

**Optimising contract management practices: evaluating contract risk
management in the South African energy sector**

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ABSTRACT

This study explains how contract risk management (CRM) practices shape delivery outcomes in South Africa's energy sector and identifies feasible improvements. A qualitative design was used. Twelve semi-structured interviews were conducted with client-side and supplier-side practitioners. Data were analysed using reflexive thematic analysis with established trustworthiness criteria.

Findings show that front-end planning and fair risk allocation set realistic baselines for cost, schedule and quality. Disciplined contract administration, including timely certification, contemporaneous records and firm change control, translates contractual intent into steady execution. Monitoring and control improve performance when information triggers proportionate consequence management rather than compliance for its own sake. Early project-embedded dispute mechanisms limit secondary delays and cost growth, and feed lessons back into planning and control. These effects are conditioned by political commitment, administrative capacity and governance culture.

The study offers an integrated mechanism model and practical guidance: streamline approval chains, use live risk registers and early warnings, tighten documentation and payment routines, resource adjudication pathways, and build contract-management capability. The contribution is a context-sensitive explanation of how CRM pillars work in state-owned settings and a set of actions to improve delivery reliability.

Keywords: Contract Risk Management, Eskom, Infrastructure Projects, Governance, Project Performance

PLAGIARISM DECLARATION

I declare that this research project is my own work. It is submitted in partial fulfilment of the requirements for the degree of Master of Business Administration at the Gordon Institute of Business Science, University of Pretoria. It has not been submitted before for any degree or examination in any other University. I further declare that I have obtained the necessary authorisation and consent to carry out this research.

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CHAPTER 1: INTRODUCTION TO RESEARCH PROBLEM

1.1 Background to Study

Within the South African energy sector, major infrastructure and refurbishment projects are unfolding amid severe electrical-supply uncertainty and urgent national need. According to the Council for Scientific and Industrial Research (CSIR), load shedding reached record highs in recent years before easing in 2024-2025 (CSIR, 2023, 2025a, 2025b). Van der Merwe and Potgieter (2023) identify prolonged load shedding as one of the most serious systemic risks to enterprises. These conditions underline the importance of delivering new energy infrastructure both on time and within budget. The National Development Plan 2030 calls for investment in reliable, affordable, and sustainable energy infrastructure (South African National Energy Association [SANEA], 2024-2025), which depends on effective project execution and risk management. In complex infrastructure projects, risk is ever-present and must be managed proactively. Effective risk management reduces uncertainty, improves decision quality, and supports resilience (Hillson, 2016; Project Management Institute [PMI], 2021). When embedded across planning, procurement, execution, and close-out, it becomes a governance discipline rather than a procedural formality (ISO, 2018).

Globally, large capital projects frequently experience cost and schedule overruns, a pattern often referred to as the so-called “iron law of megaprojects” (Flyvbjerg, 2014, 2017). South African projects mirror this pattern: slow decision-making, inaccurate estimates, and contractual claims have been major causes of overruns in power station projects (Tshidavhu & Khatleli, 2020). A critical determinant of these outcomes is contract risk management (CRM), which focuses on how contractual responsibilities and risks are allocated and enforced throughout the project lifecycle (Smith et al., 2014; Turner & Simister, 2001). Poorly aligned contract structures, weak change control, and fragmented handling of technical, legal, and commercial risks expose owners to cost and delay (Hillson, 2016; IRM, 2020). Evidence indicates that CRM in South African energy projects is inconsistently applied, with limited integration across functions. Therefore, strengthening CRM practice is central to improving project performance and achieving energy-sector reliability.

1.2 Governance context

South Africa's Public Finance Management Act mandates effective, efficient, and transparent financial and risk management systems (National Treasury, 1999). Corporate governance codes locate risk governance at board level in state-owned enterprises (King IV Report on Corporate Governance for South Africa, 2016). Despite these frameworks, translation into contract practice has been inconsistent. Multiple audits, inquiries, and studies identify weak contract management as a recurring cause of inferior performance in the energy sector. Reported failings include vague scopes, insufficient oversight of delivery, weak consequence management, and failure to enforce remedies or penalties, resulting in irregular, fruitless, and wasteful expenditure and, in some cases, project collapse (Auditor-General of South Africa, 2024; Flepisi & Mlambo, 2021; Judicial Commission of Inquiry into Allegations of State Capture, 2022). The Auditor-General links irregular and fruitless expenditure to shortcomings in procurement and contract administration, including unsuitable supplier appointments and payments for work not delivered (Auditor-General of South Africa, 2024).

South Africa's experience with the Medupi and Kusile coal-fired megaprojects illustrates the consequences of weak contract risk management. Originally budgeted at about R79 billion and R81 billion respectively, both projects slipped years behind schedule and expanded into the hundreds of billions of rand in capital expenditure, with Eskom's revised board-approved project values recorded at R145 billion (Medupi, excluding the Flue Gas Desulphurisation [FGD] retrofit) and R161.4 billion (Kusile, including FGD). By March 2023, Eskom reported cumulative capex of R127.8 billion at Medupi and R150.8 billion at Kusile, and revised completion targets to the 2026 and 2028 financial years (Eskom Holdings SOC Ltd., 2019; Eskom Holdings SOC Ltd., 2023; Parliament of the Republic of South Africa, 2019). Independent estimates that include capitalised interest and environmental retrofits put Medupi's total around R234 billion, implying combined escalation well above R300 billion against initial allocations (News24, 2021). These failures have been attributed to design defects, contractor underperformance, continual scope changes, and inadequate controls over variations and claims, together with contracting and oversight arrangements that left the owner assuming excessive risk. Contractor underperformance combined with weak enforcement of remedies contributed to prolonged disputes and a proliferation of claims (Burkhardt & Cohen, 2019;

Tshidavhu & Khatleli, 2020). By 2024 the utility was still contending with significant claims activity and settlements and penalty payments, diverting management attention and compounding budgetary pressure (Eskom, 2024). Collectively, these findings motivate the study's focus on front-end planning, scope definition, rigorous monitoring, and robust enforcement and dispute-resolution arrangements.

In summary, the sector urgently needs to expand and upgrade infrastructure, yet faces significant risk-management challenges, particularly within contract practice where project expectations meet commercial reality. This study responds to that need by examining how CRM practices relate to outcomes and how they can be improved in context. The next sections state the research problem, purpose, and significance of the study.

South Africa's electricity system remains in recovery. After record outages in 2023, the CSIR reports that loadshedding fell by 82% in the first half of 2025 relative to the first half of 2024 as the energy availability factor edged higher, although Stage 3 interruptions returned briefly in March 2025 (Council for Scientific and Industrial Research, 2025; Eskom Holdings SOC Ltd., 2025b). Eskom's 2024 *Sustainability Report* attributes this turning point to the Generation Recovery Plan, with improvements in the energy availability factor and the unplanned capability loss factor (Eskom Holdings SOC Ltd., 2024). At the same time, Public Finance Management Act (PFMA) 2023/24 audit outcomes show R43.49 billion in irregular expenditure related to supply chain management and persistent material irregularities across high-impact entities (Auditor-General South Africa, 2024). The *National Development Plan 2030* continues to call for secure, reliable supply through accelerated investment and flexible response measures (National Planning Commission, 2012), while Eskom indicates R307.1 billion in capital over five years across the Transmission and Distribution development plans (Eskom Holdings SOC Ltd., 2025a). These conditions heighten the practical need for rigorous CRM in large infrastructure delivery.

1.3 Problem Statement

1.3.1 The Business or Practical Problem

Despite the centrality of infrastructure to South Africa's energy security, current CRM practices are not delivering consistent results. Large projects continue to incur substantial cost overruns, schedule slippages, and disputes that undermine objectives. The practical core of the problem is an implementation gap: processes intended to plan for, and control contractual risks are often applied ineffectively, leading to uncontrolled exposures during execution. In short, there is a mismatch between formal risk-management policies on paper and outcomes in projects.

South African evidence from peer-reviewed studies and oversight reviews shows persistent weaknesses in CRM, including misaligned planning, incomplete risk identification and mitigation, and weak enforcement. Empirical work on Medupi and Kusile identifies contractual claims, variation orders, and poor monitoring and control as major contributors to cost and schedule overruns, while governance and risk-allocation choices entrenched owner exposure (Gregory, 2020; Tshidavhu & Khatleli, 2020). Audit evidence mirrors these patterns: the Auditor-General links elevated levels of irregular and fruitless expenditure to non-compliance with procurement and contract-management legislation and to weak consequence management (Auditor-General of South Africa, 2024). When protections, such as delay damages and robust change control are inadequately drafted or inconsistently implemented, contractors face limited consequences for non-performance, while owners bear financial and scheduling impacts (Flepisi & Mlambo, 2021). Recent research suggests that enhanced consequence management within the material-irregularity framework improves accountability and deterrence and should be coupled with better planning and CRM execution (Gasela, 2022). This practical situation defines the business case for the study: ineffective contract-risk practices are causing measurable performance and fiscal losses in the national energy sector.

1.3.2 The Academic or Theoretical Problem

At a theoretical level, this practical problem signals a context gap. Standard risk frameworks and model contract suites provide general principles for allocation and control, yet they do not fully reflect the institutional realities of South Africa's state-owned energy sector, including public-procurement regulation, political salience, capacity constraints, and stakeholder pressures. Thus, even when global

good practice is formally adopted, intended results may not follow unless adapted to local conditions. The golden thread can be summarised as follows: despite sound risk policies, weaknesses in how contract-related risks are identified, allocated, and managed in the sector have led to repeated delivery failures. Without intervention, these issues risk jeopardising future investments in in the South Africa's new generation, grid expansion, and renewables.

1.3.3 Synthesis of the Problem

Accordingly, the problem addressed in this research is: CRM techniques in South Africa's energy-sector infrastructure projects are inadequate, leading to frequent overruns, conflicts, and inefficiencies. It is essential to understand the reasons for the inadequacies and to identify improvements that are feasible in context, to enhance project outcomes. The issue has a practical dimension – improving success rates – and a theoretical one – adapting risk-management knowledge to a complex public-sector environment. Addressing the research problem requires understanding both (1) the practical weaknesses in CRM execution, and (2) the theoretical gap in adapting risk-management knowledge to complex, politicised public-sector contexts.

1.4. Purpose of the Study

Building on the problem statement, the purpose of this study is to evaluate and enhance CRM practices in the South African energy sector, with the aim of improving project performance. The study will examine how critical elements of CRM affect results and will suggest enhancements aligned with global good practice and local constraints. The research addresses the gap between insufficient current techniques and the effective risk management needed for successful energy-infrastructure delivery.

The study is organised around four objectives that map to CRM pillars and are expected to influence cost, schedule, quality, and stakeholder satisfaction: (1) assess the effectiveness of contract planning and risk allocation at the front end; (2) examine how contract administration and execution practices affect outcomes, with particular attention to change control, documentation, and payment processes; (3) determine the effect of contract monitoring and control mechanisms on performance through oversight of delivery and enforcement of terms; and (4) evaluate the role of dispute-resolution processes in limiting secondary delay and cost growth and

supporting continuity of work. Evidence will be compiled from a purposive portfolio of energy projects to examine how variation in CRM techniques relates to performance. A qualitative strategy was used to generate contextual explanations for observed patterns and to illuminate underlying mechanisms. The contribution is diagnostic and improvement-oriented: it explains what occurs in CRM and advises what should change to enhance outcomes.

1.5 Significance of Study

From a theoretical perspective, this study advances project-risk and contract-management scholarship in public-sector infrastructure by extending established theories to the context of state-owned enterprises (SOEs) in emerging economies. It addresses how conventional risk frameworks require adaptation where political oversight, public accountability, and capacity constraints shape implementation. The research integrates insights from project management theory, agency theory, and transaction-cost economics to explain why risk allocation and enforcement often diverge in practice. It also contributes to contract-governance literature by developing a contextual framework for integrated CRM, highlighting interdependence among planning, administration, monitoring, and dispute-resolution pillars that prior studies treat separately (Gregory, 2020; Hillson, 2016; IRM, 2020).

From a business perspective, the study provides evidence-based recommendations to improve CRM within South Africa's energy sector. Identifying weaknesses in risk allocation, contract administration, and enforcement means that the study offers actionable guidance for project managers, executives, and policymakers. Findings can inform training, standard-condition reform, and adoption of mechanisms, such as early-warning systems and standing adjudication to reduce disputes and improve project continuity. Strengthened CRM will support value for money, timely delivery, and stakeholder confidence, directly contributing to energy-sector reform and broader public-infrastructure performance (Auditor-General South Africa, 2024; Gasela, 2022).

1.6 Scope, setting, and delimitations

The inquiry focuses on large capital and refurbishment projects within the South African electricity sector that are governed by NEC-type contracts or comparable

public-sector arrangements. The unit of analysis is the project-level CRM practice set across the four pillars, rather than the performance of any single contractor or the adjudication of specific claims. The qualitative design privileges depth of understanding and mechanism tracing over statistical generalisation; findings are analytically transferable to settings with similar institutional characteristics (Project Management Institute, 2021).

The study boundary includes contract formation and execution through to close-out, with particular attention to how administrative routines and monitoring signals interact with decision rights and enforcement. Excluded are detailed technical evaluations of plant equipment, cost audits, or legal opinions on specific disputes; these lie beyond the analytic focus on mechanisms and practices (International Organization for Standardization, 2018). Where documentary or interview evidence references particular sites, identifying particulars are masked to preserve confidentiality while enabling analytic transparency. Ethical clearance processes, participant protections, and data-handling protocols are detailed in Chapter 4.

1.7 Key constructs and working definitions

Contract-risk management (CRM). The integrated set of practices spanning front-end planning and allocation of risk, contract administration and execution routines, monitoring and control mechanisms, and dispute handling and settlement, through which contractual intent is translated into delivery control over time (Institute of Risk Management, 2020).

Delivery outcomes. The project's realised performance in schedule adherence, cost containment, quality compliance, and the timely close-out of compensation events, claims, and disputes; outcomes are interpreted in relation to accepted baselines and documented obligations (Project Management Institute, 2021).

Institutional moderators. Contextual conditions that shape how CRM practices operate in public-owner settings, including political commitment to programme delivery, administrative capacity within the client and service providers, and governance culture that influences the credibility of monitoring and the enforcement of obligations (IoDSA, 2016).

1.8 Assumptions and limitations

The study assumes that formal documents, meeting artefacts, and interview accounts, when triangulated, provide a credible basis for reconstructing practice and its effects. Although access is bounded to particular projects and roles, participants span commercial, technical, project management, and governance functions, which supports a multi-perspectival view of CRM routines. As a qualitative study, causal inferences are explanatory and mechanism-focused rather than probabilistic; the objective is to develop a theoretically grounded account that is transferable to comparable state-owned infrastructure contexts (Aven, 2016).

A further limitation is that organisational reforms or macro-policy shifts contemporaneous with the study may influence the salience of some mechanisms. To mitigate this, the analysis identifies boundary conditions and specifies where claims depend on particular moderator configurations, such as the approval cycle length or monitoring capacity (Locatelli et al., 2014).

1.9 Conclusion

This chapter has provided the necessary background to the problem, outlined and delineated the research problem, and set out the aim of the study. In addition to that, the chapter has also outlined the practical, academic, and policy significance of the study, together with the delimitations and foreseeable limitations of the study. The next chapter reviews existing literature to understand the current body of knowledge and apparent knowledge gaps.

Chapter 2 sets out an integrated CRM performance model that links the four contract pillars (planning, administration, monitoring and control, dispute resolution) to delivery outcomes, conditioned by political commitment, administrative capacity and governance culture. On that basis, the study poses four questions: RQ1 on how front-end planning and risk allocation shape downstream performance; RQ2 on how administration routines translate contractual intent into action; RQ3 on how monitoring and control discipline influences cost, time and quality; and RQ4 on how dispute pathways feedback to strengthen or weaken the preceding pillars.

Table 1.1. Delivery-outcome definitions and indicative measures used in this study.

Outcome	Definition	Indicative measures	Illustrative sources
Cost	Deviation from approved budget	Final account variance; CE value as % of contract	PMBOK; sector case studies
Schedule	Deviation from approved programme	Time at completion variance; critical path slips	PMBOK; case studies
Quality	Conformance to specification	Defect rates; rework hours; test failures	Construction management literature
Stakeholder satisfaction	Acceptance by salient stakeholders	Formal acceptance; dispute incidence; complaints	Stakeholder literature

Note. PMBOK = *Project Management Body of Knowledge* (Project Management Institute, 2017).

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

This chapter reviews the literature on CRM in large infrastructure, with specific attention to the South African energy context. The purpose is to establish a coherent theoretical base, to synthesise empirical findings on the link between contract practices and delivery outcomes, and to identify gaps that motivate the present study. The discussion is structured to build a clear line of argument from theory to practice and from general evidence to sector-specific implications.

The first section sets out the theoretical foundations that frame CRM. Principal-Agent Theory explains how incentive alignment and information asymmetry shape behaviour within contractual relationships. Transaction Cost Economics (TCE) accounts for governance safeguards under conditions of uncertainty and asset specificity. Stakeholder theory broadens the lens by recognising the salience of multiple external interests in public projects. Together, these perspectives treat contract mechanisms as instruments of governance rather than administrative routine.

The chapter then defines CRM and examines its four pillars: planning and risk allocation, administration during execution, monitoring and control, and dispute resolution. For each pillar, the literature is reviewed on how practices influence time, cost, quality, and stakeholder satisfaction in public-sector delivery. The review further considers contextual moderators in state-owned enterprise settings, including political influence, organisational capacity, and governance culture, and offers brief comparative insights from other jurisdictions.

Despite extensive guidance on risk governance, empirical synthesis remains thin on how the four CRM pillars translate into delivery outcomes under state-owned conditions shaped by political commitment, administrative capacity and governance culture. Therefore, this chapter builds a moderated CRM–performance model that directly informs the research questions and instrument. The next sections review theory, evidence by pillar, and public-sector moderators, and then present the conceptual model that links the pillars to outcomes under these conditions. The chapter concludes by noting emerging digital tools that support post-award control

and evidence-based decision making. The synthesis provides the conceptual and empirical grounding for the study's framework and research questions that follow.

2.2 Theoretical Foundations for Contract Risk Management

Effective CRM is underpinned by several management theories that explain why contract practices influence project outcomes.

2.1.1 Principal-Agent Theory

Principal-Agent Theory highlights problems arising from misaligned incentives and information asymmetry in contractual relationships. In the context of public projects, the government or SOE (principal) delegates project execution to contractors or managers (agents). If oversight is weak, agents may pursue self-interest at the expense of the principal, leading to cost overruns or quality issues. This moral hazard is evident in the sector, where weak monitoring and conflicted objectives have allowed contractors to shift risks back to the client. Jiang et al. (2022) found that poor oversight enables agents to exploit contracts, reinforcing the need for strong monitoring mechanisms.

2.2.2 Transaction Cost Economics

TCE provides a complementary lens, focusing on how contractual safeguards are needed to mitigate opportunism when projects involve high-asset specificity and uncertainty. Eskom's megaprojects often require bespoke, complex equipment (e.g., supercritical boilers), which heightens the risk of delays by either party once investments are sunk. According to Williamson's (1979) TCE, parties may behave opportunistically after contract signing unless rigorous ex-ante planning and ex-post governance mechanisms are in place. For instance, Long (2022) emphasizes that rigorous upfront contracting and strong contract administration are essential to mitigate hold-up risks in complex construction projects. These theories substantiate why this study focuses on improving contract planning (to align incentives early) and contract administration/monitoring (to enforce compliance later) in Eskom's projects.

2.2.3 Stakeholder theory

In addition to agency and TCE perspectives, Stakeholder Theory broadens the understanding of contract risk in public-sector projects. Unlike private ventures, SOE

projects involve numerous stakeholders, including government bodies, regulators, communities, and the public, all of whom have interests that can impact project risk profiles. Ignoring stakeholder expectations can create external risks, such as community opposition or political intervention or interference. Di Maddaloni and Davis (2018) argue that poor stakeholder management can lead to resistance or reputational damage, indirectly harming project outcomes. Recent research by Prebanić and Vukomanović (2023) found that early stakeholder engagement in infrastructure projects significantly reduces disputes and improves delivery, highlighting that engaging stakeholders is a form of risk mitigation. This justifies the inclusion of stakeholder satisfaction as a performance criterion in our framework, alongside the traditional “iron triangle” of cost, time, and quality.

2.2.4 Integrative Perspective

Grounding this study in Principal-Agent Theory, TCE, and Stakeholder Theory, help to provide a strong theoretical base: CRM methods are not only about operations; they are also closely tied to governance and incentive systems. Strong contract procedures ensure that agents operate in ways aligned with the principal’s aims (Agency Theory), lower transaction costs and opportunism (TCE), and serve the needs of a wider group of stakeholders (Stakeholder Theory). These theoretical insights provide the groundwork for the subsequent examination of CRM approaches.

2.2.5 Relational Contract Theory

Relational Contract Theory conceives long-term contracting as a socio-economic relationship in which the parties rely on shared norms, credible commitments and information exchange to manage uncertainty, rather than attempting to draft a fully complete, self-executing instrument (Macaulay, 1963; Macneil, 1978, 1980). Classic empirical work showed that commercial actors often prioritise co-operation, flexibility and reputation over strict legal enforcement when projects become complex or circumstances change (Macaulay, 1963). Building on this, Macneil (1978, 1980) argued that relational norms, such as role integrity, mutuality and harmonisation of conflict – supplement, rather than replace, formal controls. Contemporary infrastructure and public-private partnership (PPP) evidence confirms that project performance improves when formal contractual safeguards are complemented by trust, transparent communication and visible partner contribution, because these

relational mechanisms mediate the effect of governance on outcomes (Benítez-Ávila, Hartmann, Dewulf, & Henseler, 2018). In the present study this perspective is applied most directly to the contract-administration and dispute-resolution pillars, since it is at these stages that ongoing adjustment, joint problem solving and good-faith information sharing are most needed, and their effectiveness is further conditioned by the governance culture of SOEs (Benítez-Ávila et al., 2018; Macaulay, 1963; Macneil, 1978, 1980).

Table 2.1 summarises how each theoretical lens predicts specific mechanisms on the four CRM pillars and which moderator is most salient. This anchors the causal claims used in the remainder of the chapter.

Table 2.1: Theoretical lenses, pillars and primary moderators

Theory	Pillar mechanism claim	Primary moderator
Principal–Agent	Clear risk allocation and credible monitoring reduce moral hazard and strategic claims.	Political commitment; governance culture
TCE	Higher asset specificity and uncertainty require stronger ex-ante definition and adaptive ex-post clauses.	Administrative capacity
Relational contract	Trust, disclosure and joint problem-solving complement formal controls and limit disputes.	Governance culture
Stakeholder	Early engagement reduces external shocks and contestation; improves acceptance.	Political commitment

2.3 Contract Risk Management: Concepts and Importance

Before expanding into CRM pillars, it is necessary to understand what CRM comprises and why it is so important for project success. CRM is the systematic use of contractual terms and management methods to distribute, mitigate, and control risks throughout the project's lifespan. It is a subset of overall project risk management that focuses on how contracts are drafted and managed to address uncertainties and commitments. Key activities include thorough contract planning (clear scope, roles, and risk allocation), careful contract type and clause selection (e.g., insurance, warranties, penalty clauses), proactive contract administration during execution (change control, performance tracking, payments), continuous compliance monitoring and control, and effective dispute resolution mechanisms. Rather than addressing challenges ad hoc or reactively, best practice recommends a planned and initiative-taking approach to risk management via contracts. For example, the PMI emphasises incorporating risk management into contract management procedures to avoid chaotic issue resolution. Hillson (2016) recommends using a Risk Breakdown Structure in contract management to ensure that all risk sources are recognised and managed early.

The importance of CRM is well documented in literature, especially for large-scale projects. Numerous studies link poor contract management to project failures in terms of cost, schedule, and disputes. Peer-reviewed work reaches similar conclusions to Tshidavhu and Khatleli (2020). Gregory's (2020) review of six South African generation megaprojects, including Medupi and Kusile, links their severe cost and schedule overruns to governance and contracting failures, scope expansion, and weak oversight. Complementing this, a South African industrial engineering case study shows that extensive variation orders driven by scope changes, design errors, and poor integration between work packages have materially contributed to overruns on new-build power stations (Mashamba, Kanakana-Katumba, & Maladzhi, 2023). The authors found that unclear initial contracts and lax management led to frequent changes and claims, which in turn drove up costs and delays. Similarly, Gündüz and Elsherbeny (2020) report that poor contract administration is a significant cause of inefficiencies, leading to delays, rework, and conflicts between parties. Their findings underscore that when contract duties (like change approvals, record-keeping, and enforcement of terms) are not performed properly, projects experience more disruptions and disputes. Conversely, effective CRM correlates with better

outcomes. Zuriantomy (2023) observed in a study of state-owned enterprises that organisations with more systematic contract risk practices achieved better cost control and service delivery even amid challenges like COVID-19. Similarly, Algremazy et al. (2023) discovered that comprehensive risk management methods (including risk allocation, monitoring, etc.) had a positive impact on project performance in Libya's construction industry. These empirical studies reinforce a core premise: improving contract management processes can significantly reduce unforeseen costs, delays, and conflicts, thereby improving the likelihood of project success.

In South Africa's energy sector context, the stakes for CRM are especially high. The sector's projects are often mega-investments with large budgets and public visibility, meaning that failures have far-reaching consequences. Past audits and investigations have pointed out contracting mismanagement as a root cause of the energy sector's woes. For example, the Auditor-General South Africa (AGSA) reported that in FY2023/24 the energy sector incurred over R4.7 billion in irregular expenditure linked to non-compliant contracts and was exposed to billions more in claims and cost overruns. Such findings illustrate that weak contract controls (e.g., lack of competitive procurement, unmanaged change orders) directly translate into financial losses and service delivery shortfalls. They also highlight the gap between having formal policies and implementing them. South Africans have procurement and contract policies "on paper," but their effectiveness is undermined by insufficient enforcement and oversight. Indeed, an OECD report (2024) noted that many jurisdictions (including South Africa) have adopted world-class risk management frameworks in theory yet still suffer execution failures due to misaligned incentives and weak monitoring. All these points underscore why optimising CRM practices is not just a procedural necessity but a strategic necessity for Eskom. Improving how contracts are planned, managed, and enforced is a lever to prevent wasteful expenditure, avoid project stagnation (like load-shedding crises), and ensure infrastructure projects meet their intended goals. With this rationale in mind, the following sections review literature on each of the four CRM pillars: contract planning, contract administration, contract monitoring and control, and dispute resolution.

Figure 2.3 summarises NEC's risk-management sequence. Early warnings trigger risk-reduction meetings and register updates; compensation events follow notice,

assessment and instruction; the programme and payment certificate reflect agreed change. The control logic depends on timely notice and contemporaneous records.

