reliability testing, correlation and regression analysis of collected survey data.

Chapter 5: Findings' Discussion and Conclusion (*Project 2*). Interpretation of results, theoretical and practical implications, limitations, and recommendations for future research.

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