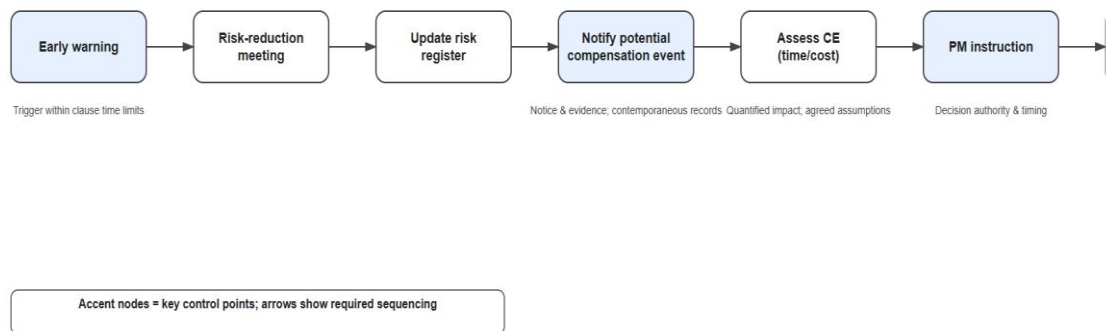


Figure 2.3. NEC early-warning to compensation-event flow and control points

2.4 Contract Planning and Risk Allocation

Contract planning is the first pillar of CRM and the most critical phase to “get right from the start” as it sets the foundation for the entire project. Contract planning encompasses all pre-contract activities required to prepare a sound agreement. This includes clearly defining the project scope and deliverables and conducting risk identification and assessment. The process also includes deciding how risks will be allocated between the parties, and choosing an appropriate contract model (e.g., fixed-price, cost-plus, target contract). Finally, it entails formulating the contract terms and conditions (including performance guarantees, penalty clauses, dispute clauses, etc.). High-quality planning means potential issues are anticipated and addressed before the contract is signed, thereby reducing the likelihood of surprises later. Strong front-end planning pays off. Reviews of South Africa’s generation megaprojects show that weak early scoping and governance made scope growth and contractor claims more likely, which later drove cost and schedule blowouts (Gregory, 2020). Case evidence from an electricity utility finds that once construction began, unclear scope and design issues translated into frequent variation orders that materially increased time and cost (Mashamba, Kanakana-Katumba, & Maladzhi, 2023). Broader construction research echoes this pattern: inadequate planning and change control inhibit cost and time performance, while rework arising from design and coordination problems amplifies overruns (Love, 2019; Olawale & Sun, 2010). Together, these studies indicate that detailed early planning and explicit allocation of risks at contract award reduce downstream variation orders and claims, improving

delivery outcomes (Gregory, 2020; Love, 2019). On the other hand, a study of Kenyan state corporations by Tanui and Moronge (2021) found that rigorous contract planning (including clear deliverables and upfront risk-sharing arrangements) was significantly and positively correlated with project performance across 162 organisations. These findings align with the broader principle that “failing to plan is planning to fail” in project contracts; investments in careful planning pay off through fewer disputes and changes downstream.

A central task in contract planning is risk allocation, that is, deciding which party should carry each identified risk. Following Abrahamson’s fair-allocation principle, risks are best assigned to the party most able to control, mitigate, or insure against them, which supports better pricing and fewer disputes (Abrahamson, 1984; Halim Hong & Quek, 2022). In theory, fair risk allocation leads to efficiency and minimises contingency costs: each risk is managed by the party who can do so at least cost or with greatest control. Standard contract guidelines and many international contract forms (like International Federation of Consulting Engineers [FIDIC] or New Engineering Contract [NEC]) embrace this logic. For instance, if the contractor has better control over site safety, then safety risks should be contractor’s responsibility; if the client has control over scope definition, then the risk of scope changes might remain with the client.

However, literature also challenges itself in applying this ideal in public-sector contexts. Political and regulatory constraints can force sub-optimal risk allocations. Procurement laws may require clients to accept certain liabilities, or political pressures might lead to selecting contractors who insist on the client carrying more risk than is ideal. In South African public contracts, there have been cases where risks were not placed with the party best able to manage them due to such external factors. Eskom itself, being an SOE, faces pressure to use standardised procurement rules that sometimes limit flexibility in risk allocation. The OECD (2024) observed that SOEs often have less freedom in contract negotiation, which can result in the client retaining risks it cannot manage. This misalignment is expected to correlate with more frequent compensation events and claims, as the party saddled with the risk may lack the capability, capacity or authority to mitigate it. One manifestation in the energy sector was the acceptance of rigid turnkey contracts for complex power plant builds; when problems arose, the contracts had been structured

such that Eskom bore many costs for delays it could not control (due to design issues by contractors, etc.).

A crucial decision during planning is the choice of contract type or form, which itself is a risk management strategy. Organisations must decide whether to use a standard form contract (like NEC, FIDIC, Joint Building Contracts Committee [JBCC], etc.) or a bespoke contract crafted for the specific project. Each approach has implications for risk management. Standard form contracts come with the benefit of being tried-and-tested frameworks, often developed by industry experts to cover common risks and promote fairness and working in ‘good faith.’ In recent years, South African entities have increasingly considered the NEC suite for major projects. NEC3 and NEC4 contracts are known for their collaborative approach and built-in risk management mechanisms. NEC contracts embed explicit, initiative-taking risk-management tools. The suit requires early warnings, a live risk register and risk-reduction meetings, and it couples these with a structured compensation-event process that links change control to risk allocation. This architecture supports clearer and more equitable apportionment of responsibilities among parties and is associated with fewer disputes when administered competently (Eggleston, 2015; Patterson, 2009). They use understandable language and processes, such as early warning notices, risk registers, and compensation events to encourage timely identification and resolution of risks. The NEC4 Engineering and Construction Contract, for example, requires the creation of a joint risk register and obliges both contractor and project manager to proactively flag any issue that could cause delay or extra cost (early warning). This develops a culture of transparency and problem-solving, ideally preventing disputes from escalating. Additionally, NEC’s emphasis on mutual trust and cooperation aligns with best practices in risk allocation and management, helping avoid the adversarial stances that often plague construction projects.

Figure 2.2 translates the planning literature into a simple choice heuristic. Where scope is stable and asset specificity is low, design–bid–build or fixed-price forms are feasible; rising uncertainty and specificity shift the recommendation toward target cost or collaborative forms, conditional on administrative capacity and governance culture.

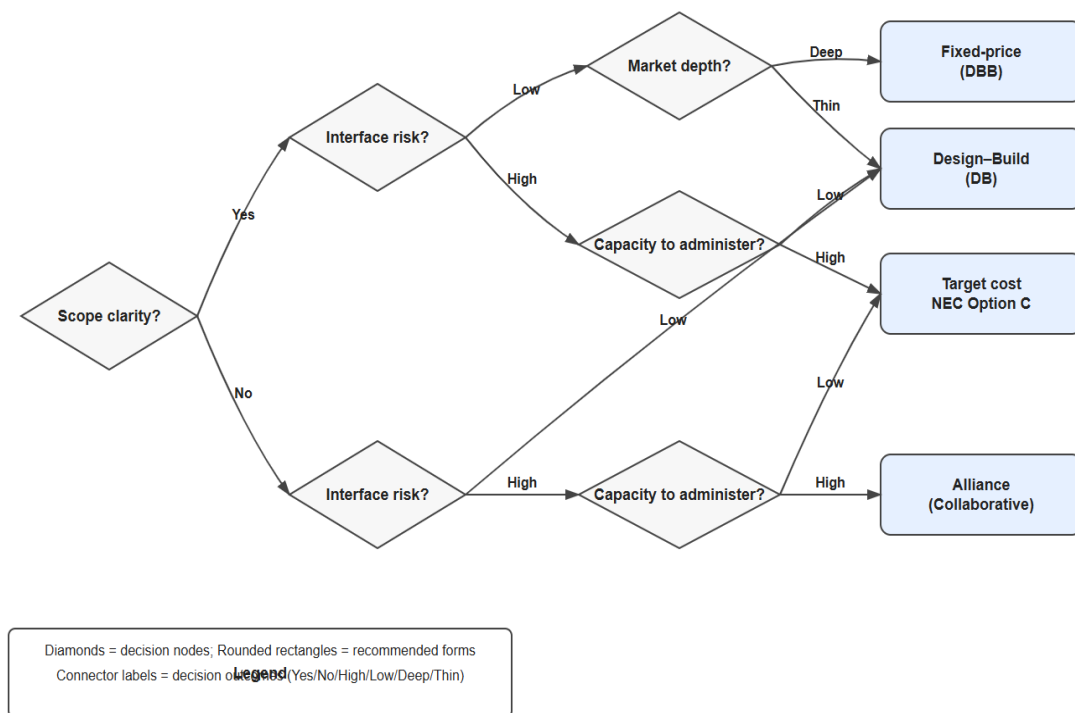


Figure 2.2: Contract form selection decision tree by uncertainty and asset specificity.

Source: Own

Adopting a standard form, such as NEC is not a cure-all; benefits erode when parties heavily amend the wording. Peer-reviewed evidence shows that modifications to standard-form clauses increase textual difficulty and reduce clarity, thereby raising interpretation risk and dispute exposure (Rameezdeen & Rodrigo, 2014). In practice, South African users often add extensive Z-clauses that change risk allocation and process discipline; guidance from professional bodies and local commentators describes how heavy amendment can re-introduce adversarial behaviours and ambiguity. Those practitioner observations are consistent with the academic finding that readability and certainty decline as deviation grows (ECS Associates, 2023; Rameezdeen & Rodrigo, 2014; RICS, 2025).

In summary, contract planning and risk allocation set the trajectory for project risk management. The literature advocates comprehensive upfront planning: clearly scope the work, allocate risks to the party best able to oversee them, and select a contract approach that supports collaborative risk management (e.g., using proven standard contracts like NEC4 where suitable). Failures in this phase – such as unclear scope, inappropriate risk allocation, or using a poorly drafted bespoke contract – often manifest later as variation orders, claims, and disputes that could have been avoided. Thus, bolstering the planning phase is a key recommendation

for improving project outcomes: it means investing time in due diligence, risk workshops, and aligning the contract structure with project realities and capacities of the parties involved.

Front-end effects are strongest where political commitment is stable and approvals are timely; unstable mandates unravel scope control and shift risk back to the client.

2.5 Contract Administration in Project Execution

Once a contract is in place, attention shifts to contract administration, the second pillar of CRM. Contract administration – sometimes simply called contract management during execution – involves managing the relationship and obligations outlined in the contract to ensure both parties fulfil their commitments. This includes tasks such as: handling change orders or variations, maintaining documentation and correspondence, managing schedules and deliverables per contract terms, overseeing contractor performance, ensuring timely payments, and enforcing contract clauses (like penalties for delays or bonuses for early completion). Effective administration is essential for translating the contract's plans into actual performance on the ground. The literature often links strong contract administration to better cost and schedule control. For example, the PMI emphasises that efficient change control processes and prompt payment approvals can prevent small issues from escalating into major delays. Further academic studies link disciplined administration with better time and cost outcomes because it limits rework, reduces surprise claims, and helps issues get resolved early (Assaf & Al-Hejji, 2006; Love, 2004; Love & Li, 2000). Other factors to consider are effective management and payment approval as they are especially important. Empirical work shows that late or uncertain payments weaken contractors' cash flow, disrupt labour and material provisioning, and slow site progress, thereby increasing the risk of delays and disputes (Bageis et al., 2024; Bolton et al., 2022). Conversely, timely certification and payment support steady production and help maintain trust (Assaf & Al-Hejji, 2006).

Evidence also links weak administration to disputes and claims. Classic and recent reviews of construction disputes identify poor contract administration, inadequate record-keeping, and failures to follow notice and variation procedures as frequent roots of conflict (Cheung & Yiu, 2006; Fenn et al., 1997; Gündüz & Elsherbeny, 2020). Keeping contemporaneous records and following the contract's processes

lower the likelihood of dispute escalation and improve outcomes when disputes do arise (Kalogeraki et al., 2024). South African inquiries reinforce these points in the public-sector context. The Zondo Commission's Eskom volumes and Parliament's 2018 Eskom Inquiry detail governance failures, procurement irregularities, and oversight breakdowns that undermined contract discipline and performance at Eskom during the state-capture period (Judicial Commission of Inquiry, 2022; Parliament of South Africa, 2018). Eskom's own reports note follow-up actions to implement the Commission's recommendations. These findings highlight how weak administration and oversight can translate into poor delivery, increased costs, and prolonged disputes in complex projects (Eskom, 2024).

Academically, the relational contract theory complements the formal view of contract administration. Ning and Ling (2021) and other scholars suggest that beyond just enforcing the black-and-white terms, successful long-term projects often rely on relational governance: trust-building, open communication, and collaboration between client and contractor. Relational contract theory views contracting as an ongoing socio-economic relationship rather than a single exchange. Its core stance is that long-term, complex arrangements perform best when rooted in shared norms, credible trust, and adaptive governance that can accommodate uncertainty and change, rather than relying solely on a classical, arm's-length model. In the relational contract theory, MacNeil's (1978, 1980) work is foundational; he identified a cluster of relational norms that guide behaviour within long-term contractual relationships. In a long-term project, such as the construction of a power station, unforeseen events will occur that no contract can fully specify or predict; therefore, a cooperative relationship can help parties adjust and solve problems without resorting to adversarial tactics (Macaulay, 1963; MacNeil, 1978, 1980). In this sector, effective administration may include actively fostering a partnership attitude through regular meetings to jointly review progress, sharing risk information transparently, and resolving minor issues mutually. It is crucial to keep in mind that this should not replace the contract's formal mechanisms but complement them. Literature indicates that such a dual approach (formal controls + relational norms) tends to reduce conflict. A study by Ning and Ling (2021) found that projects in which the client–contractor relationship was managed with trust and communication experienced fewer disputes, even when issues arose. In the South African energy sector context, where projects are complex and politically sensitive, blending formal enforcement

with relational strategies could be key as the contract will provide the framework of accountability, but relationships provide flexibility to adapt.

Several frameworks and best practices exist for contract administration. One common tool is maintaining a contract risk register throughout execution and not only in the planning phase. This means continuously and formally recording any emerging risks or issues related to the contract and tracking their mitigation. Another is performing regular contract performance reviews or audits. This implies monitoring if all parties are adhering to contractual terms and conditions, and if not, correcting them early (Kalogeraki et al., 2024). In simpler terms, scholars have found that most disputes could be avoided by early identification of contract deviations and prompt action by the contract administrator (Kalogeraki et al., 2024; Meng, 2014). In a case where a contractor is falling behind schedule, an early warning and a recovery plan can be instituted (if the contract admin is attentive), instead of waiting until a major delay triggers a claim.

Organisations like the World Bank have published procurement and contract management guidelines urging active management post-award, rather than the “forget and hope” approach. Active, structured post-award contract management is essential to ensure suppliers meet obligations and intended outcomes are realised, rather than relying on a passive approach (World Bank, 2024a; World Bank, 2024b). They recommend training contract managers in legal compliance and project controls.

Administrative gains depend on capacity: well-resourced teams with clear delegations convert rules into timely routines; thin capacity converts compliance into delay and claim exposure.

2.6 Contract Monitoring and Control

The third pillar, contract monitoring and control, deals with how the project owner tracks performance under the contract and intervenes when things go off plan. While contract administration ensures processes are followed, monitoring and control provide oversight. Contract monitoring and control is how the client tracks performance against contract requirements and acts when deviations occur. According to the PMI, monitoring is the measurement of actual progress and

compliance; control is the set of actions used to correct problems once identified. This feedback loop is central to risk management because it enables early detection and timely response to issues before they escalate (PMI, 2021).

Recent empirical work corroborates these effects. A 2024 study of public-sector construction projects found that stronger contract-administration and monitoring routines were positively associated with quality attainment, reinforcing the argument that systematic post-award control improves delivery outcomes (Mwaiseje, Mchopa, Panga, & Nkuhi, 2024), alongside the PMBOK guidance (Project Management Institute, 2021). Research consistently finds that rigorous monitoring correlates with better project performance. Mwaiseje et al. (2024), in a study of infrastructure projects in Tanzania, showed that strong monitoring processes—such as frequent site inspections and progress reporting—had a significant positive correlation with project quality outcomes. Project managers that kept a close eye on contractor work were able to pick up defects or schedule slips early, thereby avoiding costly rework or deadline crises.

In the energy sector, there is evidence that weak monitoring has been a significant problem. Eskom reported R4.7 billion in irregular expenditure in 2023/24 (Eskom, 2024). In parallel, the Auditor-General told Parliament that Eskom’s persistent irregular expenditure stems from weak oversight and procurement non-compliance, reflecting inadequate systems and controls (Auditor-General South Africa, 2025). In other words, issues such as contractors being paid for claims without proper validation, or contract deviations not being approved at the right level, slipped through due to lack of monitoring. Eskom’s disclosures illustrate how weak post-award control manifests in unresolved claims. As of 31 March 2024, the utility reported contingent liabilities from open compensation events of about R6.683 billion, signalling a sizeable pipeline of claims still in adjudication. The accumulation of unresolved items implies that problems were identified but not advanced to timely closure. With stronger monitoring, each claim would be channelled promptly through the contract’s variation, adjudication, or dispute mechanisms rather than building up as backlog (Eskom, 2024).

Standard bodies of knowledge, notably PMI’s PMBOK, set out practical mechanisms for post-award monitoring and control, including periodic performance reporting that

compares planned and actuals, earned value metrics for cost and schedule control, and quality assurance tools, such as audits and inspections (Project Management Institute, 2017; Project Management Institute, 2019; Project Management Institute, 2021). Both NEC and FIDIC contracts also specify key performance indicators (KPIs) for contractors (e.g., safety metrics, timely delivery of milestones), which need to be monitored. When a scope variance or risk is identified – for example, when a milestone is missed or a deliverable fails to meet the required specifications or quality standards – control actions may involve issuing a notification to the contractor, requesting a recovery plan, invoking penalty clauses, or even, in serious cases, terminating the contract. The NEC4 contract, as mentioned earlier, has a formal early warning process: either party can raise an early warning about any issue that could affect time, cost, or quality, prompting a risk reduction meeting to find a solution. This is a prime example of a monitoring tool built into a contract. Literature by Long (2022) notes that such early-warning systems enable issues to be flagged and addressed collaboratively before they escalate into major claims. The effectiveness of these mechanisms, however, depends on the organisational culture and capacity. If project managers do not actually use the early warning notifications, or if they lack authority to enforce fixes, the existence of the tool alone does not help.

Challenges in public-sector contract monitoring are well-documented. Brunette and Klaaren (2020) examined South African state entities and found that political interference and frequent leadership changes can undermine formal monitoring systems. For instance, if a politically connected contractor is underperforming, managers may be hesitant to enforce the contract, fearing repercussions—this leads to a “blind eye” toward non-compliance. Myeza et al. (2021) similarly noted that in some SOEs, even when audit findings reveal contract breaches, consequences are not applied, sending a signal of impunity. Additionally, capacity constraints are a practical issue: Eskom’s contract management personnel have at times been stretched thin or lacked specialised training, limiting their ability to effectively monitor dozens of large contracts simultaneously. The ISO 31000:2018 risk management standard (2018) emphasises that risk monitoring must be ingrained in the organisational culture; this means that everyone from top leadership to project teams should value and act on risk information. If the culture instead tolerates deviations or delays (due to the normalisation of deviance over years of crisis in the sector), then even formal reports will not trigger corrective action.

Overall, the literature conveys that continuous contract monitoring and control is indispensable for keeping projects on track. It provides the “radar” for emerging problems and the “steering mechanism” to correct course. Empirical support comes from correlation studies, for example, Tanui and Moronge (2021) who included monitoring as a key factor linked to organisational performance in Kenyan SOEs and also case analyses of failing projects, which often cite a lack of oversight. For the South African energy sector, strengthening this pillar might involve implementing improved and rigorous reporting systems with digital tools for real-time data, empowering project managers to act on early signs of risk, and insulating the monitoring process from undue interference. A proactive monitoring system that tracks schedule adherence, cost deviations, quality metrics, and contractor compliance regularly can detect issues like contractor underperformance or cost creep in time to act. By doing so, project managers can avoid the scenario of discovering massive overruns when it is too late. In summary, the message from literature is clear: “you cannot manage what you do not monitor.” Continuous monitoring, paired with a willingness to enforce contract provisions, is a critical mechanism against project failure.

Monitoring improves baseline adherence only where governance culture is proportionate and learning-oriented; punitive audit-first norms suppress judgement and slow decisions.

2.7 Dispute Resolution Mechanisms in Contracts

Even where a contract is well planned, diligently administered, and closely monitored, disputes can still occur. Scholars explain this persistence by noting that long-term agreements are inherently incomplete and operate in complex settings, so unforeseen contingencies and divergent interpretations remain inevitable despite good practice (Kalogeraki et al., 2024; Williamson, 1979). The fourth pillar of CRM, dispute resolution, focuses on how conflicts or claims are managed so that they do not derail the project.

Disputes in construction and infrastructure projects typically stem from ambiguous or contested interpretations of contract clauses, scope change and the resulting time-and-money claims, delay and disruption, and performance or quality shortfalls

(Fenn, Lowe, & Speck, 1997; Kumaraswamy, 1997; Semple, Hartman, & Jergeas, 1994). The way these disputes are managed ultimately affects project outcomes: timely, fair processes such as adjudication, mediation, or standing dispute committees tend to contain secondary delay and budget increases, whereas protracted adversarial pathways are associated with significant schedule slippage and cost escalation (Harmon, 2009; National Research Council, 2007).

Traditionally, the most adversarial and damaging approach to disputes is litigation (court proceedings), which is costly, slow, and often destructive to working relationships. Recognising this, the industry has shifted toward Alternative Dispute Resolution (ADR) methods and built-in contractual processes to avoid or resolve disputes more amicably. Common mechanisms include negotiation (between project managers), mediation (a neutral facilitator helps parties reach a settlement), adjudication or dispute committees (an expert or panel gives a decision on disputes as they arise, which can be binding or interim-binding), and arbitration (a private tribunal issues a binding award). Standing dispute boards that meet throughout project delivery allow issues to be heard and decided quickly, which reduces escalation to arbitration or litigation and helps work proceed with minimal disruption. Empirical and best-practice evidence shows that “real-time” mechanisms, such as dispute review boards resolve matters far faster than traditional routes and keep projects moving (Harmon, 2009; National Research Council, 2007).

The NEC4 suite of contracts exemplifies a proactive approach to dispute avoidance and resolution. NEC4 places stronger emphasis on preventing disputes before they arise. It introduces a conflict-avoidance mechanism and reinforces the principle of early warning, encouraging parties to raise and address potential issues as soon as they surface. In doing so, problems are treated as matters to be jointly resolved rather than as formal claims to be contested (Eggleson, 2019). If a dispute does get formalised, NEC contracts require adjudication by an impartial adjudicator as a first step, whose decision is binding unless and until overturned by arbitration or litigation later. This means the project can continue (based on the adjudicator’s decision) without waiting for a final legal resolution. Long (2022) notes that such early-warning and adjudication procedures in NEC have been effective in resolving potential problems before they balloon into full disputes. This is particularly relevant to Eskom, since Eskom has begun to use NEC contracts in some projects; leveraging NEC’s

dispute mechanisms (like adjudicators and early warnings) could help avoid the multi-year legal sagas that have plagued its past projects.

According to Mkhize (2021), Eskom's dispute resolution process has historically been less organised. The study found that many of Eskom's earlier contracts contained unclear or weak dispute provisions, causing the parties to go directly to litigation or arbitration without intermediate processes. The end effect was prolonged court fights, work stoppages, and damaged relationships. Eskom's 2024 annual financial statements show that the utility was still managing a large volume of unresolved contract claims and legal matters. The company disclosed contingent liabilities from open compensation events amounting to R6.68 billion, including some relating to projects that had already been completed. Such outstanding claims constrain liquidity because funds must be reserved for potential settlements (Eskom, 2024). This occurs in conjunction with mounting legal expenses and the diversion of management focus. It additionally contributes to scope creep over time, as projects stay essentially "open" or not settled due to unresolved claims. As a result, there is an impact on final costs as well as operational readiness across the organisation. All of this demonstrates why more effective conflict resolution is key.

Early, project-embedded pathways contain secondary delay when political commitment supports consequence management and administrators can action decisions.

2.8 Contract Risk Management in Large Infrastructure Projects: Public-Sector and SOE Perspectives

2.8.1 Political Interference and Contextual Factors Influencing CRM Effectiveness

Effective CRM in public infrastructure projects depends strongly on the institutional environment in which contracts are designed and applied. In SOE and wider public-sector contexts, three moderators repeatedly shape outcomes: political interference, institutional capacity, and governance culture. Evidence from Sub-Saharan Africa, Latin America, Asia, and high-income countries shows that identical contract forms can perform very differently when they meet real institutions and political incentives (Bohlken, 2021; Damoah & Kumi, 2018).

Public work attracts senior political attention because it involves large budgets and visible assets. That visibility creates scope for patronage, electoral timing, and other political goals that may override technical needs. Rigorous evidence from India shows that elected politicians influence the location and allocation of public works, often favouring politically aligned areas rather than areas of greatest need, which distorts procurement choices and increases delivery risk (Bohlken, 2021; Lehne, Shapiro, & Vanden Eynde, 2018). The Indian road-building case illustrates how political ties can affect bidder composition, award decisions, and subsequent performance, with measurable impacts on costs and completion (Lehne et al., 2018).

Interference does not stop at contract award. After signing, project officials may be pressed to approve scope changes, accept weak performance, or pay claims with limited evidence. Sector analyses show that where political pressure overwhelms oversight, unit costs rise and quality falls because sanctions lack credibility (Kenny, 2007). In Nigeria, qualitative and case-based evidence on large transport schemes, including the Lagos–Ibadan corridor, links influence-peddling and patronage to stalled works and abandonment, with predictable effects on time and cost (Oluseye & Oyewobi, 2024).

The broader Latin American experience with infrastructure concessions highlights the same mechanism. Extensive renegotiation soon after award is common, and is often associated with political–business collusion rather than genuine risk shocks (Campos, Engel, Fischer, & Galetovic, 2021). In projects touched by the Odebrecht scandal, average cost increases were an order of magnitude larger than in comparable projects without bribe payments, indicating that formal risk transfer was undone once political incentives favoured revision (Campos et al., 2021).

2.8.2 Institutional Capacity and Governance Culture

The capability of the purchasing institution is as important as the contract itself. Where teams lack trained contract managers, reliable data, and authority to enforce terms, basic CRM tasks such as risk identification, planning, and monitoring are conducted superficially or not at all. Empirical studies across East Africa and Ghana associate limited professional training and weak systems with delays, cost overruns, and frequent variations (Damoah & Kumi, 2018; Oluka & Basheka, 2014). Country diagnostics repeatedly make the same point: without investment in skills and

information systems, procurement reforms remain on paper and do not translate into better results (World Bank, 2004).

Recent work in Lesotho's construction sector is consistent with that pattern. Although procurement rules have been updated, a large share of practitioners report weak enforcement and limited autonomy within implementing bodies, which undermines accountability and day-to-day control of contract risk (Mokole et al., 2025). High failure rates were linked to poor contract administration, slow payment, and inadequate supervision capacity.

In short, skilled staff, clear processes, and usable data allow buyers to plan realistically, monitor performance, and respond quickly to emerging risks. Where those elements are missing, even well-designed clauses on paper may not be understood, applied, or enforced (Ameyaw, Mensah, & Osei-Tutu, 2012; World Bank, 2004).

Informal norms shape how formal rules work in practice. Informal institutions sometimes complement formal rules, but they can also compete with or substitute for them, undermining compliance (Helmke & Levitsky, 2004). Cross-country procurement research finds that where transparency and equal treatment are the norm, red flags such as single-bid awards and opaque variations are rarer. Where favouritisms are accepted, the same written rules coexist with higher corruption risk and weaker performance (Fazekas & Tóth, 2016). Macroeconomic studies further show that corruption depresses investment and service quality, pointing to wider costs of weak governance culture (Mauro, 1995).

South African policy scholarship similarly documents periods in which politicised organisational cultures in SOEs diluted contract discipline and weakened post-award management. Analyses of public procurement reform argue for professionalising commercial functions and shielding post-award oversight from undue influence, precisely because culture can either amplify or neutralise formal CRM tools (Klaaren, Belvedere, Brunette, & Gray, 2023).

2.8.3 *Global comparisons in CRM practices*

CRM in large infrastructure programmes varies markedly across countries. Differences in political incentives, market structure, administrative capability, and

legal certainty shape how contracts are designed and enforced, which in turn drives divergent outcomes. The discussion below retains the established structure, presents comparable country clusters, and applies a consistent analytical lens to clarify where and why CRM succeeds or fails.

2.9 Emerging markets: Brazil, India, and Kenya

In many emerging economies, rapid investment has coincided with evolving governance systems. This combination raises exposure to renegotiation, opportunistic claims, and delivery shortfalls. Brazil provides a widely discussed illustration. During the Growth Acceleration Programme, substantial capital flowed into transport, energy, and water projects. Evidence from high-profile corruption cases indicates that large contractors sometimes underbid initially, then secured favourable mid-course contract changes. A multi-country analysis of the Odebrecht network reports that projects involving bribe payments experienced renegotiations averaging about 70% of initial investment, compared with single-digit increases for comparable projects without recorded bribes – a pattern consistent with political–business collusion that overrides formal risk allocation and undermines fixed-price discipline (Campos, Engel, Fischer, & Galetovic, 2021). Region-wide concession data reinforces the point. Across Latin America, a high share of transport and water concessions were renegotiated within a few years of award, often to the private party's advantage, signalling weaknesses in commitment and enforcement that CRM provisions alone could not neutralise (Guasch, Laffont, & Straub, 2008).

India presents a different mix of pressures. Competitive electoral politics encourage spatially broad project allocations, which can dilute technical prioritisation. Quantitative work shows that political connections influence road awards and subsequent performance, with measurable impacts on costs and completion (Lehne, Shapiro, & Vanden Eynde, 2018). Parallel research documents on how elected legislators secure disproportionate resources for aligned constituencies, shifting project portfolios away from need and towards electoral calculus (Bohlken, 2021). Together, these studies suggest that while model concession agreements and formal oversight bodies have strengthened risk allocation on paper, land acquisition politics and shifting policy priorities introduce external risks that formal clauses cannot fully contain. Therefore, the contradiction is structural: India's legal and regulatory

frameworks have matured, yet political incentives and administrative complexity continue to generate renegotiation and delay risks that erode CRM effectiveness.

In East Africa, Kenya illustrates capacity–politics interactions that complicate post-award risk control. Long-standing analyses of the procurement structure highlight the importance of credible enforcement and professional capability for translating rule changes into improved contract outcomes (Akech, 2005). More recent diagnostics continue to highlight implementation constraints, including uneven monitoring, slow payment, and the difficulty of enforcing terms where local political pressures favour continuity over sanctions. These institutional frictions are compounded when large, externally financed projects import contractual terms that domestic agencies struggle to administer consistently. The consequence is a risk profile marked by delayed delivery, scope drift, and recurrent claims, even where the contract form is standardised and the tender is formally competitive (Akech, 2005).

2.10 High-income contexts: United Kingdom and Australia

High-income systems provide a contrasting environment. Institutions are stable, audit scrutiny is strong, and procurement cadres are professionalised. Even so, the United Kingdom's recent history shows that strong frameworks do not eliminate CRM risk, particularly where complexity is underestimated. Good-practice guidance from the National Audit Office (NAO) emphasises strategic planning, whole-life contract management, clear accountability for benefits delivery, and resourcing the transition from award to operations (Walker et al., 2015). The central government has also invested in commercial capability programmes and professional standards to build a shared skill base for contract managers across departments, with defined competencies at foundation, practitioner, and expert levels (Government Commercial Function, 2019).

Nonetheless, high-profile cases show how gaps in modelling, assurance, and risk allocation can still trigger failure and costly resets. The cancellation of the InterCity West Coast rail franchise competition in 2012 followed errors in risk modelling and governance, leading to significant additional public cost and a programme-wide rethink of franchising controls (National Audit Office, 2012; UK Parliament Public Accounts Committee, 2013). The outsourcing of probation services under Transforming Rehabilitation was terminated early after performance and risk-sharing

assumptions failed in practice, again highlighting the importance of realistic incentives, reliable data, and ongoing assurance in complex, relational contracts (National Audit Office, 2019). The lesson is not that frameworks are ineffective, but that strategy, modelling quality, and senior oversight remain decisive determinants of CRM success even where corruption risk is low.

Australia's experience with alliance contracting illustrates an alternative approach for high-uncertainty settings. Alliances create a single integrated team and share risks and rewards, with open-book accounting and explicit behavioural norms to support joint problem-solving. Empirical assessments report that, when well governed, alliances can deliver favourable value for money and high stakeholder satisfaction on complex projects such as tunnels, desalination plants, and rail links (Hackman et al., 2021; Walker et al., 2015). Outcomes appear sensitive to leadership quality, information transparency, and dispute-avoidance routines. Where these are strong, alliancing can outperform rigid risk transfer by reducing claims and keeping delivery teams focused on shared outcomes. Where governance is weak or fiscal risks are not carefully managed, alliances can drift or become expensive. Recent practice, therefore, tends toward selective use, applying alliancing to projects with high uncertainty and interdependence, while retaining more transactional models for standard civil works.

2.11 Comparative insights

A cross-national view reveals a spectrum rather than a hierarchy. At one end are environments where enforcement credibility is low and political influence is pervasive. In such settings, extensive ex-ante risk transfer on paper often unravels ex-post through renegotiation. At the other end are systems with strong audit and professional capacity that still face modelling and incentive design challenges on complex services and assets. Two consistent themes emerge.

First, credible commitment and administrative capacity condition the effectiveness of any contract form. Where governments can commit and administrators can monitor and act, a clear allocation backed by early-warning mechanisms reduces opportunistic behaviour and supports timely intervention. Where commitment and capacity are weak, collaborative instruments with transparent escalation procedures may perform better than strict transfer that will not be honoured when shocks occur.

Second, delivery models should match problem structure. Fixed-price or design-build models can control unit costs for well-specified, low-uncertainty works. Conversely, alliance or other collaborative models suit interdependent assets with significant design and interface risk, but only where project governance, audit, and leadership are up to the task.

For public owners, such as state-owned enterprises, the practical implication is to diagnose the institutional setting first and then choose the contract architecture, assurance regime, and dispute-avoidance tools accordingly. Doing so aligns CRM design with the political economy and administrative realities that determine whether contract risk is managed in practice, not only in principle.

2.12 Emerging trends and digital tools in contract risk management

CRM is changing as digital technology matures. Large infrastructure contracts involve many documents, long timelines, and numerous performance conditions. Manual oversight struggles to keep up at this scale. New tools promise clearer records, faster feedback, and decisions based on evidence rather than guesswork. This section keeps the structure, uses clear academic language, and adds peer-reviewed sources to support each claim.

2.12.1 Digital contract management systems: Contract analytics and artificial intelligence

Public bodies are adopting digital platforms to store contracts, track variations, and automate routine checks. A central, searchable repository makes it easier to know what has been agreed, what has changed, and whether suppliers are meeting obligations. Typical features include configurable workflows, audit trails, deadline reminders, and alerts for exceptions. These functions help teams act earlier when risks appear, for example, when insurance lapses, when a milestone falls behind plan, or when claimed work exceeds verified progress.

Evidence suggests that digital records and dashboards can improve transparency and reduce opportunities for error and fraud when they are used across the whole procurement cycle (Neupane, Soar, & Vaidya, 2014). Randomised and quasi-experimental studies of e-procurement in India and Indonesia show that

moving transactions online can increase competition and lower prices, which are strong intermediate indicators of lower corruption risk and better value for money (Lewis-Faupel, Neggers, Olken, & Pande, 2016). In practice, however, adoption has been uneven. Many governments implemented e-tendering first and only later extended digital tools to post-award management. This left a gap in oversight at the delivery stage, where cost and schedule risks accumulate. Recent public administration work reports that this gap is now closing as post-award modules for supplier performance reporting, digital approvals, and change control become more common (Khorana, Nistotskaya, & Yanguas, 2024).

Real-time progress information has also improved. Site engineers can capture photos, quantities, and test results on mobile devices, which flow into project dashboards at programme offices. These dashboards compare planned and actual performance in near real time, making exceptions visible. Research in construction management shows that visual, shared performance displays help teams identify variance early and coordinate responses, especially when combined with clear routines for investigation and corrective action (Tezel, Koskela, & Aziz, 2018). A practical example is the classic early-warning pattern where a contractor's payment claims grow faster than verified physical progress. A digital dashboard can flag this divergence immediately, prompting a site check and, if needed, a temporary hold on certification to limit over-payment risk.

Artificial intelligence (AI) and machine learning are being applied to long and complex contract portfolios. AI tools can scan large volumes of clauses to detect non-standard wording, missing protections, or inconsistencies that increase risk exposure. In procurement settings, this helps commercial teams enforce the use of approved terms and identify agreements that need legal review. Much like a spelling checker, the algorithm does not replace human judgement; it highlights where attention is needed.

Growing scholarly literature maps these applications (Guida, Caravelli, & Iandoli, 2023). Recent reviews find active use cases in fraud detection, supplier risk profiling, anomaly spotting, and automated compliance checks against policy rules (Guida, Caniato, Moretto, & Ronchi, 2023; Nai, Sulis, & Meo, 2022; Wang, Zipperle, Becherer, Gottwalt, & Zhang, 2020). Lessons from the broader public-sector AI field

are also relevant. Studies caution that data quality, transparency of models, and organisational readiness are critical to achieve benefits while avoiding bias or over-confidence in algorithmic outputs (Wirtz, Weyerer, & Geyer, 2019). In construction and infrastructure, predictive analytics can learn from past projects to estimate which new contracts are likely to face cost or time overruns, based on factors such as complexity, contractor history, and change frequency (Bilal, Oyedele, Qadir, Munir, & Ajayi, 2016). Used well, these forecasts support a risk-based oversight approach: managers spend more time on the small set of contracts with the highest predicted exposure and document the rationale for that choice.

Adoption in the public sector lags the private sector for understandable reasons. Budget constraints, legacy systems, and strict data governance rules make integration hard. There is also a skills gap. Teams need training to interpret model outputs, to calibrate alert thresholds, and to decide when to escalate for legal advice. The underlying message is straightforward. AI can reduce search and screening costs in large contract sets, but it works best where institutions invest in data standards, documentation discipline, and staff capability.

2.12.2 Blockchain and smart contracts

Blockchain is proposed to create tamper-resistant records of procurement and delivery events. In principle, a distributed ledger can log every step, from tender submission to payment, and each change in scope or schedule, which makes manipulation harder. Smart contracts are small programs that execute agreed rules and can automate limited parts of enforcement. For example, a payment tranche could be released only after an independent sensor or certified test confirms that a concrete pour meets strength specifications (Ahmadisheykhsarmast & Sonmez, 2020).

Current peer-reviewed evidence is cautious. Reviews in the built environment report promising prototypes and pilots rather than large-scale roll-outs, mainly because systems are complex, legal nuance is difficult to encode, and multiple organisations must adopt the same infrastructure for it to work (Hunhevicz & Hall, 2020; Li, Greenwood, & Kassem, 2019). Broader information-systems research reaches a similar view. Blockchain can strengthen auditability and traceability where records are fragmented or vulnerable to tampering, but interoperability, governance, and

legal recognition remain open issues that require careful design and standards (Casino, Dasaklis, & Patsakis, 2019). For public owners, a practical middle path is emerging. Rather than converting entire contracts into executable code, agencies can target high-value pain points, such as milestone verification, materials provenance, or the release and return of performance securities. This hybrid approach keeps legal interpretation with people, while using the ledger to secure evidence and automate simple triggers (Kamel, Elshaer, & Marzouk, 2023; Wilson, Rodrigues, & de Albuquerque, 2024).

2.12.3 Integrating technology with managerial judgement

Digital tools are aids, not substitutes, for capable managers and clear processes. The best outcomes arise when technology is integrated into everyday work and backed by defined responsibilities. A dashboard that highlights a delay has little value unless someone is trained and authorised to act on it. AI that identifies a risky clause helps only if commercial and legal staff have a process for negotiating amendments or applying fallback terms. Research on e-procurement and project delivery repeatedly finds that people and routines determine whether technology improves outcomes (Lewis-Faupel et al., 2016; Tezel et al., 2018). Practical steps include live digital risk registers shared across client and contractor teams, structured meetings that review dashboard exceptions, and disciplined record-keeping that creates a common factual base for dispute avoidance and resolution.

Overall, the direction of travel is towards predictive and preventive risk management. Instead of discovering problems late in quarterly reports, public owners can use streams of verified data to detect weak signals early and intervene sooner. As digital procurement and analytics mature, the cost of not having timely, accurate contract information becomes clearer. The literature indicates that agencies that invest in information quality, staff skills, and proportionate controls are more likely to realise the benefits of technology while avoiding new sources of risk.

Taken together, the mechanism holds only where political commitment is credible and sustained; when mandates are unstable or contested, approvals stall, front-end choices unravel, and risk migrates back to the client.

2.13 Contradictions and divergent findings in literature

Evidence on CRM is mixed. Studies cover different sectors, use different methods, and start with different theories, so they often reach different conclusions. A careful review should show these differences and then explain why they arise, for example, because of local institutions, market conditions, or how governance is set up (Cao & Lumineau, 2015; Poppo & Zenger, 2002).

2.13.1 Formal contracts versus relational management

One view, common in economics and project management, is that clear contracts, defined roles, and enforceable remedies improve performance. When outputs can be measured with some accuracy, detailed agreements tend to support better cost and schedule results (Lu, Guo, Qian, He, & Xu, 2015; Suprpto, Bakker, Mooi, & Hertogh, 2016).

Another view, grounded in relational contracting, is that complex projects face uncertainty that no document can fully anticipate. In these settings, trust, information sharing, and joint problem-solving help teams adapt, avoid disputes, and reduce opportunism. Evidence from long-term public–private partnerships shows that strong relationships enable timely adjustment without turning to adversarial tactics (Benítez-Ávila, Hartmann, Dewulf, & Henseler, 2018).

These positions are not an either–or choice. The weight of evidence shows they are complementary. Formal controls provide clarity and credible sanctions. Relational governance supports coordination, learning, and voluntary compliance when conditions change. Studies also find patterning by outcome type: formal provisions align well with “hard” outcomes such as time and cost, while relational mechanisms are better at limiting subtle opportunism, such as strategic claims or information hoarding, especially under high uncertainty (Benítez-Ávila et al., 2018; Cao & Lumineau, 2015; Lu et al., 2015; Poppo & Zenger, 2002). Context matters. In stable environments with repeat dealings and strong professional norms, relational governance adds more value. In transactional or one-off settings, formal contracting plays a larger role (Cao & Lumineau, 2015; Poppo & Zenger, 2002).

2.13.2 Risk allocation: transfer vs partnership

The basic rule is to give each risk to the party best placed to manage it (UK Cabinet Office, 2021). Fixed-price and design-build contracts can contain cost growth when the scope is clear and information is good, which aligns with both theory and comparative evidence (Bajari & Tadelis, 2001; Hale, Shrestha, Gibson, & Migliaccio, 2009; Hodge & Greve, 2017; Konchar & Sanvido, 1998).

Problems arise when buyers shift risks that contractors cannot control, such as demand shocks, regulatory changes, or force-majeure events. In these cases, bids often rise to cover contingencies, or suppliers underbid and later seek changes. Latin American concession data show high renegotiation rates in transport and water public-private partnerships, sometimes soon after award, which suggests that paper risk transfer broke down in practice (Guasch, Laffont, & Straub, 2008; Guasch et al., 2014).

A balanced approach works best. Keep controllable, day-to-day risks clearly with the party that can manage them, and oversee extreme or systemic risks through sharing, contingent mechanisms, or explicit guarantees. This is consistent with public guidance and reviews of PPP performance (Hodge & Greve, 2017; UK Cabinet Office, 2021). Over short periods, a transfer model may look effective. Over longer horizons, designs that recognise political and macro-risk realities are more likely to be sustainable (Hodge & Greve, 2017).

2.13.3 How much contract risk management changes outcomes

Various case studies and surveys find that projects using systematic risk work (identify, analyse, and monitor) report fewer surprises and better delivery. But when researchers pool larger samples or run more rigorous tests, the direct effect on cost or schedule is often modest or depends on context (de Bakker, Boonstra, & Wortmann, 2010; Willumsen, Oehmen, Stingl, & Geraldi, 2019).

1. Selection (endogeneity). Riskier projects are more likely to adopt heavier CRM, so simple correlations can underestimate benefits—high-risk projects still have issues even with stronger CRM (de Bakker et al., 2010; Zwikael & Ahn, 2011).

2. Measurement quality. Many studies record whether a risk register or meeting exists, not how good or timely it is. “Tick-box” risk processes do not move results; embedded processes with authority to act do (Kutsch & Hall, 2010; Willumsen et al., 2019).
3. External shocks and capability. Macroeconomics, regulation, and organisational maturity (leadership backing, skills, process discipline) shape outcomes. When those factors are accounted for, the standalone effect of formal risk steps can look small or contingent (Carvalho & Rabechini, 2015).
4. The practical takeaway: CRM helps most when it is integrated into decisions (not just documented), supported by leadership, and matched to project and organisational maturity. In other words, risk practice is necessary but not sufficient (de Bakker et al., 2012; Willumsen et al., 2019).

2.13.4 The role of context and governance structures

Many of the “contradictions” in the evidence make sense once you factor in context. Where courts are weak and enforcement is uncertain, tougher contractual enforcement can deter opportunism and help contain overruns because parties expect penalties to stick (D’Alpaos, Moretto, Valbonesi, & Vergalli, 2013). In higher-trust settings with credible courts and strong professional norms, teams can adjust more flexibly without writing everything into the contract, saving transaction costs, because trust reduces the need for exhaustive detail (D’Acunto, Xie, & Yao, 2022; Dyer & Chu, 2003).

Politics also changes the picture. Classic principal-agent models assume one principal with clear goals and credible sanctions, but SOE projects usually have multiple principals with competing objectives. In those cases, contractors may respond to political sponsors more than to the formal client, and standard incentives do not always work as intended (Apriliyanti, Hoon, & Heugens, 2024; Voorn, Van Genugten, & Van Thiel, 2019). Evidence from Latin-American concessions shows how political and regulatory shocks often drive early renegotiations, undercutting paper risk transfer and formal controls.

Overall, there is not a single “best” approach. Formal tools such as quantitative risk analysis, clear clauses, and enforcement rights are powerful, but their impact depends on information quality, the ability and willingness to enforce, and institutional

culture (D'Alpaos et al., 2013). Relational approaches—trust, information-sharing, and cooperative problem-solving—can deliver excellent results where norms support collaboration but can struggle in adversarial or politicised environments (Dyer & Chu, 2003). The most reliable path is an integrated, context-sensitive model of project governance that combines economic, sociological, and psychological elements, making institutional pressures, stakeholder salience, and commitment credibility explicit (Henisz, Levitt, & Scott, 2012).

Accordingly, the strength of this effect is conditioned by administrative capacity: well-resourced teams with clear delegations convert rules into timely routines, while weak capacity converts compliance into delay and claim exposure.

2.14 Theoretical implications and gaps in complex state-owned enterprise environments

Classical theories used to explain contracting, especially agency theory and TCE, have helped researchers and practitioners understand why contracts succeed or fail. However, large public projects run by SOEs often sit in political settings and organisational systems that these theories only partly capture. This section retains the original structure and arguments, rephrases them in clear academic language, and anchors key points in peer-reviewed sources.

2.14.1 Limits of agency theory in politicised state-owned enterprise settings

Agency theory describes how a principal (for example, the state) uses contracts, incentives, and monitoring to align an agent's behaviour with organisational goals (Jensen & Meckling, 1976). In simple principal-agent situations, clear performance targets, transparent rewards, and credible sanctions can reduce shirking or opportunism. That logic has shaped public-sector reforms, such as performance-based contracts and PPPs.

SOE projects are rarely simple. They usually involve several principals with different aims. There are political principals (ministers or party leaders), administrative principals (central departments or regulators), SOE boards and executives, and the wider public. At the same time, there are several layers of agents, from prime contractors to specialist subcontractors. These overlapping relationships create what

the economics literature calls a common-agency or multi-principal problem, in which agents can play principals off against each other or align with the most powerful sponsor rather than with the contractual principal (Bernheim & Whinston, 1986; Tirole, 1994). In such settings, the clean prescriptions of agency theory, such as “raise bonuses” or “tighten penalties,” often do not bite because the political sponsor can shield an underperforming contractor, or because sanctions are delayed by appeals and administrative processes.

Another assumption in conventional agency models is the presence of enforceable contracts and impartial courts. Where judicial processes are slow or subject to interference, the credible threat that underpins incentive contracts weakens (Acemoglu & Johnson, 2005). In these environments, agents may view side-payments, political protection, or alliance with influential actors as safer strategies than meeting contractual targets—a pattern consistent with corruption as an alternative alignment mechanism (Shleifer & Vishny, 1993; Tirole, 1994). For these reasons, scholars have called for extensions to agency theory that explicitly include multiple principals, political incentives, and possibilities of regulatory capture. (Tirole, 1994).

The implication for CRM is practical. More detailed contracts or sharper incentives are useful, but alone they will not control behaviour in politicised systems. Additional governance devices are needed, such as external scrutiny, transparent audit trails, and civil-society monitoring. These can shift incentives by raising the visibility and cost of opportunism beyond the formal buyer–seller relationship (Henisz, Levitt, & Scott, 2012).

2.14.2 Limits of transaction cost economics when politics dominate.

TCE explains organisational choices by comparing the costs of arranging transactions in markets with the costs of coordination inside hierarchies, under bounded rationality and opportunism (Williamson, 1979). The framework advises matching governance to hazards. For example, high asset specificity and uncertainty call for stronger safeguards, such as longer contracts, clearer adaptation clauses, or even vertical integration.

In public infrastructure, TCE remains valuable, yet it usually treats politics as background rather than as a first-order hazard. Work on regulation shows that political and institutional arrangements determine whether long-term contracts are credible in practice (Levy & Spiller, 1994). Governments change, priorities shift, and legislatures or treasuries can delay or withhold funds. These political transaction costs include lobbying, influence activities, and the expense of trying to secure promises from government that may not be honoured later. Where political commitment is fragile, the contract that looks efficient on paper may be untenable in practice. This is visible in Latin American concession data, where renegotiations were frequent and often occurred soon after award, implying that formal risk transfer could not survive political and social pressures once projects were underway (Guasch, Laffont, & Straub, 2008).

TCE also tends to assume that actors seek efficiency. Institutional theory shows that organisations sometimes adopt practices to gain legitimacy rather than to solve problems, especially under external pressure to “look modern” (DiMaggio & Powell, 1983; Meyer & Rowan, 1977). SOEs can, therefore, introduce risk registers, stage-gate reviews, or sophisticated contract forms to satisfy donors, auditors, or parent ministries, even when internal capability or incentives are not in place. In such cases, the visible “best practice” may not change behaviour on site, which helps explain why similar contract designs perform differently across systems.

2.14.3 A case of hybrid theoretical frameworks

Taken together, these limits point to the value of hybrid models that integrate economics of incentives with political economy and institutional perspectives.

First, extended agency perspectives treat SOE contracting as a network of principal–agent relationships, with multiple principals pursuing different aims and with scope for collusion or capture. These models pay attention to who monitors the monitors, how information flows across tiers, and how reputational and political pressures interact with formal incentives (Henisz et al., 2012; Tirole, 1994).

Second, a political-TCE view adds credible commitment to the standard hazards of asset specificity and uncertainty. The core question becomes not only “which contract is efficient ex ante,” but also “which contract can the state credibly sustain

ex post.” Where political commitment is weak, simple contracts with transparent adjustment rules and independent oversight may outperform intricate allocation schemes that will be renegotiated under pressure (Guasch et al., 2008; Levy & Spiller, 1994).

Third, institutional theory clarifies why form often decouples from practice. Organisations may adopt the symbols of good governance without the routines and skills that make them work. Recognising this tendency helps researchers and managers distinguish between compliance on paper and capability in use, and directs attention to training, data quality, and realistic authority to act (DiMaggio & Powell, 1983; Meyer & Rowan, 1977).

Finally, stakeholder perspectives add that projects operate in a social arena. Media, communities, and oversight bodies can alter the trade-offs that managers face. Where stakeholder scrutiny is strong and predictable, opportunism becomes costlier and relational problem-solving becomes safer. Where scrutiny is weak or politicised, relational approaches can slide into favouritism. Therefore, effective theory needs to allow for shifts in stakeholder salience across time and context (Henisz et al., 2012; Mitchell, Agle, & Wood, 1997).

2.14.4 Implications for research and practice

For researchers, these arguments suggest two priorities. First, designs and methods should account for endogeneity and hidden moderators. Projects facing the greatest hazards are often the ones that adopt the most elaborate risk processes. Analyses that ignore this selection effect may understate the real benefit of capable CRM. Second, measurement should move beyond counting the presence of tools towards assessing their quality and use. Studies that capture who acts on early warnings, how quickly decisions are taken, and how disputes are resolved will better link theory to outcomes.

For practitioners, the lesson is diagnostic. Before deciding on a contract form, managers should assess credible commitment, political salience, and administrative capacity. Where commitment is weak and capability thin, simpler contracts with clear escalation routes, independent certification, and frequent early-warning routines are more likely to hold. Where commitment is strong and capability high, risk transfer and

performance incentives can be specified more tightly, with confidence that sanctions will be enforced. In both cases, attention to information systems, record-keeping, and the independence of oversight will strengthen the connection between contract intent and delivery performance (Flyvbjerg, 2009; Henisz et al., 2012).

In summary, agency theory and TCE remain essential parts of the toolkit, but they need help in complex SOE environments. Blending them with the political economy and institutional theory provides a more realistic picture of how contracts work. This richer frame explains why well-designed clauses sometimes fail under political pressure, and why incentives can produce rent-seeking rather than effort when sanctions are not credible. It also sets up the next step in this thesis, which will present a conceptual model that treats political commitment, administrative capacity, and governance culture as explicit moderators of the link between CRM practices and project performance.

In practice, governance culture moderates the outcome, as proportionate, learning-oriented assurance enables adaptive control and early correction, whereas punitive audit-first norms suppress judgement, slow decisions and reduce delivery reliability. Table 2.2 defines the outcome constructs used across the thesis and aligns their indicative measures with the literature. This standardises interpretation ahead of the empirical chapters.

2.15 Conceptual model for contract risk management in state-owned energy projects

Building on the reviewed theory and evidence, the study proposes a moderated model that links the four CRM pillars—planning and risk allocation, administration and execution, monitoring and control, and dispute resolution—to delivery outcomes (cost, schedule, quality, stakeholder satisfaction). The relationships are conditioned by political commitment, administrative capacity and governance culture. Political commitment shapes policy continuity and enforcement credibility; administrative capacity determines consistency and responsiveness; governance culture affects compliance discipline and risk-reporting behaviour. The model includes feedback: dispute outcomes and delivery performance inform subsequent planning and administrative routines.

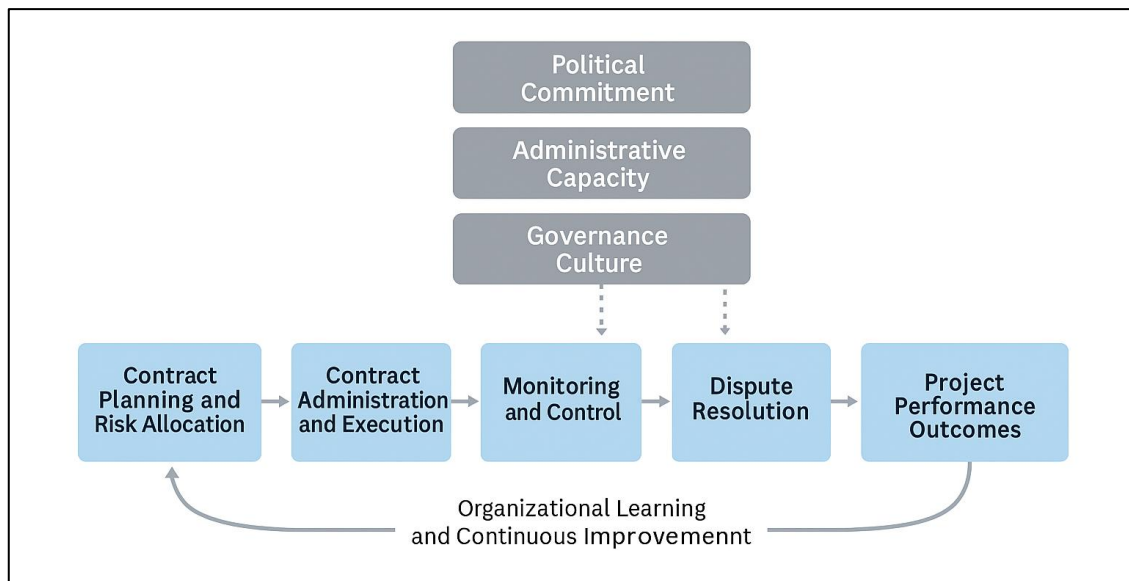


Figure 2.1: Moderated Relationship between Contract-Risk-Management Practices and Project Performance in South Africa 's State-Owned Energy Sector

2.16 Conclusion

This chapter has shown that the literature explains delivery performance through four contract pillars and a set of public-sector conditions. Yet the interaction of these pillars within a state-owned, audit-intensive environment remains under-specified, particularly how formal routines meet institutional realities. To address this gap, the study advances an integrated CRM performance model (Figure 2.1) that links planning, administration, monitoring and control, and dispute resolution to cost, time, quality and stakeholder outcomes, conditioned by political commitment, administrative capacity and governance culture. The model implies that front-end choices set feasible baselines, administrative routines translate intent into action, monitoring and control create consequence, and dispute pathways feedback to strengthen or weaken the preceding pillars. Chapter 3, therefore, formalises the inquiry through four research questions aligned to these pillars and tests the model's propositions across the South African energy context.

The study advances five propositions aligned to the research questions: first, under stable political commitment and timely approvals, rigorous front-end planning with fair risk allocation reduces variation orders, claim frequency and schedule slippage (RQ1); second, where administrative capacity is adequate and delegations are clear, disciplined contract administration translates contractual intent into timely action,

shortening cycle times and containing cost growth (RQ2); third, in a proportionate, learning-oriented governance culture, monitoring and control with consequence management improves adherence to cost, time and quality baselines (RQ3); fourth, where dispute pathways are accessible, timely and fair, early resolution limits disruption and feeds lessons back to strengthen planning, administration and control, with effects strongest when political commitment and administrative capacity are supportive (RQ4); fifth, delivery performance is maximised when the four pillars operate in alignment, whereas a breakdown in any pillar amplifies risk transfer back to the client, especially under weak commitment, thin capacity or a punitive audit-first culture (integration).

CHAPTER 3: RESEARCH QUESTIONS

3.1 Introduction

This chapter sets out the research questions that guide the study. Chapter 2 developed an integrated CRM performance model (Figure 2.1) that links four pillars—planning, administration, monitoring and control, and dispute resolution—to delivery outcomes under the conditions of political commitment, administrative capacity and governance culture. The four questions below derive from that model and the sector evidence outlined in Chapter 1. They provide the analytic frame for data collection and analysis in Chapter 4 and the reporting in Chapter 5. (Gregory, 2020; Project Management Institute, 2021).

The study adopts an exploratory, qualitative design to examine how practice within each pillar relates to performance. The four questions below derive directly from the synthesis in Chapter 2 and from sector evidence outlined in Chapter 1. Together, they put into motion the study aim of improving project delivery through enhanced CRM practice.

Alignment with objectives: RQ1 supports Objective 1 (to assess the effectiveness of contract planning and risk allocation); RQ2 supports Objective 2 (to examine how contract administration and execution practices affect outcomes); RQ3 supports Objective 3 (to determine the effect of contract monitoring and control mechanisms on performance); and RQ4 supports Objective 4 (to evaluate the role of dispute-resolution processes in limiting secondary delays and cost growth).

Table 3.1 summarises each research question, its pillar, expected outcome effects and the primary moderator, and indicates where evidence is gathered in Chapter 4.

Table 3.1: Linking of research questions, pillars, outcomes, primary moderators and evidence sources

RQ	Pillar focus	Primary outcome lens	Primary moderator	Primary evidence source
RQ1	Front-end planning and risk allocation	Cost, schedule, quality	Political commitment	Interviews, Sections B prompts
RQ2	Contract administration routines	Cost, schedule	Administrative capacity	Interviews, Section C prompts
RQ3	Monitoring and control with consequence management	Cost, schedule, quality adherence	Governance culture	Interviews, Section D prompts
RQ4	Dispute avoidance and resolution pathways	Secondary delay, cost growth	Political commitment; administrative capacity	Interviews, Section E prompts

3.2 Research Question 1 (RQ1)

How does contract planning influence project performance?

This question operationalises the planning → performance pathway in Figure 2.1. It tests whether rigorous front-end definition and fair risk allocation, under credible political commitment, reduce variation orders, re-pricing and schedule slippage. (Gregory, 2020; Mashamba, Kanakana-Katumba, & Maladzhi, 2023).

RQ1 examines the extent to which the quality of contract planning – including scope definition and explicit, fair allocation of risk – predicts cost, schedule and quality performance in energy-sector projects.

3.3 Research Question 2 (RQ2)

What is the impact of contract administration on cost and schedule outcomes?

Contract administration translates paper intent into performance. This question examines the administration → performance mechanism in Figure 2.1. It assesses whether adequate administrative capacity and clear delegations convert change control, documentation, and payment routines into predictable cycle times and

contained cost growth. (Bolton, Potts, & Rintoul, 2022; Project Management Institute, 2021).

RQ2 investigates how the consistency and quality of contract administration and execution procedures – particularly change control, documentation and payment cycles – shape cost and schedule outcomes.

3.4 Research Question 3 (RQ3)

How do monitoring and control practices affect project performance?

This question interrogates the monitoring and control → performance pathway in Figure 2.1. It evaluates whether a learning-oriented governance culture with consequence management improves adherence to cost, time and quality baselines. (Mwaiseje, Mrope, & Mrope, 2024; Project Management Institute, 2021). Sector oversight in South Africa has further highlighted how weak post-award monitoring is associated with irregular expenditure and unresolved claims (Auditor-General South Africa, 2024; Eskom Holdings SOC Ltd., 2024).

RQ3 examines whether and how monitoring and control practices are associated with improved adherence to cost, schedule and quality targets in the South African energy context.

3.5 Research Question 4 (RQ4)

What role does dispute resolution play in achieving budget and schedule adherence?

This question tests the dispute-resolution ↔ feedback loop in Figure 2.1. It examines whether early, project-embedded dispute-avoidance and resolution routes, such as dispute review boards, adjudication and mediation, contain disruption and feed lessons back into planning, administration and control, conditional on political commitment and administrative capacity. Evidence shows that well-constituted dispute review boards reduce cost and schedule growth and settle most matters without escalation (Agdas & Ellis, 2013; Harmon, 2009; Menassa & Peña Mora, 2010). NEC-style early warning and structured adjudication shorten decision cycles

and limit opportunism when applied with discipline and clarity of roles (Thompson, Vorster, & Groton, 2000). Conversely, unresolved claims correlate with cost and time overruns; fit-for-purpose ADR, activated early and integrated with change control, supports adherence and traceability, with recent work highlighting the benefits of proactive claim management and digital case tracking (Cheung, Suen, & Lam, 2002; Fenn, Lowe, & Speck, 1997; Kalogeraki, 2024).

RQ4 assesses whether the presence and effective use of accessible, timely and fair dispute-avoidance and resolution mechanisms are associated with better budget and schedule adherence.

3.6 Conclusion

The four questions focus enquiry on the CRM levers most likely to influence outcomes in South Africa's energy projects. They align to the model in Chapter 2 and structure the methods in Chapter 4, where each question is mapped to specific prompts and analysis procedures, and the findings in Chapter 5.

CHAPTER 4: RESEARCH METHODOLOGY

4.1 Research design

The study adopted a qualitative design that draws on semi-structured interviews. These interviews generated practice-proximate insights into how contract risk management related to project performance within South Africa's energy sector. The enquiry was explicitly structured to the four CRM pillars identified in Chapter 2: contract planning, contract administration, monitoring and control, and dispute resolution. The design aligned directly with the four research questions formalised in Chapter 3 and mapped to the four CRM pillars (planning, administration, monitoring and control, dispute resolution). Interviews elicited detailed accounts of each pillar and perceived effects on cost, schedule, quality and stakeholder relations. The next section sets out the study's philosophical stance.

4.2 Research philosophy

The study adopted a pragmatic philosophy for addressing the stated problem in project performance in the energy sector. Pragmatism accepted that organisational reality is plural and contingent, with different stakeholders experiencing the same project through different concerns and incentives. Ontologically, it treated reality as situated and purpose laden; epistemologically, it privileged knowledge constructed through experience to guide effective action rather than to assert a single, timeless truth (Goldkuhl, 2012; Howe, 1988; James, 2000, 2001; Kaushik & Walsh, 2019; Morgan, 2014; Saunders & Lewis, 2017). On this view, the value of an explanation lies in whether it helps practitioners understand the causes that matter for performance and make better decisions.

Within this stance, the method was selected for its fit for purpose. Semi-structured interviews were appropriate because they allowed participants to articulate situated meanings, while giving the researcher sufficient control to ensure coverage of the research questions. An inductive approach was appropriate because it allowed patterns to emerge from practice rather than forcing data into prior theory. A phenomenological strategy followed naturally, since it concentrated on lived experiences of contract planning and administration and of monitoring and control, and on how these practices were understood to shape outcomes. In a pragmatic frame, rigour demonstrated through transparency, coherence between questions

and evidence, and the usefulness of the findings for improving CRM in the energy sector (Kaushik & Walsh, 2019; Saunders & Lewis, 2017).

4.3 Research approach

The study adopted an inductive approach to allow patterns and categories to emerge from participants' accounts rather than imposing a prior theoretical frame. Induction was suited to this exploratory organisational inquiry where the aim was to build explanations grounded in practice and context rather than to test predefined hypotheses (Rahi, 2017; Saunders & Lewis, 2017). In this project the focus was on how contract planning and administration, and monitoring and control, were experienced by practitioners and how these practices related to project performance energy sector.

An inductive stance, therefore, prioritised the meanings that participants attributed to their experiences and the conditions under which practices appeared to influence outcomes. The interview guide was designed to elicit detailed descriptions of recent work, decisions, and perceived effects (See Section 4.9). As field understanding developed, prompts were refined to improve clarity and coverage, while keeping the mapping of each prompt to a single research question intact (Saunders & Lewis, 2017).

Analytically, transcripts were first read for familiarisation; initial codes were then generated and remained close to participant language. Related codes were organised into candidate themes that capture recurrent patterns linked to the research questions. Themes were reviewed against the dataset and defined precisely before reporting. Reflexive thematic analysis was well suited to this sequence because it supported data-led category development, while still requiring methodological transparency and a clear audit trail (Braun & Clarke, 2006). Throughout, decisions about coding, category boundaries, and theme refinement were documented to support dependability.

Induction aligned with the pragmatic philosophy of the study. Pragmatism evaluates methods by their usefulness in producing explanations that aid effective action in a specific organisational context. Allowing categories to arise from practice means that induction helped to increase the likelihood that findings were intelligible and useful to

energy sector practitioners who must manage contract risk and project performance (Saunders & Lewis, 2017).

Although the interview was the unit of analysis, findings were developed through cross-case comparison to build themes that addressed each research question and preserved the integrity of individual accounts.

4.4 Research strategy

A phenomenological strategy was used to examine practitioners' lived experiences of contract planning and administration, and of monitoring and control, and to interpret how these practices were understood to affect project performance. Consistent with phenomenology, the interviews elicited rich descriptions to reach the essence of participants' lived experiences of contract planning and administration and of monitoring and control, and of how these practices are understood to influence project performance (Moustakas, 1994). Phenomenology was appropriate where the aim was to elicit situated meanings and to develop evidence-led themes about how work was experienced, rather than to test predefined propositions. This focus on lived experience aligned with the study's inductive approach and pragmatic philosophy (Morgan, 2014; Saunders & Lewis, 2017). In keeping with the four-pillar frame, the interview guide included a dedicated dispute resolution section to explore lived experience of avoidance and resolution mechanisms and their perceived effects on schedule and cost.

In data collection, a phenomenological orientation guided the semi-structured interviews toward concrete, recent work episodes and participant-led accounts, while the interviewer bracketed prior assumptions and used neutral prompts to sustain depth and clarity. The interview guide remained tightly anchored to the four research questions: Section B addressed contract planning (RQ1), Section C addressed contract administration and execution (RQ2), Section D addressed monitoring and control (RQ3), and Section E addressed dispute-avoidance and resolution mechanisms (RQ4). Piloting confirmed that each prompt maps to a single research question and that the wording invited detailed, experience-based descriptions without leading participants (DeJonckheere & Vaughn, 2019; Saunders & Lewis, 2017).

In analysis, phenomenological sensitivity was maintained by keeping codes close to participant language during familiarisation and initial coding and by developing themes that preserve the sense participants made of CRM in their roles. Comparative reading across interviews was used to examine whether themes hold across roles and settings, while retaining the individual interview as the unit of analysis. Thematic analysis procedures were transparently documented through memos, a versioned codebook, and an audit trail that linked coded extracts to reported claims (Braun & Clarke, 2006; Miles, Huberman, & Saldaña, 2014).

4.5 Time horizon

A cross-sectional time horizon was used, focusing on recent projects to capture current CRM practices and perceived effects on performance. The cross-sectional design provided an efficient snapshot of practice under prevailing organisational conditions and was appropriate since the aim of the study was to describe and interpret patterns rather than to test temporal causation (Saunders & Lewis, 2017). To limit threats from recall error, interviews anchored discussions in specific, recent episodes, where feasible, and were checked against dated project artefacts, where available (Coughlin, 1990; Rindfleisch, Malter, Ganesan, & Moorman, 2008; Wang & Cheng, 2020).

4.6 Population

Population is defined as the complete set of units relevant to the study to which conclusions may in principle apply (Saunders & Lewis, 2017). In this inquiry, the population comprised South African energy sector-staff directly engaged in project contract management, including project engineers, project managers, procurement and supply-chain practitioners and contract administrators involved in infrastructure contracts. Specifying the population in functional terms aligned with the unit of analysis, the research questions, and increases conceptual clarity about who possesses the needed knowledge (Bryman, 2016; Robson & McCartan, 2016).

4.7 Unit of analysis

The unit of analysis is the primary level at which data were analysed and conclusions drawn. In this study, the unit of analysis was the individual practitioner interview. Working at the interview level kept interpretation closely tied to the participant's

account, avoided conflating levels of analysis, and reduced the risk of ecological fallacy (Maxwell, 2012; Miles, Huberman, & Saldaña, 2014).

4.8 Sampling

Sampling is the process of selecting a subset from the population to examine the phenomena of interest (Saunders & Lewis, 2017). A non-probability purposive, criterion-based strategy was used to recruit information-rich participants with direct experience of CRM across the lifecycle, including planning, risk allocation, administration, change control, and dispute resolution (Etikan, 2016; Patton, 2015). Inclusion criteria were current or recent employment in the energy sector or closely linked contractors during the study period, at least two years in project or contract management roles, and direct involvement in one or more contract stages. Gatekeeper permissions were obtained; invitations were distributed through internal channels; one reminder was sent after five working days to avoid perceived coercion. Given the researcher's professional network, participation was explicitly voluntary with no consequences for non-response.

The target sample was 12 to 18 interviews, with the final number determined by saturation. The researcher had access to the target sample through their professional network in the project management industry. The information-power principle guided sufficiency, recognising that fewer interviews are needed when each participant contributes highly relevant and rich information (Malterud, Siersma, & Guassora, 2016). Saturation was monitored during collection and declared when additional interviews no longer yield new concepts (Guest, Bunce, & Johnson, 2006).

Several prior qualitative studies in project and contract management guided the determination of the target range for this study. Guest et al. (2006) demonstrated that thematic saturation in homogeneous samples is typically achieved within 12 interviews. This finding was also echoed by Hennink and Kaiser (2022), who observed that meaning saturation occurred at around 16-20 interviews in applied organisational research. In the African infrastructure and energy management context, Mudzengerere and Mbengo (2021) conducted 15 key informant interviews to explore contract administration challenges in Zimbabwean public works projects. In a similar context, Agyekum, Ayarkwa, and Adinyira (2018) used 14 semi-structured interviews to investigate risk allocation practices in Ghanaian construction

projects. Similarly, Okonkwo (2020) examined PPP governance in Nigeria based on 12 interviews with contract managers. These precedents support that a range of 12-18 interviews is adequate to achieve data saturation and theoretical sufficiency for in-depth qualitative insights in comparable sectors.

Interview instrument: The semi-structured interview guide was anchored to the four research questions and structured as follows: Section B elicited front-end planning and risk-allocation practices (RQ1); Section C examined contract-administration routines (RQ2); Section D focused on monitoring and control with consequence management (RQ3); and Section E addressed dispute pathways and feedback (RQ4). This format standardised coverage of core topics across interviews, while allowing probing and clarification so that situated meanings could be elicited in participants' own words, which is appropriate in organisational settings (DeJonckheere & Vaughn, 2019; Kallio, Pietilä, Johnson, & Kangasniemi, 2016). Each prompt mapped to a single research question to avoid cross-loading, and wording was clear and neutral. The guide was piloted with one practitioner and refined for clarity, sequencing and flow (see Appendix A).

Ethics approval and gatekeeper permission were obtained. A pilot interview with one practitioner tested clarity, sequencing and timing, and confirmed one-to-one mapping of prompts to the research questions. Minor refinements followed the pilot. Participants received an information sheet and consent form in advance (Appendix B); interviews scheduled; recording arrangements tested; and a standardised opening script was prepared (DeJonckheere & Vaughn, 2019; Kallio et al., 2016).

Interviews of approximately 30 to 50 minutes were conducted via Microsoft Teams. At the outset, consent was reconfirmed and permission to audio-record obtained. The interviewer followed the guide to ensure complete coverage of Sections B–E, while probing for role-specific detail in plain, non-leading language. Prompts were ordered B–E to mirror RQ1–RQ4 so that evidence collection maps cleanly from questions to results. Field notes were taken to capture contextual cues and reflexive observations that would assist with interpretation without replacing the transcript as the primary record (DeJonckheere & Vaughn, 2019; Miles, Huberman, & Saldaña, 2014).

Recordings were transcribed verbatim, checked against the audio for accuracy, de-identified, and stored on encrypted, password-protected drives with access restricted to the researcher. A consistent naming convention linked transcripts, consent forms, and field notes, and an audit trail documented procedural decisions. Data were then imported into qualitative analysis software, ATLAS.ti to support systematic coding, retrieval, and memo-writing in preparation for thematic analysis (Corti, Van den Eynden, Bishop, & Woollard, 2019; Nowell, Norris, White, & Moules, 2017).

4.9 Data analysis approach

Reflexive thematic analysis was used to develop evidence-led themes that addressed the research questions (Braun & Clarke, 2006). Transcripts were read for familiarisation; initial codes were generated close to participants' language; related codes were collated into candidate themes; themes were reviewed for internal coherence and external distinction; themes were defined and named; and findings were reported with short, attributed extracts. Coding was inductive and supported by ATLAS.ti, with a versioned codebook and memo trail for transparency. A cross-cutting synthesis then examined how political commitment, administrative capacity and governance culture conditioned effects across pillars. Comparative reading across interviews examined whether themes hold across roles, while keeping the individual interview as the unit of analysis. Initial codes such as "approval delays," "risk-allocation ambiguity," and "limited oversight" were progressively grouped into higher-order categories, which later crystallised into the five final themes presented in Chapter 5. Theme refinement occurred iteratively: similar codes were merged, and themes were reviewed both within and across transcripts to test coherence and distinction. ATLAS.ti's query and matrix functions were used to check how themes appeared across different participant roles (client, contractor, consultant), ensuring balanced representation.

Transparency was supported by memo-writing, a versioned codebook, and a traceable link from coded extracts to reported claims. (Miles et al., 2014; Nowell et al., 2017). An audit trail captured analytic decisions, and reflexive notes documented how interpretations evolved. Credibility was strengthened through peer debriefing with two research peers who reviewed sample extracts and code definitions for consistency. The outcome was a set of evidence-based themes – Procurement and Governance Inefficiencies, Technical Capacity and Resource Gaps, Unrealistic

Timelines and Planning Pressure, Weak Risk Quantification and Clause Interpretation, and Communication and Collaboration Enablers – that directly informed the presentation of findings.

Reporting avoided causal testing claims and instead examined whether and how patterns appeared across cases, stating scope conditions rather than universal generalisations. This reflexive, interpretive stance ensured that analysis remained grounded in participants' lived experiences while addressing the study's research questions.

4.10 Quality control

Quality was addressed in terms of credibility, transferability, dependability, and confirmability (Lincoln & Guba, 1985; Shenton, 2004). Credibility was supported through piloting of the interview guide, consistent interviewing procedures, and cautious member checking for factual plausibility on selected summaries (Birt, Scott, Cavers, Campbell, & Walter, 2016). Where appropriate, interview accounts were compared with available non-confidential artefacts to assess convergence without introducing additional methods sections (Guion, Diehl, & McDonald, 2011).

Dependability and confirmability were reinforced through a transparent audit trail that documents sampling rationale, guide revisions, coding procedures, codebook evolution, and theme construction, together with reflexive memos that surface and bracket assumptions. Secure data management and clear links from coded extracts to reported claims allowed an independent reader to trace how interpretations were reached (Miles et al., 2014; Morse, Barrett, Mayan, Olson, & Spiers, 2002; Shenton, 2004). Saturation was reached at twelve interviews; additional interviews were judged unlikely to yield new concepts.

4.11 Ethical considerations

Before data collection, approval was obtained from the University Research Ethics Committee and gatekeeper permission authorised contact with staff. Participation was voluntary, informed consent secured, withdrawal was possible at any time without penalty, and data protection requirements observed in line with recognised

human-subjects' frameworks (U.S. Department of Health and Human Services, 1979; SVRI, 2009).

For this study, interviews were conducted privately via Microsoft Teams. Transcripts de-identified using role labels, indirect identifiers generalised, and digital files stored on encrypted, password-protected drives with access restricted to the researcher. Physical notes are kept in locked storage and data retained only for the minimum period required by protocol before secure destruction. No proprietary material was collected unless public or explicitly authorised. The consent process emphasised plain-language disclosure, comprehension, voluntariness, and permission for audio-recording, and reporting was at aggregate level to reduce the likelihood of social or professional harm (American Psychological Association, 2017; Corti, Van den Eynden, Bishop, & Woollard, 2019; Kaiser, 2009; Saunders, Kitzinger, & Kitzinger, 2015; Wiles, Crow, Heath, & Charles, 2008).

4.12 Limitations

This study adopted a cross-sectional design and relied on retrospective self-report, so dynamic change and causal inference were constrained and recall or desirability bias may have occurred. These risks were mitigated by neutral interviewing, requests for concrete examples, and reference to dated artefacts, where available. Access to documents varied across projects, which could limit corroboration, and the researcher's role might have influenced questioning despite reflexive controls. Findings were offered as analytical insights situated in the South African energy sector's context rather than universal claims, with transfer left to readers' judgement of contextual similarity (Berger, 2015; Bowen, 2009; Finlay, 2002; Lincoln & Guba, 1985; Wang & Cheng, 2020).

4.13 Conclusion

This chapter sets out the study's methodological design. A qualitative, phenomenological approach was adopted within a pragmatic philosophy to obtain practice-proximate accounts of CRM in the South African energy sector. An inductive logic guided semi-structured interview aligned to the four CRM pillars, with the individual interview as the unit of analysis and a purposive sample selected for information richness.

The data collection procedures, cross-sectional time horizon, and ethical safeguards were described, together with the steps of reflexive thematic analysis. Measures to enhance quality were outlined in terms of credibility, transferability, dependability, and confirmability through piloting, audit trails, and reflexivity.

Limitations relating to self-report, recall, and contextual specificity were acknowledged. Overall, the chapter provides a clear and defensible basis for the analysis that follows.

CHAPTER 5: FINDINGS

5.1 Introduction

This chapter presents the findings from the interviews. Consistent with the approach set out in Chapter 3, results are organised around the research questions mapped to the four CRM pillars: contract planning and risk allocation; contract administration and execution; monitoring and control; and dispute resolution. In addition, a concise set of emergent, cross-cutting themes that arose inductively from the data is reported in Section 5.6 and interpreted further in Section 6.2. The chapter closes with a summary of the key findings and their internal relationships.

5.2 Analytical approach and evidence conventions

This study employed a reflexive thematic analysis to generate patterned meanings from interview data, aligning all findings with the conceptual model in Figure 2.1 and maintaining a clear “golden thread” from literature to evidence. Analysis focused on the four CRM pillars – contract planning, administration, monitoring and control, and dispute resolution – while tracing the moderating influences of political commitment, administrative capacity, and governance culture as cross-cutting dimensions.

The analytical procedure followed five iterative stages: familiarisation with transcripts; open coding of mechanisms and conditions; clustering of codes into categories; refinement of themes for coherence and distinctiveness; and final definition of themes framed as direct answers to the research questions. ATLAS.ti 14 was used to maintain transparency and an auditable chain of evidence. Data adequacy was confirmed through information power and saturation, with later interviews reinforcing rather than expanding first-order codes. Credibility and dependability were enhanced through audit trails, peer debriefing, and stability checks across participants, while transferability was supported by thick contextual description. No new first-order codes appeared after interview P10, and subsequent interviews confirmed the coherence and boundaries of existing categories, indicating data saturation and adequacy. Evidence is presented through short, focused extracts attributed by anonymised identifiers such as P01, P02, and so on. Each thematic section begins with a core claim, displays illustrative quotations, and concludes with an integrative paragraph showing how the findings confirm, extend, or nuance existing literature.

This study used reflexive thematic analysis to move from raw interview material to reported themes. In ATLAS.ti, first-order codes were generated inductively, collated into categories, and iteratively refined into themes that map directly to RQ1–RQ4. Figure 5.1 shows this left-to-right workflow and the resulting thematic map. The top band names the cross-cutting moderators from Chapter 2—political commitment, administrative capacity, and governance culture—to signal where they condition patterns across pillars. The map provides a transparent audit trail from data to claim and justifies the organisation of Sections 5.5.1–5.5.4.

Figure 5.1. Thematic map and analytic workflow from codes to themes and research questions.

The flow in Figure 5.1 clarifies how evidence underpins each reported theme: code clusters support categories, categories support themes, and themes answer the four research questions rather than stand as anecdotes. No new first-order codes appeared after interview P10; later interviews confirmed category boundaries and supplied negative cases, supporting adequacy and dependability. The moderators band explains variance across cases and foreshadows the integrated CRM model later in this chapter, where interactions between planning, administration, monitoring and control, and dispute resolution are synthesised and linked to context.

5.3 Participant Information and Demographics

Before presenting the themes that emerged from the interviews, it is important to present participants' demographics and other information relevant to this study. The detailed data is presented in Table 5.1. Across all participants, there is a balanced representation of public and private-sector perspectives. The distribution of participants is primarily within South Africa's energy and infrastructure projects. The interviews revealed that the participants possessed substantial managerial and technical experience. That ensured that there was a credible understanding of the full contract lifecycle by the selected participants, ranging from planning and procurement to execution, monitoring, and dispute resolution. This interview cohort also reflected the operational diversity of the sector, with a blend across engineering, commercial, and governance expertise. These were purposely selected to strengthen the study's validity in capturing cross-functional insights.

Table 5.1: Participant Information

Participant Code	Current Role / Designation	Organisation Type	Years of Experience	Core Area of Expertise	Key Involvement in Contract Lifecycle
P01	Senior Project Manager	Private Engineering Contractor	20+ years	Project Management, Contract Planning, Risk Allocation	Planning, Administration, Monitoring, Dispute Resolution
P02	Contract Manager	State-Owned Enterprise (Energy Utility)	15-20 years	Procurement, Contract Administration, Variation Management	Administration, Change Control, Stakeholder Communication
P03	Senior Technical Officer	Public Infrastructure Agency	10-15 years	Technical Oversight, Monitoring, Performance Reporting	Monitoring and Control, Quality Assurance
P04	Project Engineer	Private EPC Contractor	10-12 years	Engineering Design, Execution, and Risk Assessment	Planning, Execution, Monitoring
P05	Procurement Specialist	Public Sector Entity	15+ years	Supply Chain, Compliance, Governance	Planning, Contracting, Procurement
P06	Manager: Infrastructure Projects (Transmission Projects Dept.)	State-owned energy utility (Transmission)	20+ years	EPC delivery strategy; substation refurbishment; outage planning and coordination; compensation events and commercial change control; quality and commissioning governance (41-141); FAT/SAT oversight; stakeholder coordination	Planning; Administration; Monitoring and Control; Dispute Resolution
P07	Project Manager	Public Infrastructure Utility	12-15 years	Project Execution, Contract Planning, Risk Management	Planning, Execution

P08	Commercial Executive	Private Power Construction Firm	25+ years	Commercial Management, Risk Allocation	Contract Strategy, Dispute Management
P09	Project Manager	Renewable Energy Project Company	8-10 years	Construction Management, Monitoring, Quality Control	Monitoring, Performance Oversight
P10	Senior Procurement Officer	Energy Utility	10-15 years	Tendering, Supplier Management, Governance	Planning, Administration
P11	Contract Manager	Power Transmission Project	18-20 years	Contract Execution, Change Management, Monitoring	Administration, Monitoring, Variation Management
P12	Senior Legal Advisor	Energy Sector (Legal & Compliance Division)	20+ years	Dispute Resolution, Contract Law, Risk Compliance	Dispute Management, Governance Oversight

Note. EPC = Engineering, Procurement and Construction.

5.4 Overview of themes

Table 5.2 presents an overview of the themes that emerged from the interview data. The thematic frequency analysis in Table 5.2 shows that Theme 3 (Monitoring and Control Mechanisms) and Theme 1 (Contract Planning Effectiveness) were the most frequently cited themes with a total count of 31 and 29 mentions across all the interviewees. This reflects the central influence of these aspects of contract management on overall project performance in the South African energy sector.

In Table 5.2, it is also apparent that participants consistently emphasised the importance of structured planning, early involvement, and continuous oversight through progress tracking, early warnings, and quality assurance systems. Aspects relating to Contract Administration and Execution (Theme 2) also featured prominently, with 26 mentions across all the interviewees. This suggests the significance of cross-functional coordination and governance compliance. Even though Dispute Resolution (Theme 4) was less frequently discussed, it emerged as an important downstream process influenced by earlier planning and monitoring weaknesses. Among the emergent themes, Communication and Collaboration (18 mentions) appeared as the most recurrent cross-cutting enabler. That was followed by concerns over Procurement Inefficiencies (12 mentions) and Technical Capacity Gaps (10 mentions). Both these aspects of contract management constrain efficiency and responsiveness. The overall distribution of frequencies illustrates a project environment where procedural rigor exists but is undermined by bureaucratic inertia, limited capacity, and fragmented coordination.

Table 5.2: Thematic Overview

RQ	Theme	Sub-Themes	Participants
	Theme 1		
RQ1	Contract Planning Effectiveness	Structured but Bureaucratic Processes; Early Involvement; Risk Identification; Scope Clarity; Planning Gaps	P01, P05, P11, P12, P07, P04, P09
	Theme 2		
RQ2	Contract Administration and Execution	Technical-Commercial Alignment; Change and Variation Management; Governance and Communication; Cost-Schedule-Quality Trade-offs	P01, P07, P05, P12, P11, P10
	Theme 3		
RQ3	Monitoring and Control Mechanisms	Progress Tracking; Early Warnings; Risk Registers; Quality Assurance; Dashboards; Escalation Processes	P12, P01, P05, P07, P11
	Theme 4		
RQ4	Dispute Resolution and Conflict Management	Negotiation and Expert Consultation; Relationship Preservation; Avoidance of Litigation; Clause Clarity	P12, P05, P07, P01, P11, P10

Note. Counts reflect the number of coded segments per theme across all interviews, not participant head-counts. Frequencies aid salience; interpretation relies on mechanism and context.

5.5 Findings by Research Question

In this section, the themes that emerged from the interviews are organised around the research objectives of the study as presented in Chapter 1.

5.1.1 RQ1: Contract planning and risk allocation.

Mechanism: Lengthy, multi-stage approvals compress planning windows and shift effort from judgement to template compliance.

5.5.1.1 Structured but Bureaucratic Planning Processes

Participant P01: *"We've got different processes at our large multinational company – it's like quality gates that we go through from bid phase right into execution."*

Participant P01: *"Procurement pack is normally dictated to us by our sales team who does the inquiry."*

Participant P01: *"Timelines are not that stringent for us to follow all of the processes, so we've watered down some of our processes to adapt to our business need."*

Participant P01: *"Too much red tape doesn't work well – there's a lot of things there that were implemented from the 1980s, which is a good project-management practice but not applicable to this day and age."*

Participant P05: *"It took a whole year and I feel it could have taken less if our procurement process was not lengthy... the reviewing of the procurement package itself took long – it goes to the buyer, then to the manager, then someone else; that whole process and allocating the buyer took long."*

Participant P11: *"What did not work well – I think delays in our processes. Our processes take longer; you end up delaying the process and awarding after an exceptionally long time, which then also affected the tendered prices."*

Participant P12: *"Our internal processes are tedious - buying bolts and washers can take three weeks... we used to have local purchase orders up to R30,000, but now even small RFQs take long."*

Implication: Where administrative capacity is thin and delegations are slow, compressed planning increases compensation events and price resets during execution. [Moderator: administrative capacity].

5.5.1.2 Early Involvement and Collaboration in Planning

Mechanism: Early, cross-functional involvement aligns technical and commercial assumptions, reducing scope ambiguity and pricing variance.

Participant P01: "Early involvement in the process works well – the project manager is assigned when the inquiry is being compiled and that's what we do on complex jobs... we're involved from early on in our processes, from the decision whether we go for this bid or not."

Participant P10: "The contract is reviewed by the cross-functional team and given to a contract specialist for final verification before it goes out... there were clarifications held with the tenderers and deviations negotiated so the final product was agreed upon."

Participant P07: "We cannot issue out a procurement pack without liaising with other colleagues. Safety needs to give us their spec, environmental gives deliverables, and engineering gives material specifications... the team works together in the planning phase – it helps interface everything according to procurement."

Participant P11: "The contract was planned from the business requirements... the cross-functional team came together in evaluating and getting a suitable supplier."

Participant P05: "Having all stakeholders in constant engagements and weekly check-ins on progress helped colleagues fast-track and gain momentum with compiling the scope of work, procurement strategy or contracts."

Implication: When governance culture rewards early integration, baseline stability improves and downstream variation orders fall. [Moderator: governance culture].

5.5.1.3 Risk Identification and Allocation

Mechanism: Explicit, data-led risk identification and fair allocation reduce contingency padding and opportunistic claims.

Participant P01: "We have a lot of repositories - information is widely available - and we keep lessons learned, project tracking, NCR registers, and risk register ... we even pull information from another region, say India, for similar project types, and incorporate that under risk during our cost element."

Participant P04: "The risks that were identified were mostly that these transformers in the South African market, we cannot cater for ... the risk was recorded in

the risk register and at this stage it was a shared risk because those activities that happened during shipping – it's something no one has control over."

Participant P07: "We have a risk register – all of the risks are identified in the front-end planning. It is a working document because risks are encountered as you go."

Participant P05: "All the risk was listed as part of the NEC contract... as and when risk arises throughout the project, we capture it day by day or in monthly meetings where the contractor reports on all risks."

Participant P08: "We have instruments, we have a tool for risk register... whereby when we foresee some of the risk, we document them there."

Participant P12: "We identify risks through constructability meetings with all stakeholders – engineers, safety, environmental... we also request a security threat assessment from security and include community initiatives like painting schools or providing laptops to reduce local risks."

Participant P11: "We allocate and evaluate the risks - which ones are more critical and which ones are not – and record them in the documents when preparing the procurement pack."

Implication: Where administrative capacity supports live risk registers and role clarity, risk is priced once and managed rather than relitigated. [Moderator: administrative capacity].

5.5.1.4 Scope Definition and Clarity of Contract Terms

Mechanism: Unambiguous scope and clause clarity lower interpretation variance and strengthen change control.

Participant P09: "It was well defined. However, there were other missing information on the scope, hence we are now a visa with a compensation event... it is costing the contractor extra to procure that software – now we are doing compensation event."

Participant P11: "The scope was identified from the end-user's point of view and also from technical or engineering assessment from the business side in terms of what is required."

Participant P01: "It becomes part of a functional organisation and not as a strong matrix, so to get every individual to give you buy-in into a package when it's not the normalised scope of work becomes difficult to coordinate."

Participant P12: “You find that once the design is done, when you look at constructability on your end, it may not be as easy as what it is stated in the design documents... it becomes evident that the engineer sometimes never visited site – it’s sort of a desktop office design, and you end up with challenges and design changes.”

Participant P07: “Some of the works were not included in the works information, which then resulted in claims.”

Implication: In settings with consistent approvals, clear works information reduces compensation-event frequency and cycle time. [Moderator: political commitment and administrative capacity].

5.5.1.5 Planning Gaps and Data or Process Inefficiencies

Mechanism: Incomplete inputs and rushed milestones propagate missing quantities and design errors into execution.

Participant P04: “What didn’t work well was we didn’t filter in all the requirements... we didn’t get the numbers right in terms of the required transformers because we’re going to embark on a process now to modify the panel contract.”

Participant P07: “We need to do a front-end planning before we can get to procurement... but I think in future we do not spend much time there. We try to rush dates when milestones are about to reach... we end up pressurising our quantity surveyors, and they end up populating BOQs [Bills of Quantities] which are not thoroughly checked or verified.”

Participant P05: “The contract was planned in one department – that’s one of the things that went wrong... if everyone on the value chain is well aware that this type of contract is needed and when it is needed, and everyone is aligned, that might have assisted.”

Participant P12: “Once the design is done, constructability may not be as easy as what it is stated in the design documents... that causes compensation events because you are now dealing with scope that you haven’t catered for in the original contract.”

Implication: Where governance culture prioritises realistic lead times and verification, rework and BOQ resets decline. [Moderator: governance culture].

5.5.1.6 Ambiguities and Contractual Misunderstandings

Mechanism: Clause ambiguity increases discretion at certification and enlarges the space for contested claims.

Participant P11: "One of the clauses that created ambiguity was the force majeure clause. It included many things which are not force majeure, and that created a possibility for claims... the supplier also wanted to add some of the items which are not necessarily force majeure."

Participant P04: "There was not much misunderstanding of clauses – we were aligned from inception. There was only a pushback on the delayed damages... suppliers were shying away from being penalised due to late deliveries as their OEMs [Original Equipment Manufacturers] are overseas."

Participant P09: "It is not ambiguity, but there were things we omitted... we needed that were not clearly broken down in the scope."

Participant P12: "If you interpret NEC clauses properly, you can avoid unnecessary disputes – people often don't know which clause applies."

Implication: Administrative capacity for NEC literacy and standard interpretations shortens dispute paths and protects price certainty. [Moderator: administrative capacity].

5.5.1.7 External and Contextual Constraints

Mechanism: Access, outage, and brownfield constraints inject non-contractual shocks that disturb programme logic.

Participant P12: "You have projects that are less challenging, especially your Greenfield ones – starting from nothing... then you get the difficult ones, your brownfields, refurbishment projects. That is where engineers face challenges – you must keep customers alive while executing."

Participant P03: "Sometimes when you need to execute some work and you find that the supplier is not getting access to site... once we change the schedule it affects the end period and can also affect the values."

Participant P01: "Sometimes we have to go all the way back to Germany to get vetting on approvals for processes... internally, it can take six months to compile before it even goes out."

Implication: Where political commitment secures timely permits and site access, and capacity enables re-sequencing, schedule slippage and standing-time claims reduce. [Moderators: political commitment; administrative capacity].

5.5.1.8 Conclusions for RQ1

Overall, participants described contract planning processes as structured and compliance-driven but often burdened by bureaucracy that delayed decision-making and constrained responsiveness. While the presence of formalised frameworks promoted procedural discipline, they also produced rigidity, limiting the ability of practitioners to adapt to contextual shifts during project initiation. This pattern reflects what Hillson (2016) describes as procedural compliance bias, where adherence to templates replaces critical evaluation of project risks. The result is diminished foresight in risk quantification and incomplete front-end integration between technical and commercial teams. This finding confirms Gregory (2020) and Love (2019) on front-end planning effects and sets up the monitoring link in Section 5.5.3

5.5.2 RQ2: Contract administration and execution

Theme 2 focused primarily on the effectiveness of contract administration and execution practices within the energy sector in South Africa. The sub-themes relating to that are presented next.

5.5.2.1 Coordination Between Technical, Commercial and Supply Functions

Mechanism: Tight interfaces between engineering, commercial, and supply convert decisions into timely instructions and deliveries.

Participant P01: "We have different departments that work together – procurement, finance, engineering, logistics – so once the contract is signed, each of those areas takes ownership of their scope."

Participant P07: "We liaise with other colleagues continuously; safety, environmental, and engineering all have to give their deliverables... during execution, if any of those inputs are late or incomplete, it affects progress."

Participant P11: "Technical provided the specification to commercial and ensured that when commercial advertised the inquiries, they included all the information, technical and evaluation criteria... technical and commercial were there together, assisting and providing relevant information before the inquiry was issued."

Participant P05: “We try to keep all stakeholders involved throughout implementation – weekly updates with contracts, end-users and buyers so that issues can be flagged early.”

Implication: With sufficient decision bandwidth and clear roles, hand-offs shorten and execution variability declines. [Moderator: administrative capacity].

5.5.2.2 Change and Variation Management

Mechanism: Formal change routes (instruction → quotation → CE decision) stabilise scope and pricing; informal workarounds increase downstream dispute exposure.

Participant P12: “When scope becomes unworkable, we engage engineers for redesign, get new drawings, submit to QS for BOQ, and present to the compensation-events committee... if the scope falls within the existing contract, we use the QS bill and follow CE approval; otherwise, a new commercial process is followed.”

Participant P09: “It was well defined, but there were missing items in the scope, hence we are now dealing with a compensation event... it is costing the contractor extra to procure that software.”

Participant P01: “Sometimes you pick up that what was quoted is no longer applicable – we then have to issue a change order or variation instruction so that the supplier adjusts pricing or delivery.”

Participant P10: “After contract award there are points that tenderers bring in – deviations – which we negotiate on, and the final product becomes the contract that both sides accept.”

Participant P07: “Once we commenced the works after procurement was concluded, we realised there were gaps which I was speaking about... we had to do variations and issue instructions to cover those.”

Implication: When governance culture prioritises cadence and documentation, compensation event (CE) cycle times shorten and schedule drift reduces; under weak discipline, cost and time move together. [Moderator: governance culture].

5.5.2.3 Communication, Governance and Escalation Mechanisms

Mechanism: Routine forums with clear escalation thresholds turn emerging issues into time-bounded decisions.

Participant P01: "Communication is key. If the project manager and contract manager are not talking daily, small issues become major. We use weekly reviews to check open points and escalate only when necessary."

Participant P11: "We have weekly meetings for progress and issues. Where there are disagreements, the team sits together before escalating. Escalations only go to senior management if consensus fails."

Participant P05: "Having weekly check-ins on progress kept colleagues aligned and avoided unnecessary delays. Everyone knew who was responsible for what."

Participant P12: "Every Tuesday morning we have a one-hour meeting to discuss outages, contractor claims, risks, inefficiencies, early warnings and audits... we ensure that outcomes of safety and environmental audits are closed out, and the contractor adheres to them."

Implication: Where governance culture supports timely escalation, hidden action decreases and programme adherence improves. [Moderator: governance culture].

5.5.2.4 Documentation, Record-Keeping and Control Systems

Mechanism: Single-spine documentation creates traceability that enables defensible approvals and payment gating.

Participant P01: "We maintain registers for risks, NCRs, lessons learned and documentation of change orders... it's all tracked so that at project close-out there is full traceability."

Participant P05: "Documentation is critical – procurement files, scope documents and approvals are stored in a shared drive so that anyone in the team can verify what was agreed."

Participant P10: "The process is there; it works well if it's followed... the only issue is the turnaround time at times from the cross-functional team members when they don't stick to it."

Participant P12: "Clause 31 deals with the accepted programme – contractor must submit it within two weeks... Clause 32 is the revised programme, Clause 40 covers tests and inspections, Clause 41 covers defect correction, and Clause 50 details the payment process."

Implication: Administrative capacity for disciplined record-keeping reduces claim ambiguity and audit findings. [Moderator: administrative capacity].

5.5.2.5 Cost-Schedule-Quality Trade-offs

Mechanism: Approval delays and resource constraints couple time and cost, degrading quality under schedule pressure.

Participant P12: "We normally have DCF [Delegation Consent Form] contingency of about 10% of contract cost but still need to follow commercial process for release... when scope changes occur, cost and time inevitably move together."

Participant P07: "Because of resource constraints and tight milestones, quality sometimes suffers... you end up focusing on finishing rather than on detail."

Participant P01: "If approvals take too long, suppliers increase their rates because of inflation or currency fluctuation... that pushes costs beyond budget."

Participant P05: "Once the contract is in execution, delays in material delivery or design approvals affect both the schedule and the overall cost, and quality control becomes more reactive."

Implication: Where political commitment protects realistic milestones and capacity is balanced to load, quality holds and cost creep moderates. [Moderators: political commitment; administrative capacity].

5.5.2.6 Flexibility and Adaptive Practices in Execution

Mechanism: Clause-based flexibility (early warnings, re-sequencing, CE procedures) enables fast adaptation without eroding contractual control.

Participant P12: "When we face unexpected site conditions, we adapt – issue early warnings, hold risk-register updates and modify the programme... flexibility in the NEC framework allows that without breaching contract."

Participant P07: "The NEC contract gives flexibility; we can issue early warnings and compensation-event notices quickly to avoid bigger problems later."

Participant P01: "We've learned to be flexible with clients – sometimes priorities change, so we re-sequence activities without affecting the main milestone dates."

Participant P10: "Negotiations with contractors during execution help us align on variations rather than escalating to disputes... it's about adapting together."

Implication: In a learning-oriented governance culture, adaptive use of NEC tools limits secondary delay and dispute escalation. [Moderator: governance culture].

5.5.2.7 Audit, Oversight and Compliance in Administration

Mechanism: Proportionate oversight aligns behaviour with process discipline and deters non-compliance.

Participant P12: “Every Tuesday we review safety, quality and environmental audits; the contractor must close out findings. The meeting also covers inefficiencies and early warnings.”

Participant P01: “Internal audit teams sometimes join our reviews to ensure governance compliance – we need to show all supporting documents for every claim.”

Participant P05: “Procurement and contract audits ensure that the right approvals and signoffs are followed; this protects both the company and the project manager.”

Implication: Where audits are timely and corrective actions bite, CE quality improves and opportunism declines; punitive audit-first norms slow decisions. [Moderator: governance culture].

5.5.2.8 Conclusions of RQ2 findings

Administrative frameworks enhanced auditability and role clarity but generated friction through document bottlenecks, extended approval chains, and uneven accountability, particularly at technical-commercial interfaces. The mechanism is a control-flexibility trade-off: governance strength reduces opportunism yet can impede timely adaptation when change is warranted. This aligns with contract-governance literature emphasising balanced administration and disciplined change control (Smith, Merna & Jobling, 2014). These patterns help explain the frequency and trajectory of conflicts discussed in Section 5.5.4.

5.5.3 RQ3: Monitoring and control mechanisms

Theme 3 focused primarily on the monitoring and control mechanisms within the energy sector in South Africa. The sub-themes relating to that are presented next.

5.5.3.1 Regular Progress Reviews and Programme Tracking

Mechanism: Programme-led reviews convert plan–actual variance into recovery plans and accountable actions.

Participant P12: “Every two weeks the contractor must submit an updated programme... we also check progress ourselves, arranging outages and verifying alignment... every Friday we update PowerPoint dashboards for senior management. Weekly progress meetings include contractors, engineers, controls and commercial.”

Participant P01: “Progress tracking is continuous – we use performance dashboards, cash-flow curves and milestone charts... weekly updates are done to track deliverables and supplier performance.”

Participant P05: “We track progress through weekly check-ins and monthly reporting templates... it helps us identify delays early and plan corrective measures.”

Participant P07: “We rely on programme updates and progress meetings to monitor the contractor’s delivery... you must align what is on paper with what’s happening on site.”

Implication: With sufficient administrative capacity to enforce updates, slippage is surfaced early and corrected sooner. [Moderator: administrative capacity].

5.5.3.2 Early Warnings, Risk Registers and Mitigation Plans

Mechanism: Early warnings and live risk registers bring forward problem recognition and enable joint mitigation.

Participant P12: “I used early warnings a lot, especially where contractor efficiency was low... we also complete a risk register with every early warning, noting site risks like high water tables and even wildlife – bees and Cape Cobras in cable trenches.”

Participant P07: “When we pick up a risk, we issue an early-warning notice and record it in the register... this gives everyone time to plan mitigation rather than reacting too late.”

Participant P11: “Early warnings are raised whenever a delay, cost impact or technical issue is foreseen... it’s a formal way of ensuring both parties remain aware.”

Participant P05: “We keep a running risk register throughout execution... at monthly meetings the contractor reports on risks and we update mitigations accordingly.”

Implication: Where governance culture normalises early signalling, CE volumes fall and recovery costs reduce. [Moderator: governance culture].

5.5.3.3 Quality Assurance, Inspection and Performance Evaluation

Mechanism: Test, inspection, and defect-correction gates prevent latent defects from passing cost and delay downstream.

Participant P12: “Clause 40 covers tests and inspections, Clause 41 covers defect correction... quality must be verified before handover to grid.”

Participant P01: “We have NCR registers and lessons-learned logs to ensure quality issues are closed out... supplier performance is rated after every project.”

Participant P05: “Before payments are processed, inspection and acceptance certificates must be signed off... quality assurance runs parallel to progress tracking.”

Participant P07: “Testing and commissioning documentation forms part of the control process... no payment without proper QA evidence.”

Implication: In organisations with stable political support for standards, QA non-conformances resolve faster and rework declines. [Moderator: political commitment].

5.5.3.4 Dashboards, Digital Tools and Reporting Systems

Mechanism: Shared dashboards increase visibility of exceptions and support risk-based attention.

Participant P12: “We use PowerPoint dashboards and reports every Friday for senior management... the same data feeds into quarterly performance presentations.”

Participant P01: “We use SAP for tracking deliverables and project cash flow... dashboards allow instant visibility on cost and schedule variance.”

Participant P05: “All reporting is done through the enterprise system; it captures progress, expenditure and risk updates.”

Implication: Where administrative capacity includes data discipline and user competence, information translates into timely control. [Moderator: administrative capacity].

5.5.3.5 Escalation, Corrective Action and Oversight

Mechanism: Clear escalation ladders and payment gating enforce consequence for non-performance.

Participant P12: "When a contractor fails to submit programmes or progress evidence, we escalate to the project manager and refuse full payment claims... inefficiencies are corrected through early warnings."

Participant P01: "If deliverables fall behind, escalation goes to the steering committee; they decide whether to apply penalties or renegotiate milestones."

Participant P07: "Corrective action is agreed during progress meetings - either the contractor accelerates or provides recovery plans... otherwise management intervenes."

Participant P05: "Delays are reported through the governance process; we document reasons and mitigation steps for audit purposes."

Implication: In a firm governance culture, corrective actions occur within decision windows and schedule adherence improves. [Moderator: governance culture].

5.5.3.6 Monitoring Challenges and Capacity Constraints

Mechanism: Thin staffing and over-extended managers shift monitoring from preventive to reactive.

Participant P12: "The contractor struggled to produce programmes, so we started doing our own to track activities... I issued early warnings to refuse full payment claims due to inefficiencies."

Participant P07: "Because of limited resources, monitoring is sometimes reactive rather than proactive... we discover problems only when they've already affected timelines."

Participant P01: "We depend heavily on the project manager's workload; if a person is managing too many projects, oversight weakens."

Participant P05: "Sometimes information comes late from site, which makes reporting inconsistent – by the time you react, the delay has already accumulated."

Implication: Administrative capacity investments in bandwidth and skills are prerequisite for monitoring to bite. [Moderator: administrative capacity].

5.5.3.7 Consequences of Poor Monitoring and Control

Mechanism: Late detection amplifies standing time, accelerations, and quality escapes that compound cost and delay.

Participant P12: "If you run behind programme during an outage, suppliers and OEMs charge for site returns, contractors claim standing time, and grid KPIs are affected... when people rush to recover time, quality drops."

Participant P01: "Late detection of problems increases project cost and reduces confidence from clients... once trust is lost, recovery becomes difficult."

Participant P07: "Failure to monitor properly results in rework and cost overruns... sometimes we only realise later that a specification was not met."

Participant P05: "Poor monitoring affects invoicing and completion timelines; projects end up being extended unnecessarily."

Implication: Where governance culture tolerates lagging oversight, contingency burn rises and trust erodes; strengthening cadence reverses the slope. [Moderator: governance culture].

5.5.3.8 Conclusions of RQ3 findings

Monitoring systems were pivotal when operationalised as live controls (early warnings, risk registers, programme reviews tied to decision gates); where capacity was thin or reporting lagged, oversight became reactive, and costs escalated. The mechanism is converting information into consequence: signals that trigger payment gating and recovery plans stabilise cost and schedule; those that remain informational do not. This accords with governance studies on capability-dependent performance effects. The observed practices anticipate the conflict-avoidance results in Section.

5.5.4 RQ4: Dispute resolution and conflict management

Theme four focused primarily on dispute resolution and conflict management within the energy sector in South Africa. The sub-themes relating to that are presented next.

5.5.4.1 Negotiation and Expert Consultation as Primary Mechanisms

Mechanism: Senior negotiation and expert input convert disagreement into time-bounded, technically grounded settlements.

Participant P12: "Before adjudication, the project manager first tries to resolve the issue, then model or senior management intervenes... in 13 years, I have never seen a project go to adjudication."

Participant P10: “Negotiations with contractors during execution help us align on variations rather than escalating to disputes... it’s about adapting together and ensuring continuity.”

Participant P01: “Most issues are managed through direct discussion – if both sides understand the impact, we agree on corrective measures instead of formal dispute.”

Participant P05: “Where there are disagreements, we first exhaust negotiation and internal review before escalating formally... this reduces tension and keeps relationships intact.”

Implication: Where administrative capacity enables authority at the right level, disputes resolve without programme-stopping escalation. [Moderator: administrative capacity].

5.5.4.2 Relationship Preservation and Communication-Based Resolution

Mechanism: Trust-based communication reduces opportunism and keeps work progressing during disagreement.

Participant P12: “We focus on maintaining a working relationship; once you lose that, progress stops... we always try to reach agreement before going formal.”

Participant P11: “We encourage communication between end-user, contractor and procurement to avoid misunderstandings becoming disputes... clear communication is the first line of resolution.”

Participant P07: “It’s better to keep the relationship intact than to chase penalties... once people start communicating openly, most issues get resolved.”

Participant P01: “Trust and collaboration help avoid confrontation – open communication keeps projects moving even when disagreements arise.”

Implication: In a collaborative governance culture, relational resolution limits secondary delay and legal cost. [Moderator: governance culture].

5.5.4.3 Use of Adjudication, Mediation and Legal Consultation

Mechanism: Tiered ADR channels provide fast, interim-binding decisions that prevent deadlock.

Participant P12: “I’ve never seen a project go to adjudication... the NEC process allows for early warnings and collaborative resolution, which makes formal dispute unnecessary.”

Participant P11: “We use mediation and adjudication only when required by the contract; in most cases, issues are closed at project-manager level.”

Participant P01: “Formal processes are the last resort; we prefer to use internal reviews or facilitation before invoking dispute clauses.”

Participant P05: “Legal gets involved only when the matter escalates beyond commercial control... otherwise, mediation within the project team is sufficient.”

Implication: Where political commitment protects contractual ADR pathways, projects continue while issues are decided. [Moderator: political commitment].

5.5.4.4 Avoidance of Litigation and Preference for Internal Resolution

Mechanism: Internal resolution avoids adversarial cycles and preserves delivery focus.

Participant P12: “In my experience, we’ve terminated contracts but never gone to court... disputes are managed internally to avoid delays and costs.”

Participant P01: “Going to litigation is rare because it damages relationships and wastes time... it’s more efficient to resolve internally through the project steering committee.”

Participant P10: “We always try to avoid formal legal routes – they delay completion and strain the relationship with the supplier.”

Participant P05: “Litigation is not common in our environment; we prefer mediated settlement and documented agreements.”

Implication: In systems with credible internal forums and management attention, cycle time to closure shortens and legal spend declines. [Moderator: administrative capacity].

5.5.4.5 Dispute Prevention through Contract Clarity and Collaboration

Mechanism: Clear clauses and shared understanding lower interpretation variance and reduce claim initiation.

Participant P11: “Clear contract clauses and well-defined responsibilities reduce the chances of disputes... when everything is understood up-front, conflict drops significantly.”

Participant P04: “There wasn’t much misunderstanding of clauses - we were aligned from inception... only minor pushback on delayed-damages provisions.”

Participant P12: “If you interpret NEC clauses properly, you can avoid unnecessary disputes – people often don’t know which clause applies.”

Participant P01: “Transparent communication during planning and execution prevents conflicts from escalating into formal disputes.”

Implication: Where governance culture supports clause literacy and proactive alignment, dispute incidence and severity fall. [Moderator: governance culture].

5.5.4.6 Conclusion of RQ4

Participants reported a consistent preference for negotiated, relationship-preserving resolution, with formal ADR used sparingly. The operative mechanism is relational governance under uncertainty: trust and open communication contain secondary delay and cost growth when coupled with credible contract controls. This accords with relational contracting propositions, while underscoring dependence on upstream planning and monitoring discipline. The reliance on informal resolution is path-dependent on earlier choices, closing the loop to Figure 2.1.

5.6 Purpose and focus of the integrated elements

This section synthesises the empirical results reported in Sections 5.1–5.5 into an integrated set of elements that explain how contract risk management (CRM) affects delivery outcomes in the study context. Its purpose is threefold. First, to consolidate the mechanisms observed across cases — the operational patterns by which planning, administration, monitoring and dispute-resolution activities altered cost, schedule and quality trajectories. Secondly, to surface the conditions that enabled or constrained those mechanisms, including political commitment, administrative capacity, governance culture and digital maturity, as reported by participants. Thirdly, to define the focus of the model that follows: a concise, project-embedded account of how front-end risk allocation, cadenced administrative routines, programme-led monitoring, and early dispute pathways interacted to stabilise scope and compress decision time. The elements are not new data; they are a structured representation of the results already presented in Sections 5.1–5.5.

Each emergent theme is tagged with its dominant moderator in brackets to show conditioning effects on the pillars, for example, procurement delays [administrative capacity], declining expertise [administrative capacity], unrealistic timelines [political commitment/governance culture].

The analysis surfaced patterns that recur across cases and do not sit neatly within a single pillar of the themes above. These themes were not predetermined by any research question but emerged inductively during coding and consolidation. In brief, participants described capacity constraints within contract and project management functions; fragmented information flows between commercial, technical, and governance roles; and organisational cultures that influence the use of early warnings, documentation discipline, and the enforcement of remedies. Together, these factors affect the incidence of compensation events, the timeliness of decision-making, and the escalation of disputes.

These emergent themes cut across planning, administration, monitoring and control, and dispute resolution. Their presence suggests that technical improvements to contract processes, while necessary, are unlikely to be sufficient without corresponding attention to capability, information integrity, and leadership tone. The intention in this chapter is to record the empirical signal at a descriptive level. The following cross-cutting patterns were reported across cases and condition how mechanisms operated; they are recorded here as part of the integrated results and anchored to the evidence in Sections 5.1–5.5.

5.6.1 Inefficiencies in Internal Procurement and Governance Systems

Participant P12: “Our internal processes are tedious – buying bolts and washers can take three weeks... we used to have local purchase orders up to R30,000, but now even small RFQs take long.”

Participant P05: “The reviewing of the procurement package itself took long – it goes to the buyer, then to the manager, then someone else; that whole process and allocating the buyer took long.”

Participant P01: “Sometimes we have to go all the way back to Germany to get vetting on approvals for processes to get releases to the next step... internally, it can take six months to compile before it even goes out.”

Participant P11: “What did not work well – delays in our processes. Our processes take longer; you end up delaying the process and awarding after a very long time.”

5.6.2 Declining Technical Competence and Capacity Gaps

Participant P12: “Our business has lost a lot of skill – HR [human resources] decisions cause experienced technical people to leave... external contractors won’t take inexperienced people, and it takes years to replace lost expertise.”

Participant P12: “Technical training schools like Roscherville no longer exist – that’s why our capability is dropping.”

Participant P07: “Because of resource constraints and tight milestones, quality sometimes suffers... you end up focusing on finishing rather than on detail.”

Participant P01: “We depend heavily on project managers’ workload; if a person is managing too many projects, oversight weakens.”

5.6.3 Unrealistic Timelines and Planning Pressures

Participant P07: “We need to do a front-end planning before we can get to procurement... but I think in future we do not spend much time there. We try to rush dates when milestones are about to reach... we end up pressurising our quantity surveyors, and they end up populating BOQs which are not thoroughly checked or verified.”

Participant P05: “The contract was planned in one department – that’s one of the things that went wrong... if everyone on the value chain is well aware that this type of contract is needed and when it is needed, and everyone is aligned, that might have assisted.”

Participant P12: “Once the design is done, constructability may not be as easy as what it is stated in the design documents... that causes compensation events because you are now dealing with scope that you haven’t catered for in the original contract.”

5.6.4 Weak Risk Quantification and Clause Interpretation

Participant P10: “It’s the quantification of the risk - we’re not doing it properly... we just work around within that small group, and no one really thinks further than how it will immediately affect them locally.”

Participant P11: “One of the clauses that created ambiguity was the force majeure clause... it included many things which are not force majeure, and that created a possibility for claims.”

Participant P12: “You need to interpret NEC clauses properly – people often don’t know which clause applies... if you invoke the correct clauses, you can avoid unnecessary disputes.”

Participant P04: “Suppliers were shying away from being penalised due to late deliveries as their OEMs are overseas... the delayed damages they would mostly want us to look at the percentage and make it a bit less.”

5.6.5 Communication and Cross-Functional Collaboration as Enablers

Participant P01: “Communication is key. If the project manager and contract manager are not talking daily, small issues become major... we use weekly reviews to check open points and escalate only when necessary.”

Participant P05: “Having all stakeholders in constant engagements and weekly check-ins on progress helped colleagues fast-track and gain momentum with compiling the scope of work, procurement strategy or contracts.”

Participant P07: “We liaise with other colleagues continuously; safety, environmental, and engineering all have to give their deliverables... during execution, if any of those inputs are late or incomplete, it affects progress.”

Participant P11: “We encourage communication between end-user, contractor and procurement to avoid misunderstandings becoming disputes... clear communication is the first line of resolution.”

5.6.6 Stakeholder Awareness and Socio-Economic Considerations

Participant P12: “We also request a security threat assessment from security and include community initiatives like painting schools or providing laptops to reduce local risks.”

Participant P10: “If the transformer is going to be delayed by six months, the cost and the businesses that are going to be affected – we don’t really think that far... there’s businesses around the area – what if those businesses put a claim against Eskom?”

Participant P03: “Sometimes when you need to execute some work and you find that the supplier is not getting access to site... those issues delay delivery and affect the schedule.”

Participant P05: “Engaging communities early and explaining project impact helps avoid unnecessary resistance and delays.”

5.6.7 Closing note on cross-cutting patterns (results only)

These patterns qualify the element linkages set out in Section 5.6 by showing that process quality within pillars depends on capacity, information integrity and leadership tone observed in the study context.

5.7 Relation of the elements to the core findings

5.7.1 RQ1: Planning and risk allocation — relation to element

Early technical–commercial alignment, credible timelines, and explicit, fair risk allocation set the performance trajectory by stabilising scope and cost. This aligns with the element front-end definition and allocation discipline and is evidenced in the RQ1 results (see Section 5.2 and sub-sections). It matters because early clarity lowers later renegotiation, rework, and transaction and verification costs..

5.7.2 RQ2: Contract administration — relation to element

Standing change-control forums, a single evidence spine, and time-bounded approvals converted procedural rules into effective control. This aligns with the element structured administration with shared artefacts and is evidenced in the RQ2 results (see Section 5.3 and sub-sections). It matters because cadence reduces hidden action, shared artefacts create traceability, and the instruction-quotation-decision path shortens compensation-event cycles and keeps prices and dates defensible.

5.7.3 RQ3: Monitoring and control — relation to element

Programme-led tracking with accepted programmes, recovery plans, clause-based risk reduction, and QA gates translated information into consequence. This aligns with the element programme-anchored monitoring with enforcement gates and is evidenced in the RQ3 results (see Section 5.4 and sub-sections). It matters because short feedback loops surface slippage early, QA gates prevent rework, and linking programme to costs tightens accountability.

5.7.4 Dispute

Early, project-embedded dispute paths were effective when notices were timely and records contemporaneous. This aligns with the element early dispute paths

supported by notice and record discipline and is evidenced in the RQ4 results (see Section 5.5 and sub-sections). It matters because clear clauses and sound records enable negotiation or adjudication to resolve issues quickly, compress decision time, protect relationships, and keep work moving.

5.7.5 Refined evidence-based model

Golden Thread: Project Governance Flow

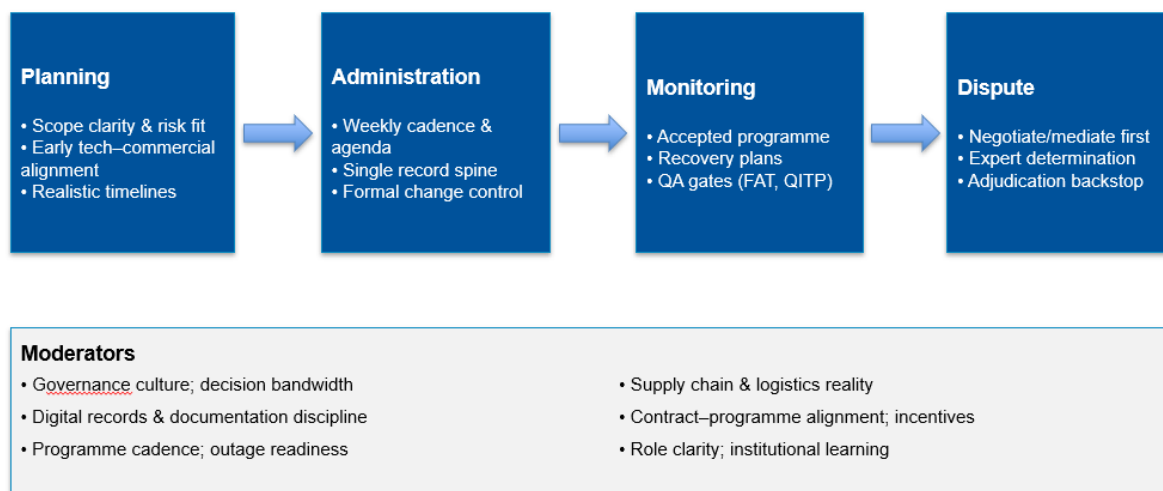


Figure 5.3. Integrated CRM performance model (summary)

Figure 5.3 synthesises the findings: Planning → Administration → Monitoring → Dispute, with political commitment, administrative capacity, and governance culture conditioning the strength of each link.

Note. Solid arrows indicate the core flow across pillars. The dashed container lists moderators that shape how hard each control bites on a given contract.

5.7.6 Findings by Research Question

Table 5.3: Summary of findings by research question, mechanisms, moderators and implications

RQ	Principal finding	Dominant mechanism (theory)	Moderators	Delivery implication
RQ1 (Planning and risk allocation)	Front-end definition and institutional fit set the delivery slope. Compressed planning, slow approvals and global–local misfit seed later change. Early technical–commercial alignment and realistic dates stabilise outcomes.	PAT and TCE: information gaps and slow decision rights raise transaction and verification costs.	Governance efficiency and culture; stakeholder alignment; contract-form fitness; make-or-buy discipline.	Fewer compensation events and repricing; more realistic schedules; reduced downstream claims.
RQ2 (Administration and execution)	Cadenced forums, a single evidence spine and disciplined change control translate paper intent into action. Timely certification and payment sustain production and contain disputes.	PAT/TCE: cadence and shared artefacts reduce hidden action and verification cost; formal routes constrain opportunism.	Decision bandwidth; clear delegations; documentation discipline; governance literacy (client and supplier).	Shorter CE cycle times; defensible approvals; steadier progress; fewer opportunistic claims.
RQ3 (Monitoring and control)	Programme-led monitoring, early warnings, risk-reduction meetings and QA gates convert information into consequence. Payment gating tied to verified progress limits drift.	Feedback-control logic within PAT/TCE: short loops reduce variance; accepted programmes anchor accountability.	Administrative capacity; digital maturity; consequence culture; data quality.	Earlier correction; improved schedule adherence; reduced rework; controlled cost drift.
RQ4 (Dispute resolution)	Relational resolution first, adjudication last. Senior negotiation and expert determination resolve most issues when clauses are clear and records are sound.	Relational + TCE: authority, trust and expertise compress decision time; clear contracts lower interpretation variance.	Relational capital; governance culture; institutional readiness (NEC literacy); incentive design.	Quicker closure; lower legal cost; preserved relationships; escalate only when value-adding.

Notes: CE = compensation event; QA = quality assurance. Table 5.4 shows direct answers to RQ1-RQ4 with mechanisms, pillars and evidence anchors.

Table 5.3: Direct answers to RQ1-RQ4 with mechanisms, pillars and evidence anchors

Research question	Concise answer	Mechanism (why it matters)	Primary pillars
RQ1: Planning and risk allocation	Front-end definition quality and institutional fit set the delivery slope. Early technical–commercial alignment and realistic timelines stabilise scope and cost.	Information gaps and slow decision rights increase transaction and verification costs; alignment across functions reduces renegotiation and downstream claims.	Planning → Administration
RQ2: Administration and execution	Cadenced forums and a single evidence spine convert rules into control. Formal change-control routes and CE committees discipline scope, price and accountability.	Regular cadence reduces hidden action; shared artefacts create traceability; structured approvals speed defensible decisions and contain opportunism.	Administration
RQ3: Monitoring and control	Programme-led monitoring with recovery plans, clause-based risk reduction and QA gates converts information into consequence.	Short feedback loops and accepted programmes reduce uncertainty; verification through QA and progress-linked payment gates lowers rework and delay.	Monitoring and Control
RQ4: Dispute resolution	Structured early warning and compensation event routines surface issues early. Tiered, time-boxed escalation (site negotiation → senior review → independent adjudication) with a single evidence spine enables defensible decisions. Clear decision rights and deadlines contain disputes. Weak	Early dispute signals are surfaced through structured early-warning and compensation-event routines, reducing escalation risk and downstream disruption; where dispute governance is timely and authority is clear, delivery impacts are contained; weak escalation	Dispute resolution

	pathways drive standing-time claims, delay and cost growth.	pathways amplify delays and cost growth.	
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Note. CE = compensation event; QA = quality assurance. Entries summarise evidence from Sections 5.4 to 5.7.

5.8 Conclusion

Across cases, CRM effectiveness was as much institutional and behavioural as procedural. Front-end definition quality and institutional fit shaped administrative tractability; cadence and a single evidence spine made monitoring consequential; and relationship-preserving resolution shortened disputes when underpinned by clear clauses and contemporaneous records. Variance was explained by moderators: political commitment (approval credibility), administrative capacity (decision bandwidth and documentation discipline), and governance culture (propensity to act on signals). Chapter 6 interprets these mechanisms against the Chapter 2 model and specifies propositions for improvement in state-owned energy projects.

CHAPTER 6: DISCUSSION OF FINDINGS

6.1 Introduction

The chapter proceeds as follows. Section 6.2 summarises key findings. Sections 6.3–6.6 discuss planning, administration, monitoring, and dispute resolution. Section 6.7 integrates the findings with the Chapter 2 model and presents the updated framework. Sections 6.8–6.11 set out theoretical implications, practical and policy recommendations, limitations, and directions for future research. Section 6.12 concludes.

6.2 Discussion by research question

This section links RQ-level findings to the Chapter 2 model and makes the moderators explicit. In brief: (i) stronger planning makes monitoring feasible; (ii) administration and execution determine whether planned controls occur in practice; (iii) monitoring improves outcomes only when linked to consequence; and (iv) the dispute path reflects the strength of the first three pillars under real institutional conditions.

This chapter interprets the findings reported in Chapter 5 in relation to the study's aims, research questions, and the literature reviewed in Chapter 2. It explains what the results mean for CRM in South Africa's energy sector, identifies where the evidence confirms, contradicts, or extends prior theory, and shows how sectoral moderators (political commitment, administrative capacity, governance culture) condition outcomes. The chapter proceeds as follows: Section 6.2 offers a concise overview of key findings; Sections 6.3–6.7 discuss each focal area (planning, administration, monitoring, dispute resolution, and cross-cutting issues) and close with short implications; Section 6.2 integrates the findings against the conceptual model introduced in Chapter 2 and presents an updated framework (Figure 6.3); Sections 6.9–6.12 set out theoretical implications, practical and policy recommendations, limitations, and directions for future research; Section 6.13 concludes.

6.2.1 RQ1 Findings Discussion: Effectiveness of Contract Planning

Mechanism: Front-end definition quality and fair risk allocation determine whether later controls can bite.

The first objective of this study focused on assessing the effectiveness of contract planning processes in South Africa's energy-sector projects. Figure 6.1 illustrates the planning findings discussed in this section.

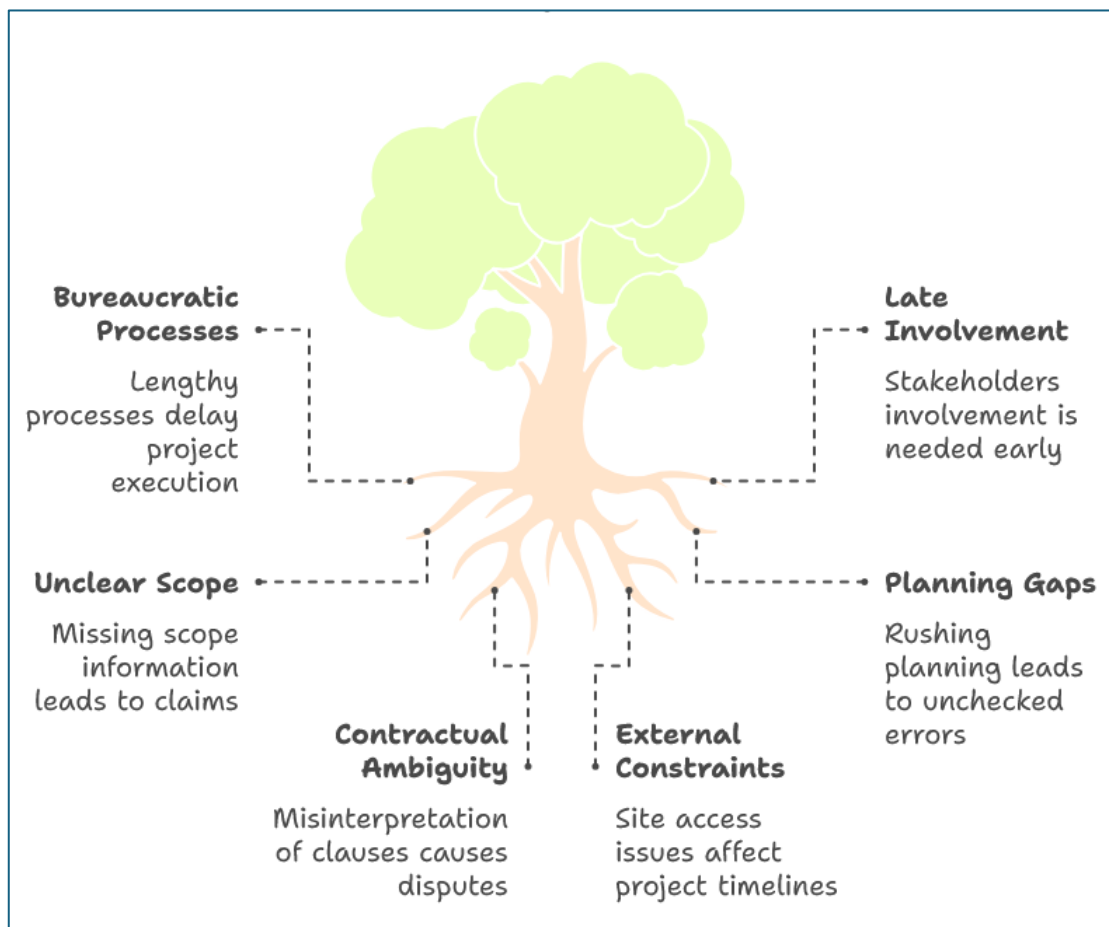


Figure 6.1: Effectiveness of Contract Planning: from front-end definition to control feasibility

Source: Own Illustration

The findings revealed that risk registers and templates are widely used in South Africa's energy sector; however, these are often treated as compliance artefacts rather than as live tools for risk management (Kutsch & Hall, 2010; Willumsen et al., 2019). Empirical studies show that formal risk routines often slide into documentary compliance, with known risks downplayed or ignored when inconvenient, especially

under time pressure (Kutsch & Hall, 2010). This administrative drift severs the link between registers and action, reinforcing the critique that risk management is practiced as ritual rather than adaptive governance. This confirms Chapman and Ward's (2003) argument that organisations frequently adopt risk-management procedures as a formality rather than as adaptive practice. It also reflects an institutionalised approach wherein formal risk processes are adopted symbolically without influencing actual management behaviour (Meyer & Rowan, 1977). Such failure to use risk-management procedures adaptively contradicts Risk-Management Theory, which prescribes that organisations be proactive and iterative in risk planning (Aven, 2016; Project Management Institute, 2021). Despite this strong guidance, empirical evidence in this study shows that risk planning remains linear and static – only conducted once during tendering and seldom revisited during project execution – aligning with observations that risk registers are often established at a project's outset but not continuously updated as living documents (Lyons & Skitmore, 2004). This one-off approach contravenes ISO 31000:2018 provisions that advocate continuous improvement (ISO, 2018). Well-designed applications of ISO 31000 correlate with better cost, schedule, technical and customer outcomes when the principles are embedded in decision routines rather than treated as a checklist (Olechowski et al., 2016). The study's large-scale survey evidence supports iterative, integrated risk work over static, document-driven compliance. Critical analyses similarly caution that treating ISO 31000 as a checklist undermines learning and resilience (Lalonde & Boiral, 2012). As Hillson (2016) reports, reactive planning erodes resilience and undermines project agility. Thus, the procedural rigidity observed in practice limits the sector's ability to anticipate uncertainty and adapt to emerging risks, resulting in inefficiencies cascading throughout the project lifecycle.

Stakeholder Involvement in Planning: The study also revealed a lack of early stakeholder involvement in contract planning within the energy sector. In other words, project engineers and managers are frequently introduced late in the procurement process. This delay restricts the ability of these key stakeholders to influence cost, schedule, and risk-allocation decisions. Comparative evidence shows procurement arrangements that enable early, cross-party involvement and collaborative forums produce more thorough risk identification and treatment, with fewer surprises in execution (Osipova & Eriksson, 2011). Early participation aligns technical and commercial assumptions, raising scope clarity and reducing transaction costs during

delivery. Unfortunately, this contradicts prior studies showing that early cross-functional participation enhances scope clarity and reduces the likelihood of later disputes or compensation events (Flyvbjerg, 2014; Smith, Merna, & Jobling, 2014; Tshidavhu & Khatleli, 2020). In contrast, late engagement contributes to scope omissions and misaligned expectations among project stakeholders. These problems reinforce the importance of front-end integration in ensuring realistic and coordinated contract risk planning outcomes.

Risk Identification and Allocation Practices: Additionally, the identification and allocation of contract risks were reported to be inconsistent and largely generic in the South African energy sector. Notably, many project risk registers appeared to be populated from standard templates rather than through project-specific analysis, creating a superficial sense of readiness. This contradicts Hillson and Murray-Webster's (2007) insistence on contextual understanding and clearly defined risk ownership. Again, the findings revealed ambiguities over which party (client or contractor) bears responsibility for key risks. This uncertainty has often led to inflated contingency pricing, confirming observations that unbalanced risk transfer increases bid premiums in fixed-price contracts (Anyanwu, 2012; Zaghloul & Hartman, 2003). PPP studies demonstrate that allocating risks to parties with limited control invites price-loading and strategic resistance, degrading value-for-money; optimal allocation follows controllability and influence over outcomes (Ke, Wang, Chan, & Lam, 2010). Cross-jurisdiction comparisons reinforce that balanced allocation is a precondition for credible pricing and performance.

Governance and Organisational Factors: Principal–Agent Theory provides a lens for interpreting these inefficiencies. Agency Theory attributes governance failures to information asymmetry between principals and agents and to misaligned incentives (Jensen & Meckling, 1976). In South Africa's public sector, well-defined PFMA-driven hierarchies with multiple approval layers are often cited for fragmenting accountability and slowing responses to emerging contract risks (Flepisi & Mlambo, 2021). South African procurement research shows that prescriptive compliance and fragmented oversight generate multilayered approvals and diffuse accountability, conditions under which agency problems and risk aversion proliferate (Ambe & Badenhorst-Weiss, 2012). Such environments prioritise auditability over adaptive management, weakening timely risk response. This environment fosters a

compliance-driven culture in which procedural oversight substitutes for performance accountability, extending Agency Theory beyond contracts into intra-organisational structures. Regulatory rigidity further constrains managerial discretion, so risks end up being managed “by the book” rather than by what works best in a given situation. Gasela (2022) reports that fear of audit sanctions discourages decision-makers from exercising judgment. Such failure to exercise judgment fosters a risk-averse bureaucracy that undermines risk-management best practices (like ISO 31000:2018) aimed at empowering managers to act decisively on informed risk assessments.

Implication: Where administrative capacity is thin and approvals are slow, compressed planning raises compensation-event frequency and price resets [conditioned by administrative capacity].

See Chapter 5 exhibits for evidence anchors: Table 5.2 (thematic overview), Section 5.5.1 (RQ1 themes) and Figures 5.1 to 5.4.

6.2.2 RQ2 findings Discussion: Contract Administration and Execution Practices

Mechanism: Cadenced change control and single evidence spine convert rules into timely action.

The second objective was to examine how contract administration and execution practices affect project performance in South Africa’s energy sector. The findings of this study as presented in Chapter 5 revealed that although formal governance frameworks exist, contract administration remains fragmented, slow, and inconsistently enforced. It was apparent from the interviews that coordination failures between technical, commercial, and legal units delayed approval of variation orders and led to weak documentation of contractual changes. These factors, collectively, lead to cost inflation, diminished accountability, and schedule slippages. Unfortunately, such administrative control often overshadows integrated CRM systems within the South African energy sector. Poor contract administration has been identified as a central cause of cost and schedule overruns in major infrastructure projects (Smith, Merna, & Jobling, 2014; Turner & Simister, 2001). Recent empirical work similarly finds that manual, siloed contract routines increase delays, rework, and compliance defects, whereas cadence and shared artefacts

reduce processing time and error rates (Willumsen, Oehmen, Stingl, & Geraldi, 2019).

Within the South African context, the findings in this study also align with Flepisi and Mlambo (2021), who reported that ineffective oversight of variations and limited enforcement of penalties can significantly contribute to delays in state-owned enterprises. That is the case because administrative systems tend to be compliance-driven rather than performance-oriented. This is evidenced by the retrospective nature of progress reports and variation logs that serve audit purposes even though they fail to enable proactive management. Comparable public-sector studies show that weak document trails and slow approvals correlate with higher claims incidence and schedule drift (Alinaitwe, Apolot, & Tindiwensi, 2013; Love, Ahiaga-Dagbui, & Irani, 2016).

From a theoretical perspective, the findings in this study reinforce the relevance of Agency Theory. The theory specifically explains that inefficiencies arise from information asymmetry and misaligned incentives within the principal–agent relationship (Jensen & Meckling, 1976). This asymmetry within the energy-sector projects occurs both between project owners and contractors and within hierarchical layers of public-sector entities. In other words, departmental silos limit the flow of information and obscure accountability. The result is a fragmented understanding of project risks. Hillson (2016) supports this view and argues that excessive procedural control without effective communication diminishes adaptive risk management. Evidence from construction governance also shows that information gaps and opportunism increase the likelihood of inflated pricing and quality shortfalls when contract administration is weak (Ivić & Cerić, 2023).

If anything, the management of variation orders and scope changes represents a critical manifestation of administrative weakness within the South African energy sector. Participants reported persistent approval delays, which in turn trigger contractual claims and additional costs. This aligns with the literature, which finds that ineffective change control correlates with time and cost overruns (Flyvbjerg, 2014; Locatelli, Mancini, & Romano, 2014). These contractual enforcement bottlenecks compound programme slippage by extending standing time, inflating preliminaries, and increasing the probability of disputes, particularly where decision

rights and the evidence trail are unclear. Incomplete documentation and slow information flows intensify administrative overload, where paper-based compliance displaces timely decision-making and stalls accountability (Project Management Institute, 2021).

The findings also highlight the inherent tension between governance compliance and operational flexibility. The PFMA and Treasury Regulations establish strict procurement controls intended to prevent irregular expenditure, yet these same rules limit responsiveness and innovation in contract execution (Gasela, 2022). Project managers often prioritise procedural adherence to avoid audit sanctions rather than focusing on performance optimisation. This behaviour reflects a compliance trap, where control processes become ends in themselves and weaken the feedback loops essential for effective risk management (Aven, 2016; ISO, 2018). Capacity constraints compound these challenges. Several participants observed that inadequate training of contract administrators and high staff turnover undermine governance continuity. This observation reinforces the Auditor-General's (2024) findings that limited expertise across SOEs hampers the consistent enforcement of contract conditions. Diffused accountability combined with reliance on external consultants who are unfamiliar with local regulatory nuances further perpetuates weak contract oversight and limited consequence management (Smith et al., 2014; Turner & Simister, 2001).

Overall, the discussion confirms global and local evidence that effective contract administration is essential to project success but extends current understanding by highlighting the influence of bureaucratic culture and institutional rigidity in the South African energy sector. While international frameworks such as PMBOK® and ISO 31000:2018 advocate integrated, cross-functional contract control systems, local implementation is constrained by procedural inertia and fragmented accountability (ISO, 2018; Project Management Institute, 2021). The findings therefore support the need for an integrated contract governance framework that combines compliance oversight with decentralised authority, shared accountability, and digital monitoring tools, supported by a single evidence spine and cadenced change-control routines (Willumsen et al., 2019).

Implication: When governance culture values cadence and documentation, compensation-event cycle time shortens and schedule drift reduces; without such discipline, cost and time move together, conditioned by governance culture.

See Chapter 5 exhibits for evidence anchors: Sections 5.5.2.1 to 5.5.2.7 (RQ2 themes), Table 5.3 and Figures 5.1 to 5.4.

6.2.3 RQ3 Findings Discussion: Monitoring and Control Mechanisms

Mechanism: Monitoring shifts outcomes only when signals trigger decision gates that affect programme and payment.

This objective assessed the effectiveness of monitoring and control mechanisms in managing contract risk within South Africa's energy-sector projects.

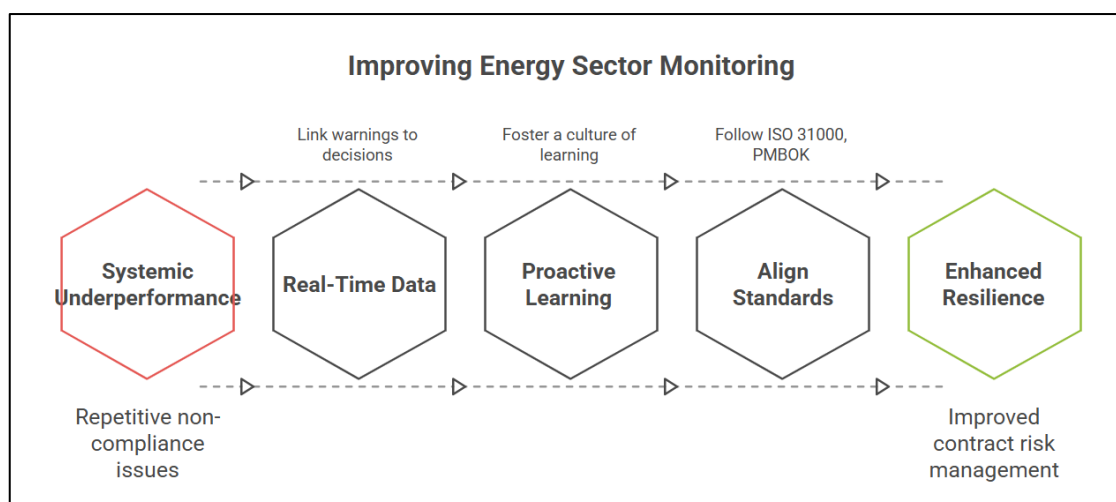


Figure 6.2. Monitoring and control mechanisms: information to consequence flow.

Source: Own Illustration

The findings in Chapter 5 showed that, although organisations maintain formal monitoring frameworks – such as progress reports, risk registers, and dashboard systems – these mechanisms are inconsistently applied, largely reactive, and rarely function as proactive management tools. Participants reported that early-warning indicators are often overlooked, escalation procedures are delayed, and risk registers are not continuously updated. Consequently, monitoring activities tend to occur after performance deviations have already materialised, undermining opportunities for early intervention and learning. This aligns with findings from Lehtiranta and Lillrank (2014), who demonstrate that project monitoring tools must

include predictive and real-time elements to influence decisions before deviations escalate.

These observations confirm international studies that identify weak monitoring as a major contributor to project underperformance (Aven, 2016; Hillson, 2016). They also align with findings by the PMI (2021) that successful project risk management depends on the integration of real-time data, feedback loops, and adaptive decision-making. In contrast, the present study revealed that monitoring practices in South Africa's energy sector are predominantly compliance-driven and document-oriented. Reports are generated to satisfy audit or contractual requirements rather than to inform operational decisions. Ncube (2015) similarly found that while accountability systems exist in South African municipalities, they are rarely linked to real-time corrective action or integrated data flows. This procedural mindset mirrors the broader institutional pattern identified in previous objectives where formality substitutes for functionality.

Theoretically, the results reinforce Risk-Management Theory but also expose the limits of its implementation in bureaucratic contexts. The theory posits that continuous monitoring and feedback strengthen resilience by enabling early identification of threats and opportunities (Aven, 2016; ISO, 2018). However, in practice, rigid hierarchical approvals and delayed reporting cycles prevent risk registers from serving as live documents. Tengan and Aigbavboa (2018) argue that stakeholder-inclusive monitoring frameworks (supported by training and joint reviews) can mitigate this rigidity and improve feedback timeliness. Participants described situations in which deviations were only reported during monthly review meetings, by which time cost or schedule impacts were already entrenched. This reactive posture contradicts the dynamic control model advocated by modern risk-governance frameworks, such as King IV, which emphasises iterative review, transparency, and escalation protocols.

The findings also underscore the influence of organisational structure and accountability on monitoring effectiveness. Many participants indicated that responsibility for performance oversight is dispersed across departments, with no single unit mandated to ensure integrated risk tracking. This fragmentation is consistent with the Agency-Theory explanation that unclear accountability and information asymmetry erode control (Jensen & Meckling, 1976). When monitoring

data are decentralised, principals lack timely insight into project realities, allowing agents to conceal inefficiencies or delay remedial actions. Flepisi and Mlambo (2021) similarly noted that compartmentalised reporting systems in public enterprises hinder comprehensive performance evaluation.

Another recurring concern was the absence of advanced digital systems for integrated monitoring. While some entities have implemented dashboards and early-warning registers, these tools are often manual or inconsistently maintained. Aiyetan and Das (2022) also observed that construction sites suffer when digital monitoring lacks staff competence, leading to slow response cycles despite the presence of tools. Consequently, risk signals do not translate into strategic decision-making. This finding extends Hillson's (2016) argument that effective monitoring depends not only on tools but also on the organisational culture that interprets and acts on the data. In many cases, decision-makers appear constrained by audit anxiety or procedural bottlenecks, limiting the flexibility to escalate emerging risks promptly.

The study further revealed that communication gaps between contractors, project managers, and oversight units weaken the effectiveness of control mechanisms. When monitoring insights are not disseminated across teams, lessons are lost, and similar issues recur. This observation resonates with the work of Zou, Zhang, and Wang (2007), who emphasise that collaborative risk communication is central to continuous improvement. In South Africa's public-sector context, however, limited feedback integration results in repetitive non-compliance and systemic underperformance.

Overall, the discussion under Objective 3 confirms global literature on the central role of monitoring and control in successful contract management but extends it by highlighting how bureaucratic governance structures inhibit their dynamic application. This is consistent with Flyvbjerg's (2014) broader critique of megaprojects, where he argues that systemic delays and control failures are often rooted in institutional inertia rather than planning deficiencies. The results suggest that institutional and procedural rigidity (rather than lack of frameworks) explains the persistent monitoring gap. To enhance effectiveness, monitoring must shift from static reporting toward a real-time, data-driven, and accountability-anchored system that links early warnings to decision-making authority. Such transformation would

align local practices with ISO 31000:2018, PMBOK®, and King IV standards while fostering a culture of proactive learning, rather than retrospective compliance.

Implication. Live dashboards, coupled with authority to gate certification, stabilise delivery; report-only systems do not, and the effect is amplified when decision bandwidth is limited.

See Chapter 5 exhibits for evidence anchors: Sections 5.5.3.1 to 5.5.3.7 (RQ3 themes), Table 5.3 and Figures 5.1 to 5.4.

6.2.4 RQ4 Findings Discussion: Dispute Resolution and Conflict Management

Mechanism: Early, project-embedded dispute paths (negotiation, adjudication) limit secondary delay and cost when records and clauses are clear.

Projects used NEC or FIDIC on paper, yet practical use of dispute-avoidance and adjudication was uneven. Mechanism: when notices are timely and records contemporaneous, negotiation and adjudication resolve most issues at project level; when time bars are missed and evidence is thin, claims escalate and stall work. Interview accounts that “we rarely go to adjudication” are consistent with relational resolution, but the same accounts reported long claim backlogs where documentation was weak. Implication: strengthen NEC literacy, time-bar discipline and evidence trails to compress decision time and keep the programme moving [conditioned by institutional readiness].

Bureaucratic governance structures inhibit the dynamic application of monitoring and control mechanisms. Institutional and procedural rigidity, rather than a lack of frameworks, explains the persistent monitoring gap. As Gasela (2022) notes, the fear of audit findings or allegations of irregular expenditure often leads managers to avoid direct negotiation or compromise, even when such actions would be cost-effective. This compliance-driven behaviour reinforces the findings from Objectives 1–3, indicating that institutional rigidity permeates all stages of the contract life cycle. To bridge this gap, monitoring must shift toward a real-time, data-driven approach.

A real-time, data-driven system would enable proactive and integrated monitoring, aligning local practices with international standards (ISO 31000:2018, PMBOK, and

King IV). Overall, the discussion under Objective 4 confirms that effective dispute resolution is inseparable from broader contract-risk-management practices. The results corroborate global studies emphasising the need for clarity, collaboration, and proactive engagement, while extending theoretical insight by highlighting how bureaucratic and cultural constraints limit these ideals in South Africa's energy sector.

Beyond the core objectives, the study revealed key themes that deepen understanding of CRM in South Africa's energy sector. These themes – communication and collaboration, institutional capacity constraints, and bureaucratic rigidity – show that effective contract management depends on organisational and behavioural context. Systemic inefficiencies persist due to structural and cultural dynamics that transcend individual project processes.

Communication and collaboration are crucial for project performance. When cross-functional teams engage continuously, project risks are identified and mitigated more effectively. This observation aligns with the assertions of Hillson (2016) and Zou, Zhang, and Wang (2007), who argue that transparent information flow across the project value chain strengthens collective decision-making and reduces the likelihood of disputes. However, communication is often fragmented due to departmental silos and hierarchical reporting lines, leading to delayed issue escalation and reactive responses. This pattern mirrors the Agency-Theory problem of divided accountability (Jensen & Meckling, 1976), where misaligned incentives and poor coordination erode trust and operational efficiency.

Institutional capacity constraints, such as shortages of experienced contract managers and risk specialists, weaken risk framework implementation. Reliance on external consultants who lack local governance knowledge exacerbates the issue. The findings corroborate the Auditor-General's (2024) reports that many public-sector projects suffer from limited technical skills and high staff turnover, which undermine continuity and institutional learning. Bureaucratic rigidity also hinders effective contract management, with rigid approval hierarchies and excessive oversight inhibiting timely decision-making.

The study highlights the interplay between organisational culture and governance structures. A culture that prioritises punishment over learning discourages proactive

disclosure of problems, eroding trust and open communication necessary for effective collaboration. This fear-driven governance culture contrasts with participatory frameworks like King IV, which emphasise ethical leadership, transparency, and shared responsibility.

To conclude, successful CRM requires systemic transformation of communication practices, capacity development, and governance culture. The root causes of performance inefficiency lie in the institutional ecosystem, rather than technical guidance. Strengthening CRM in South Africa's energy sector demands a holistic approach integrating human capability, relational governance, and adaptive institutional design.

Implication: Where NEC literacy and documentary trails are strong, most issues close without litigation; weak clause use and poor records prolong disruption [conditioned by institutional readiness].

See Chapter 5 exhibits for evidence anchors: Sections 5.5.4.1 to 5.5.4.5 (RQ4 themes), Table 5.3 and Figures 5.1 to 5.4.

6.3 Integrative Synthesis of Findings and Conceptual Model

The findings discussed above are now synthesised against the conceptual model introduced in Chapter 2 (Figure 2.1). This synthesis integrates the four pillars of contract risk management – planning, administration, monitoring, and dispute resolution – with the moderating influences of political commitment, administrative capacity, and governance culture. The integrated model (presented as Figure 6.3) illustrates how these contextual moderators condition the relationship between contract-risk-management practices and project performance. Specifically, the analysis demonstrates that political commitment determines the credibility of enforcement, administrative capacity shapes implementation consistency, and governance culture influences behavioural compliance and information flow. Together, these dimensions explain why formally similar risk-management systems yield divergent outcomes across projects. Figure 6.3, therefore, represents a refinement of the initial conceptual model, extending it from a theoretical proposition to an empirically grounded framework for contract risk management within South Africa's energy sector.

In Figure 6.3, solid arrows show the effects of the four pillars – planning; administration and execution; monitoring and control; dispute resolution – on cost, schedule, quality, and stakeholder outcomes. Dashed boxes show moderators: political commitment (stable decision rights and credible enforcement), administrative capacity (skills, data, and process capability), and governance culture (norms on transparency, consequence management, and information sharing). Thick arrows highlight the strongest links found in the data (front-end planning → monitoring; monitoring with decision gates → fewer disputes). See Figure 2.1 for the original model.

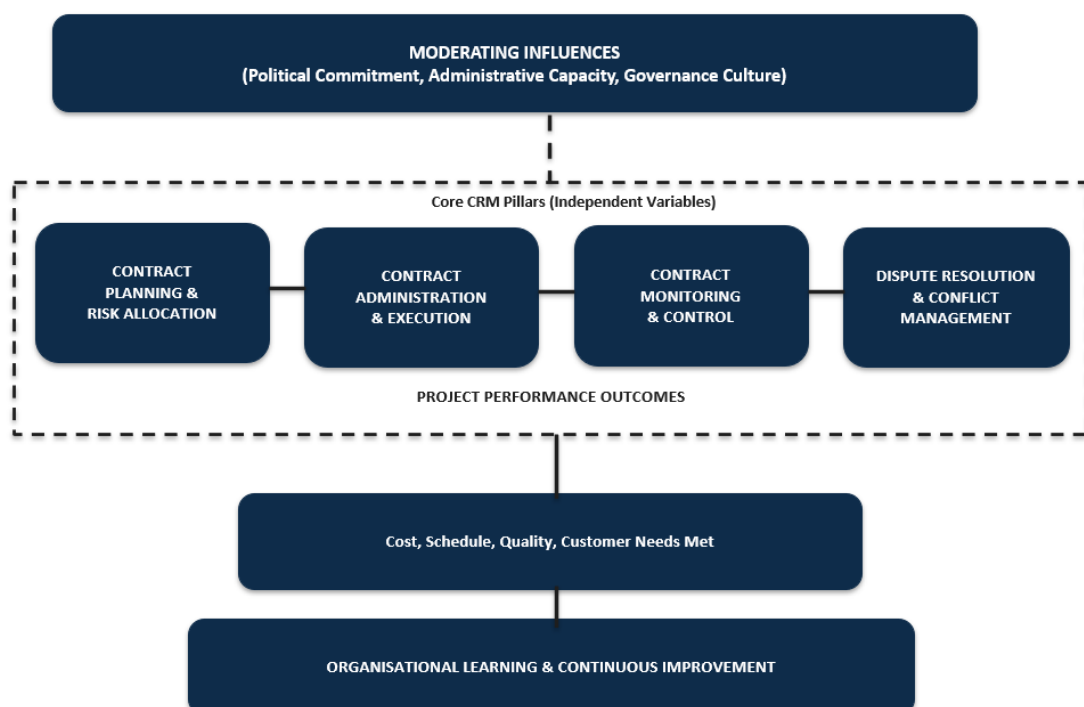


Figure 6.3: Integrated conceptual model of contract risk management in South Africa's energy sector

Source: Own Illustration

Overall, the model explains why the same contract forms and processes produce different results. Where commitment is firm, capacity adequate, and culture enabling, the same tools prompt timely action; where these are weak, tools become box-ticking. The Chapter 2 propositions are, therefore, extended into a practical, context-ready framework for state-owned settings.

6.4 Theoretical and Practical Implications

Risk-management theory. The cyclic, iterative premise holds. The contribution is to show how an audit-first culture interrupts the feedback loop, converting monitoring into reporting and weakening timely control [governance culture].

Agency theory. Classic dyadic agency problems remain, but the contribution is to extend them to intra-SOE multi-principal settings where split decision rights and layered approvals slow adaptation [political commitment and delegations].

Contract governance. Formal paths exist, yet the contribution is to add institutional readiness—literacy in the contract, reliable records, and time-bar discipline—as a necessary precondition for dispute mechanisms to work as designed [institutional readiness].

The study reveals that CRM in South Africa's energy sector is hindered by a tension between formal compliance and adaptive effectiveness. Despite advanced procedural frameworks like ISO 31000:2018, NEC and FIDIC standard, practical application is undermined by bureaucratic inertia, capacity deficits, and fragmented accountability. This leads to procedural rather than strategic risk management, confirming that formalisation alone cannot deliver resilience in complex project environments.

The study confirms and extends Risk-Management Theory, Agency Theory, and Contract Governance Theory. The evidence confirms Risk-Management Theory's emphasis on proactive, cyclical processes (Aven, 2016; ISO, 2018) but reveals that institutional rigidity interrupts this feedback loop, transforming risk management into a static, compliance-based activity. It also extends Agency Theory (Jensen & Meckling, 1976) by demonstrating that agency problems do not occur solely between clients and contractors but also within hierarchical structures of state-owned entities, where internal silos, delayed authorisations, and misaligned incentives reduce responsiveness. Thus, institutional rigidity interrupts the feedback loop of risk management, transforming it into a static, compliance-based activity. Agency problems occur not only between clients and contractors but also within hierarchical structures of SOEs, reducing responsiveness.

The findings deepen understanding of Contract Governance Theory by highlighting the role of governance cultures in shaping contractual obligation enforceability. International literature assumes that clearly articulated risk-allocation clauses naturally ensure compliance (Smith et al., 2014; Turner & Simister, 2001). However clearly articulated risk-allocation clauses do not ensure compliance in South Africa due to ambiguity, poor documentation, and low trust between actors. This contextual insight extends governance theory to include institutional trust and interpretive capacity as mediating factors of contract performance. In addition, the study contributes to contextual knowledge by situating CRM within South Africa's regulatory and socio-political environment. Institutional controls under the PFMA, while designed to promote accountability, often discourage managerial discretion and innovation (Gasela, 2022).

The study demonstrates that weaknesses in planning, administration, monitoring, and dispute resolution are systemically interlinked. Delayed planning, weak monitoring, and reactive dispute management amplify costs. To address these issues, a shift from departmentalised control to an integrated governance model is necessary, aligning planning, monitoring, and dispute-resolution functions within a unified risk-management framework.

See Chapter 5 evidence anchors in Sections 5.5.2–5.5.4 and Table 5.3 for the mechanism–moderator patterns that support these contributions.

6.5 Conclusion

This chapter discussed the study's findings in relation to the research objectives, literature, and theoretical frameworks. The discussion revealed that CRM in South Africa's energy sector is shaped by a complex interplay between formal governance frameworks, institutional capacity, and organisational culture. Despite well-established formal systems and policies, implementation is constrained by procedural rigidity, weak accountability, and limited technical capability.

The study's findings confirmed and extended theoretical perspectives on risk management, agency theory, and contract governance. Bureaucratic contexts interrupt the feedback loop of risk management, transforming it into a compliance-driven activity. Intra-organisational agency problems within state entities hinder

timely action, and institutional trust, interpretive capacity, and communication quality are critical determinants of clause effectiveness and risk allocation.

The study concludes that CRM effectiveness is determined not by the presence of frameworks alone, but by the institutional environment in which they operate. To improve outcomes, the energy sector requires integrated, context-sensitive CRM systems that combine accountability with adaptive capacity. The findings provide a foundation for strengthening contract risk governance across the South African energy sector, highlighting the need for a holistic approach that addresses institutional capacity, communication, and governance culture.

CHAPTER 7: CONCLUSIONS AND RECOMMENDATIONS

7.1 Principal conclusions

The study examined how CRM practices influence delivery outcomes in South Africa's energy sector and identified improvement levers that are feasible in context. The evidence indicates that performance hinges less on the mere presence of formal frameworks and more on the manner in which the four contract pillars are enacted under real institutional constraints. The golden thread is consistent. Sound front-end choices enable later control, administrative routines convert contractual intent into operational practice, monitoring produces results only when it triggers consequences, and the dispute path ultimately mirrors the strength of the preceding pillars within prevailing political and organisational conditions.

This then implies that outcomes improve when front-end definition is rigorous, administration runs to a predictable cadence, monitoring is tied to consequence, and dispute avoidance is activated early, provided political commitment, administrative capacity and governance culture enable credible enforcement [political commitment; administrative capacity; governance culture].

7.2 Summary of Key Findings

Regarding RQ1, the findings confirm the centrality of rigorous front-end planning and fair risk allocation. Early multi-disciplinary engagement, clear scope definition, and clause literacy reduce downstream variation orders and claims. By contrast, extended approval lead times, late engineering inputs, and template-driven risk registers create definition gaps that resurface as compensation events. This confirms established insights on front-end definition and extends them by showing how audit-sensitive approval chains displace professional judgement in a SOE environment. See Table 5.13 and Figures 5.1–5.4 for the evidence chain from codes to themes to outcomes [governance culture; administrative capacity].

On RQ2, the data show that contract administration requires a practical balance between control and flexibility. Where technical, commercial, and legal functions sustain a predictable administrative rhythm, change control, documentation, and certification operate as intended and cost–schedule drift is contained. Where accountability is diffuse and approvals lag, administration becomes a friction point

that amplifies disruption and invites opportunistic claims. This extends earlier work by demonstrating that compliance-oriented governance can erode responsiveness when capability and decision authority are misaligned. See Tables 5.2–5.11 and Figure 5.4 for administrative mechanisms and effects on cost–schedule control [decision bandwidth; documentation discipline].

On RQ3, monitoring and control contribute only when signals are coupled to action. Early warnings linked to live risk registers, recovery plans, programme reviews, and payment gating stabilise delivery; dashboards that are compiled without consequence do not. Capacity constraints and uneven role clarity often convert monitoring into retrospective reporting, which raises cost and weakens trust. This confirms the importance of feedback loops and qualifies claims that tools alone can provide control. See Figure 5.3 and Table 5.12 for moderator patterns and verification checks linked to programme acceptance [monitoring cadence; programme-acceptance discipline].

On RQ4, disputes are predominantly contained through negotiated and relationship-preserving routes when scope discipline and monitoring are strong. Formal adjudication and litigation occur infrequently and largely as last resorts, typically where planning gaps, weak change control, or late monitoring have already entrenched positions. The evidence, therefore, contrasts with purely legalistic prescriptions and supports a hybrid view in which credible formal rights and relational governance jointly sustain continuity of work. See Section 5.5.4 and Table 5.4 for dispute pathways and triggers under NEC/FIDIC [institutional readiness; relational capital].

Across all pillars, three moderators condition outcomes. Political commitment shapes enforcement credibility and the likelihood that risk transfer will hold after award. Administrative capacity determines whether early warnings, documentation discipline, and consequence management can be maintained under workload. Governance culture influences whether staff use frameworks as live instruments or treat them as compliance artefacts. Taken together, the study concludes that improved outcomes are most likely when contract design and oversight routines are explicitly matched to these contextual realities.

7.3 Theoretical and managerial implications

This section discusses both the theoretical and managerial implications of the study.

7.1.1 Theoretical Implications

Risk-management theory. Confirmed on cyclic practice; qualified by the finding that an audit-first culture interrupts the feedback loop and converts monitoring into retrospective reporting unless signals are linked to consequence [governance culture].

Agency theory. Extended from buyer–supplier dyads to intra-SOE multi-principal settings where split decision rights and inconsistent priorities slow adaptation [political commitment; delegations].

Contract governance. Refined by adding institutional readiness, namely literacy, records and time-bar discipline, as a precondition for NEC/FIDIC dispute paths to operate as designed [institutional readiness].

Relational governance. Trust and communication reduce secondary delay and cost only when anchored in enforceable rights and consistent administration [contract clarity; documentation discipline].

7.3.2 Managerial Implications

Managerially, several implications follow. First, front-end planning should shift from template completion to decision quality. Early cross-functional scoping, explicit assignment of risk to parties able to control it, and concise clause briefings on liquidated damages, force majeure, and early-warning duties are likely to reduce avoidable claims. Second, contract administration should be managed as a cadence discipline. Weekly cross-functional reviews that integrate change control, documentation, programme updates, and certification prevent administrative queues from becoming performance risks. Third, monitoring must translate information into consequence. Early-warning thresholds should require recovery plans and link to certification or payment gates, with independent verification for high-exposure items. Fourth, dispute avoidance should be institutionalised. Standing facilitation or adjudication arrangements, activated early and supported by contemporaneous records, maintain continuity without sacrificing commercial discipline. Fifth, capability

remains a binding constraint. Targeted training on NEC/FIDIC mechanisms for contract managers and engineers, authority matrices that enable timely decisions, and light-touch analytics for claim and variation risk can strengthen enforcement without unnecessary bureaucracy.

7.3.3 Implementation KPIs (12-month horizon)

This subsection specifies five indicators to operationalise the implications in Section 7.3.2. Targets are set for a twelve-month period and reflect constraints identified in Chapters 5 and 6.

1. **Front-end planning.** Proportion of project scopes with multidisciplinary sign-off before the RFP; target $\geq 90\%$.
2. **Administration cadence.** Proportion of weeks with a minuted cross-functional contract review; target $\geq 85\%$.
3. **Monitoring to consequence.** Proportion of early warnings with an approved recovery plan linked to a payment or progress gate; target $\geq 95\%$.
4. **Dispute-avoidance readiness.** Proportion of projects with a standing facilitator or adjudicator appointed at award; target 100%.
5. **Capability uplift.** Proportion of project managers and engineers who complete the specified NEC or FIDIC modules; target $\geq 80\%$.

7.4 Contribution to Knowledge and Practice

The dissertation offers a moderated model of the relationship between CRM and performance tailored to state-owned energy projects. It explains outcomes through four mechanisms situated within three moderators. The model confirms international evidence on the value of robust front-end planning and disciplined monitoring, and it extends knowledge by showing that, in politicised and capacity-constrained settings, the effectiveness of any clause or tool depends on whether it is tied to enforceable consequences and administered with predictable rhythm. Empirically, the study contributes practitioner-proximate accounts that reveal how apparently small procedural choices, such as weekly enforcement of programme obligations or concise clause briefings, influence the incidence and trajectory of claims. Practically, it offers a coherent and context-feasible improvement pathway that integrates formal controls with relational routines and can be implemented within existing policy settings. Table 7.2 links the research gaps to the contributions of this study.

The moderated four-pillar model is context-ready for state-owned settings because tools have effect only when coupled to consequence, capacity and credible decision rights.

Table 7.2: Theoretical and Practical Contributions

Dimension	Prior Knowledge and Research Gap	Integrated Contribution and Implication
Front-End Planning and Risk Allocation	Earlier studies recognised the importance of early definition but under-explored how bureaucratic approval chains distort front-end decisions in SOEs.	This study showed that audit-sensitive approval processes displace professional judgement that create scope gaps that resurface as claims. This finding extends prior studies which reported that weak early scoping and governance cause downstream variation orders (Gregory, 2020; Love, 2019; Mashamba, Kanakana-Katumba, & Maladzhi, 2023). In addition, the study also reinforces evidence that formal frameworks in South African SOEs are undermined by administrative bottlenecks (Auditor-General of South Africa AGSA, 2024; Judicial Commission of Inquiry, 2022), supporting the need to shift from template completion to decision quality.
Contract Administration	Administration was often viewed as procedural compliance rather than a performance enabler.	The study reconceptualised administration as a <i>cadence discipline</i> , where predictable weekly cycles integrate change control, documentation, and certification. This contribution builds on prior work showing that weak contract administration and record-keeping fuel disputes (Fenn et al., 1997; Gündüz & Elsherbeny, 2020) and aligns with relational-contract insights that trust, and communication improve outcomes (MacNeil, 1980; Ning & Ling, 2021).
Monitoring and Control	Literature often assumed that monitoring tools inherently deliver control, neglecting the enforcement link.	Findings showed that monitoring adds value only when coupled with enforceable consequences and adequate capacity. This extends the PMI's (2021) feedback-loop principle and supports observations that weak oversight drives irregular expenditure in SOEs (AGSA, 2025' Eskom, 2024). The study defined <i>feedback-to-action coupling</i> as essential for effective control.
Dispute Resolution	Research emphasised legalistic dispute mechanisms, overlooking preventive and relational approaches in SOEs.	The study found that early facilitation and standing adjudication sustain continuity, while preserving commercial discipline. This complements NEC4's collaborative dispute-avoidance emphasis

		(Eggleston, 2019) and corroborates Mkhize's (2021) finding that Eskom's prior lack of structured adjudication prolonged litigation.
Political Commitment (Moderator)	Political influence was noted but seldom modelled as a moderator of CRM effectiveness.	The study confirmed that consistent political commitment underpins enforcement credibility – echoing comparative findings that weak commitment unravels formal risk transfer (Campos et al., 2021; Kenny, 2007; Oluseye & Oyewobi, 2024). It integrates political-economy dynamics into project-risk governance for emerging-market SOEs.
Administrative Capacity (Moderator)	CRM frameworks assumed adequate capability without empirical testing.	Evidence showed that constrained capacity undermines all CRM pillars, echoing African infrastructure studies linking skills deficits to overruns (Damoah & Kumi, 2018; Mokole et al., 2025; Oluka & Basheka, 2014). It extends TCE (Williamson, 1979) by positioning capability as an endogenous transaction cost and recommends targeted NEC/FIDIC training (World Bank, 2024a, 2024b).
Governance Culture (Moderator)	Governance culture was described qualitatively but rarely operationalised in CRM models.	The study demonstrated that compliance-oriented cultures decouple frameworks from practice, consistent with institutional insights that informal norms can weaken formal controls (Helmke & Levitsky, 2004; Fazekas & Tóth, 2016). This reframes governance culture as behavioural infrastructure for contract control, echoing calls to professionalise oversight (Klaaren et al., 2023).
Integrated Model of CRM and Performance	Prior models treated CRM pillars independently.	The study produced a moderated four-pillar model showing that project outcomes improve only when design and oversight routines align with contextual realities. This integrates propositions from Principal-Agent theory (Jensen & Meckling, 1976), TCE (Williamson, 1979), and relational-governance literature (Benítez-Ávila et al., 2018; Poppo & Zenger, 2002).
Practical Toolkit	Guidance on strengthening CRM under real institutional constraints was fragmented.	The research synthesised feasible tools – clause briefings, weekly review cadence, consequence-linked monitoring, and authority matrices – bridging academic theory with PFMA and King IV

		governance practice (National Treasury, 1999; King IV Report, 2016). These measures translate institutional prescriptions into enforceable action.
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7.5 Limitations of the study

The research design is cross-sectional and relies on retrospective accounts, which limits causal inference and raises the possibility of recall bias. The sample, although information-rich and functionally diverse, is confined to the South African energy sector, which may affect transferability. Availability of organisational documents varied, constraining systematic triangulation for some assertions. Researcher positionality and sector familiarity may also have influenced emphasis despite reflexive safeguards. These limitations qualify scope rather than negate findings and indicate the value of longitudinal and comparative designs to test durability and generalisability.

7.6 Practical and Policy Recommendations

Even though the majority of the recommendations have been outlined and are embedded within Section 7.3, it is fitting to summarise these recommendations in this section. From the study, six key recommendations emerge:

7.6.1 Front-End Planning:

Based on the findings of this study, it is recommended that public owners and project teams institutionalise multidisciplinary scope definition and risk-allocation workshops before contract award. This way, it is possible to ensure that risk is assigned to parties who are best positioned to manage it and reduce later variation orders and claims (Gregory, 2020; Mashamba, Kanakana-Katumba, & Maladzhi, 2023). Also, approval frameworks should prioritise decision quality over procedural compliance. In that regard, it will be possible to limit the bureaucratic bottlenecks highlighted in the Auditor-General of South Africa's reports (2024).

7.6.2 Contract Administration

It is also recommended that contract administration should be managed as a structured cadence discipline involving weekly cross-functional reviews that integrate change control, documentation, progress updates, and certification. It has been reported that predictable administrative rhythms convert contractual intent into operational control and prevent documentation backlogs from becoming project risks (Fenn et al., 1997; Gündüz & Elsherbeny, 2020).

7.6.3 Monitoring and Control

Within the South African energy sector, stakeholders need to be aware that monitoring systems need to go beyond compliance reporting and ensure that early-warning signals trigger concrete recovery actions. In other words, each deviation in time, cost, or quality should require a recovery plan linked to payment gating or certification thresholds, should be supported by independent verification where high exposure exists in line with provisions from the PMI (2021) and Eskom's (2024) aspirational principles.

7.6.4 Dispute Avoidance and Resolution

It is also recommended that organisations need to establish standing facilitation or adjudication mechanisms to resolve issues early and preserve working relationships. More specifically, it is hoped that incorporating NEC4's early-warning and adjudication provisions can prevent escalation to costly arbitration or litigation, thereby maintaining project continuity and trust (Eggleston, 2019; Mkhize, 2021).

7.6.5 Capability Development

Again, it is recommended that administrative and technical capacity constraints need to remain a binding limitation across CRM pillars. Crucially, sector agencies are recommended to prioritise targeted training in NEC/FIDIC mechanisms and certifications, risk allocation, and contract monitoring. This can then be combined with authority matrices that enable timely decision-making (Damoah & Kumi, 2018; Oluka & Basheka, 2014; World Bank, 2024a).

7.6.6 Governance and Policy Reform

A final recommendation focuses on CRM, governance and policy reforms. Strengthening consequence management is essential for accountability and deterrence. Specifically, regulators and boards need to embed PFMA-compliant escalation frameworks to ensure that non-performance or contractual breaches trigger consistent, transparent sanctions, while also rewarding early compliance and proactive risk mitigation (King IV Report, 2016; Klaaren et al., 2023; National Treasury, 1999).

7.7 Recommendations for future research

Future studies should examine the temporal dynamics of contract governance using longitudinal or panel designs that track contracts from award to close-out, testing whether enforcement of early warnings, disciplined recovery planning, and payment gating reduce variance in time and cost. Mixed-methods designs could combine qualitative mechanism tracing with quantitative analysis of claims, variation orders, and programme adherence. Comparative work across SOEs and private clients would clarify how political commitment and governance culture moderate enforcement credibility. Field experiments or realist evaluations could assess the impact of low-cost interventions, including clause briefings, authority-matrix adjustments, and lightweight digital registers, on dispute incidence and cycle time. Further research should also explore political-economy conditions under which collaborative approaches, such as standing dispute boards or alliancing, outperform strict risk transfer in brownfield refurbishments with interface risks.

7.8 Conclusion

The study began with a practical question of national importance: why contract-risk practices in South Africa's energy projects frequently fail to deliver planned time, cost, and quality, and what would work better. It traced the golden thread from problem to theory to method to findings and produced an integrated explanation grounded in project practice. In summary, the evidence indicates that outcomes improve when front-end planning is rigorous, administration runs to a steady rhythm, monitoring triggers consequences, and dispute avoidance is engaged early, within a governance setting that empowers capable people to act. Therefore, the study concludes that strengthening enforcement credibility and administrative capability around these four pillars is likely to yield material performance gains. From a managerial standpoint, implementing the above recommendations provides a feasible route to fewer variations, shorter cycle times, and more predictable delivery, which is vital for the sector's contribution to energy security and economic resilience. Ultimately, the study affirms that South Africa's energy-sector projects can achieve reliability and value for money when contractual governance evolves from compliance to consequence basis in a way that blends formal structure with relational integrity.

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APPENDICES

Appendix A: Interview Guide



Interview Guide

Optimising contract management practices: evaluating contract risk management in the South African energy sector

1. Purpose

Explore lived experiences and judgements about contract planning and administration, monitoring and control, and dispute resolution the South African energy sector projects, and how these practices relate to project performance.

2. Target participants

Project managers, contract administrators, procurement practitioners, engineers, and legal advisors involved in project contracts in the energy sector and affiliated contractors.

Structure

Section A – Background

Section B – Contract planning and administration in projects

Section C – Monitoring and control practices in projects

Section D – Strategies and mechanisms for contract planning, administration, and monitoring and control in projects

Section A: Job role and project context (Background)

1. What is your current role and department, and how many years have you worked in this role and on projects?

2. In the past three years, roughly how many projects or contracts have you worked on, and what types were they?

3. Choose one recent project you know well. What was its purpose, which contract type was used, and what was your role in contract management? Why was that contract type chosen?

Section B: Contract planning and administration in projects

4. How was the contract planned and set up from procurement pack handover to signature? What worked well, and what did not?

5. How were scope and risks defined, allocated, and recorded? Were there clauses that later created ambiguity or enabled claims?

6. How did technical and commercial teams work together during planning and contract administration, and what helped or hindered this interface?

7. How was the contract administered during execution? Which processes or records were most important, and why?

8. How were scope variations handled, priced, and approved?

9. Please describe one decision or change in planning or administration that affected outcomes. What drove it, and what was the impact on cost, schedule, quality, or stakeholders?

Section C: Monitoring and control practices in projects

10. How were progress, cost, quality, and risks monitored on this project? Who reviewed the information, and how often?

11. Which monitoring or control tools were used in practice, for example dashboards, progress meetings, programmes, early warnings, or risk registers? In what ways did they influence decisions?

12. When deviations from plan occurred, how were they identified, escalated, and addressed? Who authorised corrective actions, and how timely were they?

13. Please give one example where monitoring and control either averted a problem or failed to do so. What was the effect on cost, schedule, quality, or stakeholders?

14. In your experience in the South African energy sector, which monitoring and control practices most strongly influence project performance, and why?

Section D: Strategies and mechanisms for contract planning, administration, and monitoring and control in projects

15. Which mechanisms are available and actually used to resolve contract issues, for example adjudication, mediation, expert determination, or senior-level negotiation? How effective are they in preventing or limiting adverse impacts on performance?
16. What specific changes to planning and administration would most reduce adverse effects on performance?
17. What specific changes to monitoring and control would most reduce adverse effects on performance?
18. Which adjustments to templates or clauses, roles or capabilities, or governance would most improve outcomes? Is there anything important that has not been asked?

Appendix B – Ethical Clearance

GIBS ETHICAL CLEARANCE APPLICATION FORM 2025/26

Section of form and type of data or methodology	Attachments – including methodology chapter (please mark that they are included)
A Pre-existing personal records of human subjects, e.g. performance reviews	☐ Methodology section of proposal ☐ Description of the nature of the records to be used ☐ Signed permission letter from appropriately authorised person in the organisation to use the data
B New data solicited from human subjects, e.g. through interviews or surveys	☒ Methodology section of proposal ☒ Informed consent statement attach proforma (separate for qualitative data collection; as part of survey questionnaire for quantitative data collection) ☒ Interview guide / survey questionnaire / pre-existing proprietary test instrument / description of intervention ☒ IF pre-existing proprietary test instrument, letter of permission from the owner/copyright holder (e.g. the MBTI)
C Public non-human data, e.g. World Bank or other databases (no letter needed)	☐ Methodology section of proposal ☐ Explanation of the nature of the data, how you will source it and how you will use it
D Private Organisation-specific non-human data, e.g. financial statements, marketing or safety records	☐ Methodology section of proposal ☐ Explanation of the nature of the data, how you will source it and how you will use it ☐ Permission letter from the owner/organisation to use the data
E Indicate which methodology you will be using. Choose one only	☒ Qualitative ☐ Quantitative ☐ Mixed methods

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SECTION A. PRE-EXISTING PERSONAL RECORDS OF HUMAN SUBJECTS

1. Specify the nature of records and how they will be used

2. Confirm that permission has been obtained from an appropriately authorised person to study and report on these records.

Remember to attach permission letter(s).

☐ I confirm

3. Provide the name and job title of the person in the organisation who has authorised the use of the records.

Name:

Job Title:

4. How will **confidentiality** (when the identity of the respondent is known to the researcher e.g. when data collection is via interviews) and/or **anonymity** (when the identity of the interviewer is not known to the researcher e.g. when data collection is via surveys) of the respondents and their data be assured?

Mark all that apply – ensure this is included in your methodology chapter.

- ☐ No names will be requested
- ☐ No names will be reported
- ☐ Data will be stored without identifiers
- ☐ Only aggregated information will be provided
- ☐ Other. Please specify

SECTION B. NEW DATA OBTAINED FROM HUMAN SUBJECTS

5. Does the nature of your research require you to collect data from respondents who constitute a 'vulnerable population' (defined as those who are particularly susceptible to coercion or undue influence or who have difficulty giving free and informed consent to being the subjects of research)

☒ No

☐ Yes.

IF yes, explain the nature of the population and what measures will be put in place done to reduce or minimise this vulnerability. Ensure this is included in your methodology chapter.

6. Please confirm that no incentive is to be offered to respondents to participate in the study.

☒ I confirm

7. Mark the applicable box(es) to identify the proposed procedure(s) to be carried out to obtain data.

- ☒ Interview guide Attach if applicable
- ☐ Survey questionnaire Attach if applicable
- ☐ Pre-existing proprietary test instrument, e.g. MBTI Attach if applicable
IF a pre-existing proprietary test instrument is used, confirm that permission has been obtained to use it.
- ☐

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I confirm

Remember to attach permission letter(s) to use proprietary test instrument/s from an appropriately authorised person.

- ☐ • Intervention, e.g. training or experiment Describe in full in methodology chapter

8. Confirm that the data gathering is accompanied by a consent statement.

- ☒ I confirm

9. Where is the consent statement found?

- ☐ As part of the survey questionnaire, if quantitative data collection, in the introduction section of the questionnaire.
- ☒ As a separate document, if qualitative data collection, remember to attach.

10. Is there a risk that the respondents may not fully understand the nature of the study, or instructions or questions, or their rights as a result of language barriers between themselves and the researcher?

- ☒ No, there is not a risk
- ☐ Yes, there is a risk.
IF yes, how will the subjects' full comprehension of the content of the research, including giving consent, be ensured? Please specify, and include in methodology chapter

11. Do any respondents risk possible harm or disadvantage (e.g. financial, legal, reputational or social) by participating in the research?

- ☒ No
- ☐ Yes.
IF yes, explain what types of risk and what is done to minimise and mitigate those risks and include in methodology chapter.

12. Are there any aspects of the research about which subjects are not to be informed?

- ☒ No
- ☐ Yes.
IF yes, explain why, and how subjects will be debriefed, and include in methodology chapter.

13. Will the audio or video recorded data be transcribed and/or translated by an independent transcriber and/or translator?

- ☒ No
- ☐ Yes.
If yes, confirm that the transcriber and/or translator will be required to sign a non-disclosure agreement to protect the respondent's confidentiality, and include in methodology chapter
- ☐ I confirm. Remember to attach a pro-forma non-disclosure agreement

14. How will **confidentiality** (when the identity of the respondent is known to the researcher e.g. when data collection is via interviews) and/or **anonymity** (when the identity of the interviewer is not known to the researcher e.g. when data collection is via surveys) of the respondents and their data be assured? Include in methodology chapter

- ☐ No names will be requested, relevant when the identity of the respondent is not known to the researcher

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- ☒ No names of individuals or organisations will be reported, relevant when the identity of the respondent is known to the researcher
- ☐ Only aggregated information will be reported
- ☒ Data will be stored without identifiers
- ☐ Other. Please specify

15. Is the topic of your research and the nature of the interview or survey questions about one or more particular organisations or to be conducted within one or more particular organisations?

- ☒ No
- ☐ Yes. If yes, confirm that appropriately authorised person/s have provided written permission for you to conduct this research
- ☐ I confirm. Remember to attach signed permission letter/s

SECTION C. PUBLIC NON-HUMAN DATA

16. Specify the nature of records to be used: Explain how they will be selected, where the data will be sourced and how the data will be used, and include in methodology chapter:

17. Confirm that this pre-existing non-human data is in the public domain, is legally accessible and is free of any copyright.

- ☐ I confirm

Appendix C: Codes

Code	Comment	Groups
Missing detail in scope drives CEs	Insufficient breakdown of components or software requirements in works information leads to compensation events and extra cost.	Front-end definition & planning quality; Scope completeness & detail
TDP-driven quantities later modified	Panel and framework set-ups underestimated or mis-specified volumes; contracts needed modification.	Front-end definition & planning quality; Quantity baselining vs reality
Procurement cycle delays & value-chain misalignment	Lengthy reviews and weak early alignment across functions delay award and execution readiness.	Front-end definition & planning quality; Process length & misalignment
Shared risk: international OEM shipping delays	Shipping delays from overseas OEMs treated as shared risks; tracked in risk registers with reduction meetings.	Risk allocation & management; Registers & mitigation
Monthly risk reporting & email escalations	Risks noted in monthly reports and formalised via email when urgent; tracked to closure.	Risk allocation & management; Routine risk tracking
CFT role clarity prevents siloing	Clear roles and end-to-end understanding across CFT reduces disputes and rework.	Cross-functional teaming & governance; Role clarity & cadence
Internal caucus + clear escalation paths	Internal alignment sessions and predefined escalation points keep supplier negotiations on track.	Cross-functional teaming & governance; Negotiation caucuses & escalation
Weekly technical + monthly progress with OpenText	Structured meetings with formal progress reports and centralised document repositories.	Monitoring, control & information systems; Meetings & document control
Programme tracking + early warnings drive corrective action	Programme, dashboards and early warnings trigger timely supplier responses and risk reduction.	Monitoring, control & information systems; Dashboards, programmes & early warnings
QS assessment + CE committee approvals	Variations handled via contractor quotation, QS assessment and internal CE committee approval before authorisation to proceed.	Variation management & compensation events; Process discipline
Engineer-issued drawings create CE with time & cost	Design adjustments by engineers trigger additional scope, pricing and schedule revision.	Variation management & compensation events; Design change examples

Notification of verification of QS assessment of CE approval	NEC-aligned process where contractor notifies; PM verifies against works info; QS assesses; CE committee decides.	Variation management & compensation events; NEC notifications & verification
Supply Contract misfit for complex transformer delivery	SC under-empowers PM role for projects with installation/transport; ECC/EPC may be more appropriate.	Contract form fit & capability; Form suitability
Contractor misunderstanding of NEC obligations	Suppliers focus on technical delivery but neglect NEC processes (defects, quality documentation, configuration control).	Contract form fit & capability; Contractor familiarity with NEC
FFAT/type testing & pre-approved suppliers	EPC routes require compliance testing; engineers audit factories; testing can be very costly but avoids brittle/weak items.	External constraints & compliance; Testing & assurance
LD percentage pushback due to overseas OEM lead times	Suppliers resist standard LDs where delays stem from offshore OEM cycles and shipping.	External constraints & compliance; LDs vs market realities
De-scoping due to contract lapse & warranty expiry	When contracts lapse without installation, scope is reduced; warranty windows (52 weeks) drive decisions.	De-scoping, lapse & warranty; Financial clean-up
Alternate contract search caused 8-month delay (cash-flow shift)	Changing contract vehicle mid-stream caused delays and rebaselined cash-flow without quality loss.	Deviation management & impacts; Schedule & cash-flow effects
Strategy choice & design responsibility	Choice among conventional, PC and EPC shapes who designs, procures and tests with specs and pre-approved lists provided by the client in EPC.	Contracting strategy; Conventional vs PC vs EPC

10.4 Plagiarism Declaration

The following declaration should appear on a separate page (this must be rewritten by the student):

I declare that this research project is my own work. It is submitted in partial fulfilment of the requirements for the degree of Master of Business Administration at the Gordon Institute of Business Science, University of Pretoria. It has not been submitted before for any degree or examination in any other University. I further declare that I have obtained the necessary authorisation and consent to carry out this research.

The name of the student and the date should follow the declaration.

10.5 Acknowledgements

It is GIBS convention to **not include any acknowledgements**. Please do not include this section as part of your final submission.

10.6 Table of Contents

Under the heading "Contents", this will include the starting page numbers of the preliminary material, chapter and section headings, references and any appendices. The first page of chapter 1 would as a rule be numbered 1. Any preliminary pages, i.e. those discussed above, would be numbered in small roman numbers (i.e. i, ii, etc.)

10.7 Text of research project

The text of the conventional research report is divided into logical chapters. On reading the whole report the process of logical reasoning of the whole research process must be made apparent. There must be a golden thread in that the entire document is interlinked, and all chapters speak to each other. A typical layout would be:

Chapter 1: Introduction to Research Problem. This chapter clearly indicates the need for the research and what the research objectives are. The research problem must be explained and justified in practical and theoretical terms and the scope of the research defined. This is where the research setting/context of the research is made